

Canon
COMPUTER SYSTEMS

AS-100

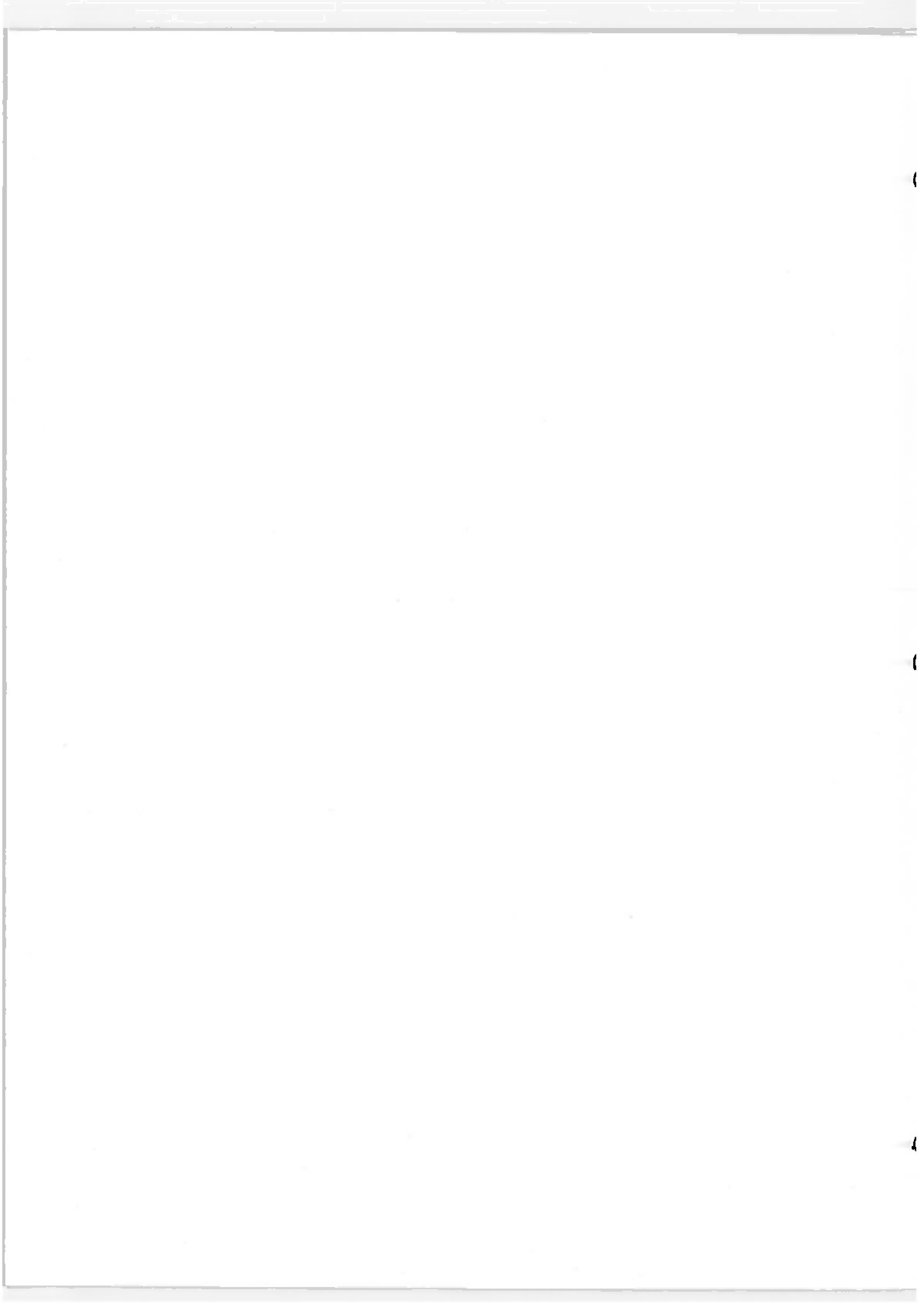
AS-100

AS-100

AS-100

Canobrain™
User's Manual





PREFACE

This instruction manual was designed to make it easy for people without specialized knowledge of computers to learn to use CANOBRAIN II, which operates under the AS-100 System.

. Volume I

Fundamentals: This volume explains the system and data floppy disks which must be created before using CANOBRAIN II, and also outlines the basic key operations of CANOBRAIN II. Be sure to read this portion carefully.

. Volume II

Books: This volume uses examples to explain the function and manipulation of books under CANOBRAIN II. Do the examples as you read this portion.

. Volume III

Rolls: This volume uses examples to explain the function and manipulation of rolls under CANOBRAIN II.

. Volume IV

Patterns: This explains how routine processing can be registered as patterns and total patterns and automatically executed by CANOBRAIN II. Be sure to do the examples included.

. Volume V

Handbook: The functions described in Volumes II to IV are summarized. For operations, consult Volume I as required. This portion is also useful when error messages are displayed, since it contains a list of these messages and explanations for each.

Appendices 1 and 2 are for readers who are going to develop BASIC programs or use IBM floppy disks.

Appendix 3 describes how to use a secondary printer if one is connected to CANOBRAIN II.

Appendix 4 describes how to use a hard disk system with CANOBRAIN II.

Appendix 5 is the function key list. Cut this sheet out and retain it for future reference.

Examples used for explanations in this manual have been executed using an 8-inch system.

Read the following manuals along with this manual:

- "AS-100 System Instructions"
- "CP/M-86 User's Manual"
- "Hard Disk System User's Manual"

- * CP/M-86TM is a registered trademark of Digital Research.
- * CanobrainTM is a registered trademark of Canon Inc.
(In this manual, please change all references to "CANOBRAIN" to "Canobrain".)
- * Information contained in this publication is subject to change without prior notice.

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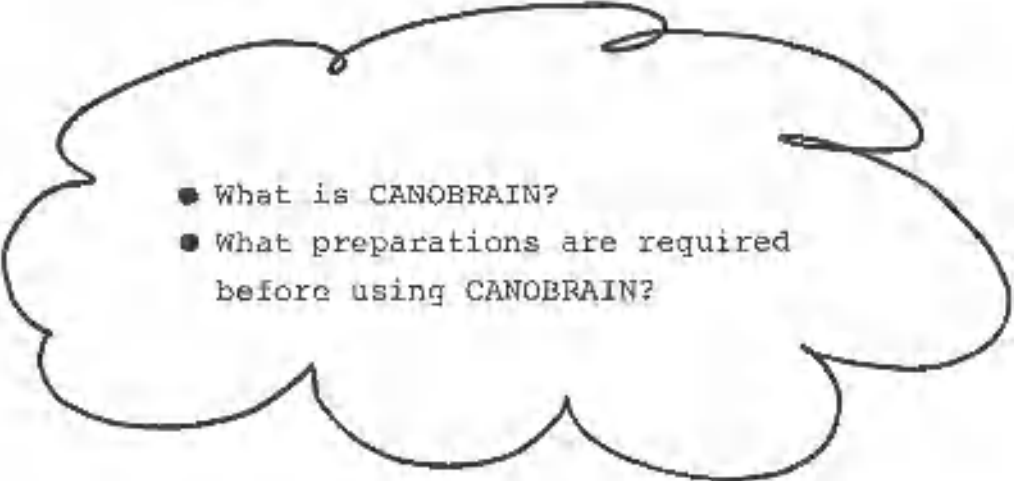
VOLUME I

**INTRODUCTION TO
THE CANOBRAIN SYSTEM**

Canon AS-100

CHAPTER 1 OUTLINE

This chapter explains what CANOBRAIN is and what procedures must be carried out before using it.

- 
- What is CANOBRAIN?
 - What preparations are required before using CANOBRAIN?



1.1 What is CANOBRAIN?

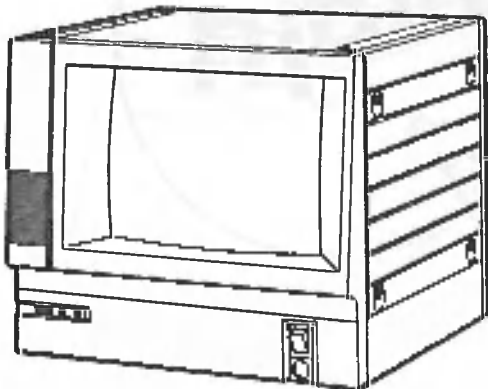
Everyone is aware that computers are playing a more important role in our daily lives. But what a lot of people don't know is that you don't necessarily have to have specialized skills or programming knowledge to take advantage of computer benefits. Today's information-intensive offices need computer software that is both versatile and easy to use. The problem is that most businesses simply do not have the time and money required to train their personnel as computer experts.

That's why we made CANOBRAIN. There's no programming language to learn, just a few easy-to-understand procedures that will quickly turn your information into results. And CANOBRAIN can be used for a wide range of tasks, from record-keeping and accounting to business projection and analysis.

1.1.1 Devices used by CANOBRAIN

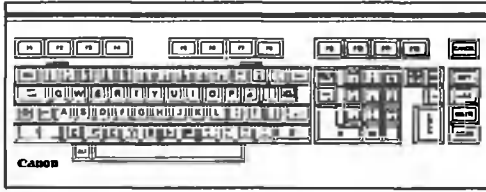
First we will explain the various AS-100 devices which CANOBRAIN uses.

(1) Display unit



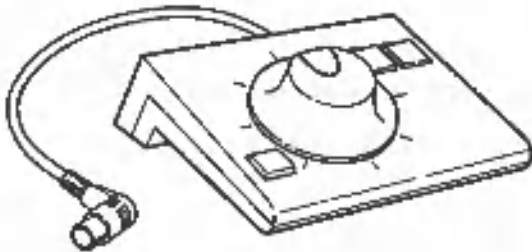
The display unit displays messages from CANOBRAIN, characters entered from the keyboard, and the contents of floppy disks. CANOBRAIN displays a wide variety of different images on this CRT; you will become familiar with these images as you learn to operate CANOBRAIN.

(2) Keyboard



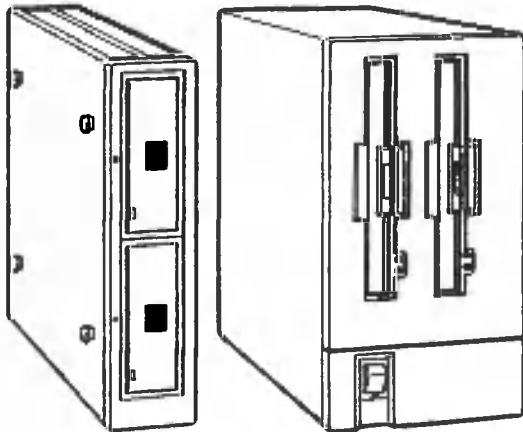
The keyboard conveys data and instructions to the computer. Characters are displayed on the screen as the various keys on the keyboard are pressed. Specific keyboard procedures are explained in Chapter 2.

(3) Pointing device



The pointing device conveys information to CANOBRAIN regarding the display positions of data which will be processed. CANOBRAIN can be used without the pointing device. Specific pointing device procedures are explained on page 50.

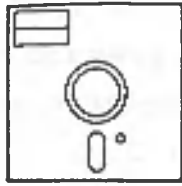
(4) Floppy disk units



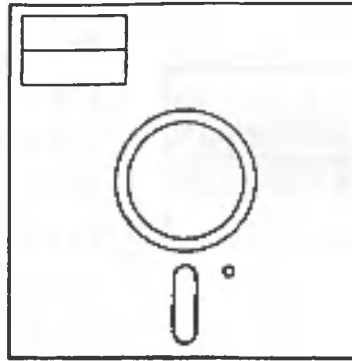
For 5 1/4-inch disks

For 8-inch disks

Two types of floppy disk units are available, one for 5 1/4 inch mini-floppy disks and one for 8-inch floppy disks. Your system is equipped with one or both types of these units. The function of these units is to write data onto floppy disks and to read data from them.



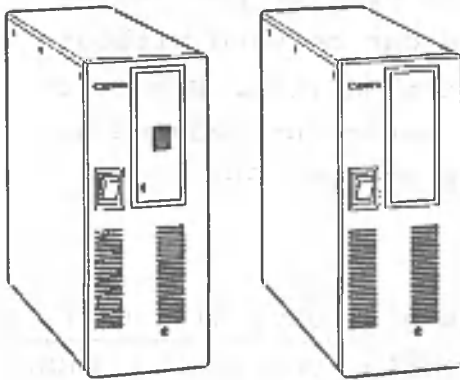
Mini-floppy disk
(5 1/4-inch)



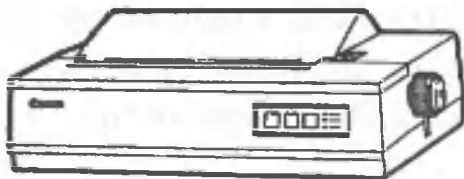
Floppy disk (8-inch)

(5) Hard disk units

Hard disk units can be used just like floppy disk units.



(6) Printer



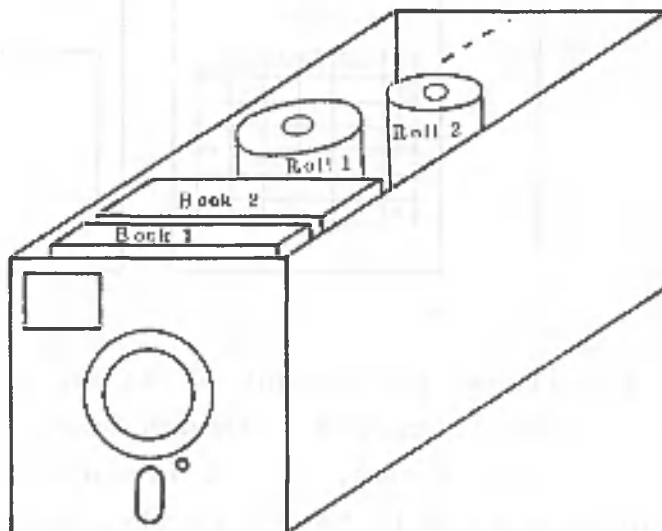
The printer prints out data prepared by CANOBRAIN. CANOBRAIN can also be used without a printer.

1.1.2 CANOBRAIN Disk Format and Contents

A brief explanation of how the floppy and hard disks are used should help you understand what CANOBRAIN is and what it does.

The types of floppy disks which are used by CANOBRAIN include the system disk, which contains the CANOBRAIN program, and data disks, which are used for data storage.

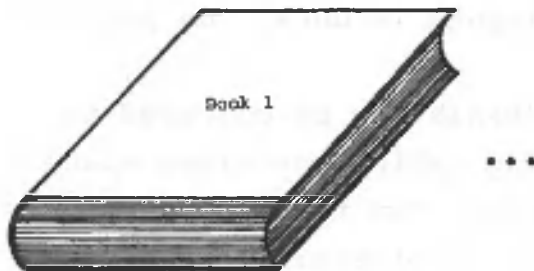
- (1) The system disk contains programs like the operating system, which controls the operation of the computer, and the CANOBRAIN program. Procedures for creating the system floppy disk are explained in detail on page 12.
- (2) The data disks used by CANOBRAIN can be compared to filing cabinets. Each filing cabinet provides space in which documents can be stored. Two types of documents can be stored in these filing cabinets: books and rolls. From the data in these books and rolls, various types of graphs can be created.



- a. Just as a book is composed of many pages, the books of CANOBRAIN are composed of units called pages. However, with CANOBRAIN, the pages are filled with words and numbers that you write yourself.

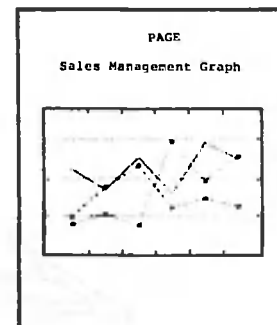
One page in each book is like a table of contents. In CANOBRAIN, this page is called an index. This index contains the titles which are assigned by you to other pages containing material you have written.

There is another special page called the 0 page. This page is used when you want to add new pages for data.



INDEX	
0 PAGE:	Additional pages
1 PAGE:	Sales Management Table
2 PAGE:	Sales Management Graph

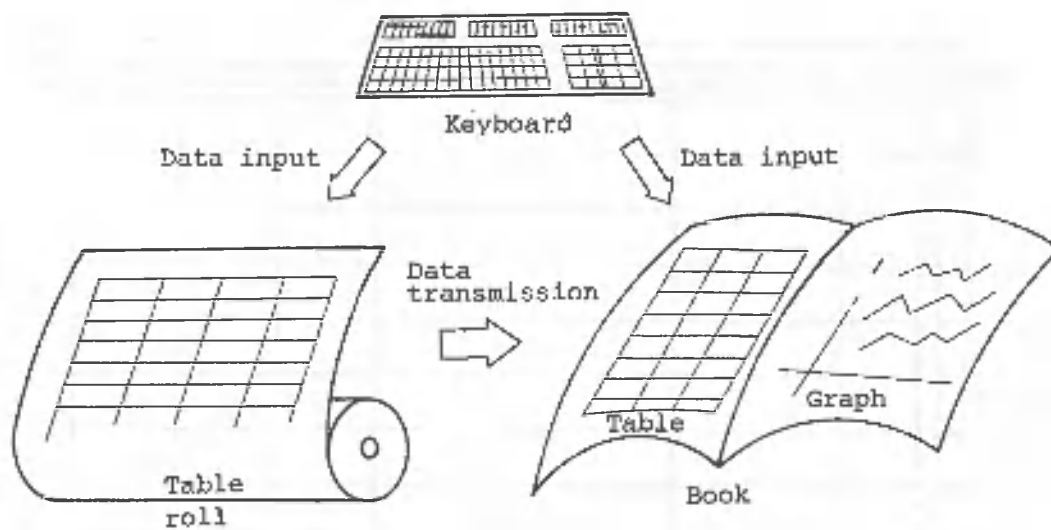
1 PAGE		Sales Management Table			
	NAME	JAN	FEB	MAR	APR
1					
2					
3					
4					
5					
6					



- b. Rolls - A roll can be thought of as an uninterrupted table or series of tables. Though books are divided into units called pages, a roll has no such divisions. This means a roll will have no index pages, page 0, or graph pages. (In order to create a graph using roll data, you must transfer the data to a book table first.) A roll table can contain up to 10,000 rows.

1.1.3 Rolls and Books

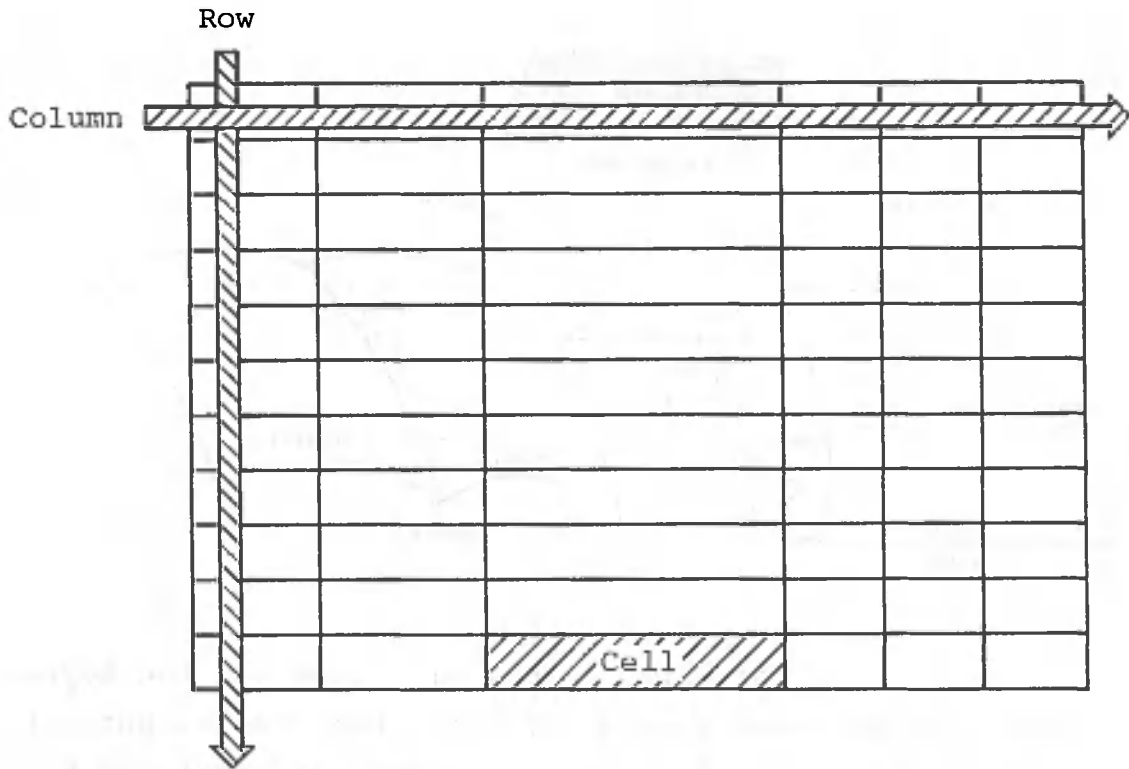
The following diagram shows the relative formats of a roll and a book:



You can input data into a roll or a book via the keyboard. Data can be moved from a roll to a book table, but not from a book table to a roll. Graphs are generated by referencing data in a book table. A roll is best suited for processing large amounts of data.

1.1.4 CANOBRAIN Tables

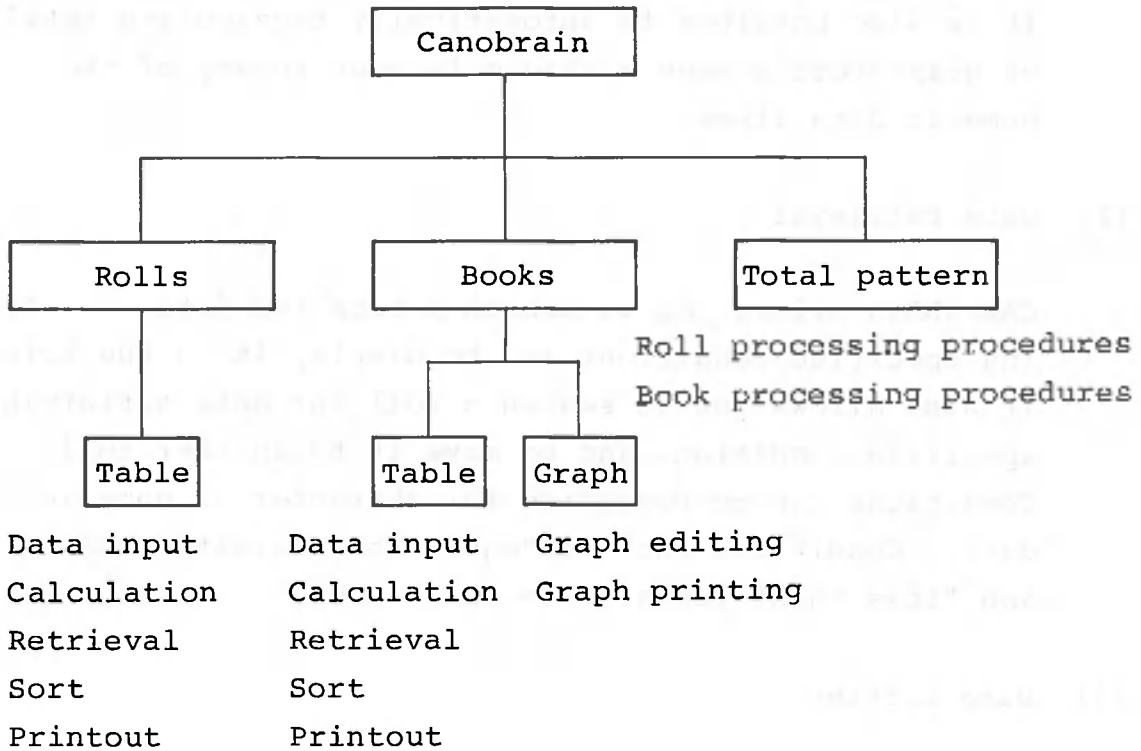
The following illustration should give you some idea of how tables are processed by CANOBRAIN.



Areas separated from one another by horizontal lines are called rows, while those separated by vertical lines are called columns. The rectangular areas formed by the intersection of vertical and horizontal lines are called cells. A cell is the smallest table unit handled by CANOBRAIN, but it is also possible to handle table data in row or column units.

1.1.5 Function Outline

The following diagram illustrates the various functions of CANOBRAIN:



CANOBRAIN allows you to:

- . perform numeric calculations,
- . retrieve data,
- . sort data,
- . generate graphs,
- . define and execute procedures.

Details about these processes and operating procedures are given in Volume II and the sections following.

(1) Numeric calculations

CANOBRAIN can calculate totals and grand totals for numeric data included in tables. This is done using expressions (functions) which are predefined in CANOBRAIN. It is also possible to automatically recalculate totals or grand totals when a change is made in any of the numeric data items.

(2) Data retrieval

CANOBRAIN allows you to search a book for data satisfying specified conditions and to display it on the screen. It also allows you to search a roll for data satisfying specified conditions and to move it to another roll. Conditions can be specified for character or numeric data. Conditions such as "equal to", "greater than", and "less than" can also be specified.

(3) Data sorting

Data sorting is the process of rearranging the rows of a table so that items in a specified column are arranged in either descending or ascending order. The contents of the specified column may be either numeric or character data.

When processing a roll, you can move the sorted table to another roll.

(4) Printout

The contents of tables can be printed out on the printer. It is possible to retrieve and print specific columns and/or rows of data.

In addition, subtotals in a roll can be calculated as the contents are being printed out.

(5) Graphing

CANOBRAIN can automatically prepare a wide variety of graphs based on the data included in tables. Simply specify the table rows and columns containing the applicable data and the type of graph required. Once a graph has been displayed on the screen, the colors used in the graph and the scale of the graph can be changed; then the graph can be printed out on the printer.

As stated previously, roll data must be transferred to a book table before a graph can be created.

(6) Procedure definition and execution

CANOBRAIN allows you to define frequently-used processing procedures as patterns. You can also define the sequence of pattern execution as a total pattern.

By now, you should have a general idea of the purpose and applications of CANOBRAIN; later, you will obtain more detailed knowledge by actually using CANOBRAIN. However, first we will explain the preparations required before using CANOBRAIN.

(7) Other processing

For data compatibility with other systems, you can read data from or write data to CD (Common Data) files when processing a book, or IBM-format floppy disks (8-inch) when processing a roll.

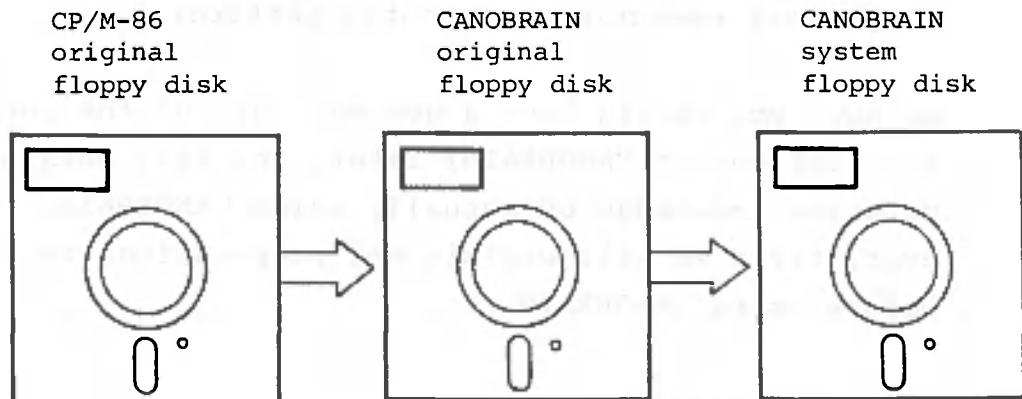
1.2 Before Starting

As was explained earlier, a system floppy disk and data disks are required to operate CANOBRAIN. This section explains procedures for creating these disks.

See Appendix 4 for details on using a hard disk system.

1.2.1 System floppy disk

The floppy disk included with this manual contains only the CANOBRAIN program. However, to use CANOBRAIN, a program called the CP/M-86 operating system is needed to control the computer's operations. A system floppy disk is created by copying the program of the original floppy disk to another floppy disk.



Creating a system floppy disk differs according to which floppy disk, 8-inch or 5¼-inch, is used.

(1) 8-inch floppy disks

- ① First, insert the disk containing the CP/M-86 operating system into drive A of the floppy disk unit. Then insert the original CANOBRAIN disk into drive B of the floppy disk unit.

- ② Turn the disk unit on; messages from the CP/M-86 system will be displayed sequentially as shown below.

```
  :  
A > _
```

- ③ Press the following keys in the order shown.

S **U** **B** **M** **I** **T** **B** **:** **S** **E** **T** **U** **P** **1**
(Space bar)

The screen should look like this:

```
  :  
A > submit b:setup1 _
```

If the characters displayed on the screen are not correct, press **DEL** and re-enter the data.

Press **↑**; the screen will return to "A>_".

- ④ Remove the original CP/M-86 disk from drive A. Remove the original CANOBRAIN disk from drive B and insert it into drive A. Insert a new floppy disk into drive B. After replacing the floppy disks, proceed as follows to inform the computer that disk replacement has been completed.

Press **↑** **C** simultaneously.

```
  :  
A > ^ C  
A > _
```

- ⑤ Press the keys in the order shown below.

F O R M A T **B** **?**

(Space bar)

Make sure that the screen is as shown below. If the information on the screen is not correct, press **DELETE LINE** and start over again from step 3.

```
⋮  
A> format b: _
```

- ⑥ Press **DELETE LINE**. The screen should look like this:

```
⋮  
A> format b :  
  
FORMAT V1.03 ← The number displayed on this line will  
vary according to the version used.  
Disk B: Will be destroyed,OK?_
```

CANOBRAIN will ask whether it is all right to destroy the contents of the floppy disk inserted in drive B. Make sure again that the floppy disk inserted into drive B is the new one. If the floppy disk is not to be destroyed, press **N** and **DELETE LINE**. The screen will return to "A>_".

- ⑦ Press **Y** and **DELETE LINE**. The following is displayed on the

screen, and processing starts.

```
⋮  
A> format b :  
  
FORMAT V1.03  
Disk B: will be destroyed,OK?y
```

The screen should look like this when processing is complete.

```
⋮  
A> format b:  
  
FORMAT V1.03  
Disk B: will be destroyed,OK?y  
COPYING SECONDARY BOOT.  
A>_
```

Now the new floppy disk is ready for use. Formatting takes about 90 seconds from start to finish.

- ⑧ Copy the original CANOBRAIN floppy disk to the new floppy disk.

Press the following keys in the order shown.

V **C** **L** **C** **C** **P** **Y**


Make sure that the screen appears as shown below.

```
⋮  
A> format b:  
  
FORMAT V1.03  
Disk B: will be destroyed,OK?y  
COPYING SECONDARY BOOT.  
A> volcopy _
```



If the information on the screen is not correct, press





and re-enter the data.

⑨ Press  . The screen appears as shown below.

```
⋮  
A > format b:  
  
FORMAT V1.03  
Disk B: will be destroyed,OK?y  
COPYING SECONDARY BOOT.  
A > volcopy  
  
VOLCOPY V1.01 — The number displayed on this line will  
vary according to the version.  
Enter Source Disk Drive (A-D) ? _
```

⑩ Press  and  . The screen appears as shown below.

```
⋮  
A > volcopy  
  
VOLCOPY V1.01  
Enter Source Disk Drive (A-D) ? a  
Destination Disk Drive (A-D) ? _
```

⑪ Press  and  . The screen shown below will appear.

```
⋮  
A > volcopy  
  
VOLCOPY V1.01  
Enter Source Disk Drive (A-D) ? a  
Destination Disk Drive (A-D) ? b  
Copying disk A : to disk B :  
Is this what you want to do (Y/N) ? _
```

⑫ Press **Y** and **ENTER**. The copy process will start. In

this particular situation, press **Y**, not **N**, to abort the copy process. The screen that appears will look like the one shown below.

```
⋮  
A > volcopy  
  
VOLCOPY V1.01  
Enter Source Disk Drive (A-D) ? a  
Destination Disk Drive (A-D) ? b  
Copying disk A : to disk B :  
Is this what you want to do (Y/N) ? y  
COPY TRACK NUMBER = 0_
```

During the copy process, the display will show the current track being copied, from track zero up to track 76. The screen will look like the one shown below.

```
⋮  
A > volcopy  
  
VOLCOPY V1.01  
Enter Source Disk Drive (A-D) ? a  
Destination Disk Drive (A-D) ? b  
Copying disk A : to disk B :  
Is this what you want to do (Y/N) ? y  
COPY TRACK NUMBER = 76  
  
Copy another disk (Y/N) ?_
```

Copying is now complete. The process takes about three minutes from start to finish.

- ⑬ Press **[N]** and **[ENTER]**. The screen will appear as shown below.

```
A > volcopy

VOLCOPY V1.01
Enter Source Disk Drive (A-D) ? a
Destination Disk Drive (A-D) ? b
Copying disk A : to disk B :
Is this what you want to do (Y/N) ? y
COPY TRACK NUMBER = 76

Copy another disk (Y/N) ? n
A > _
```

- ⑭ Press the following keys in the order shown.

[S][U][B][M][I][T][][""] [S][E][T][U][P][2][][""]

[1]
[2]
[3]
[4]

The last number will differ according to the type of printer(s) connected to your system.

- . When using an A-1200, press **[1]**.
- . When using an A-1210, press **[2]**.
- . When using an A-1250, press **[3]**.
- . When using other printers, press **[4]**.
- . When no printers are connected, press **[4]**.



If an incorrect key is entered, the printer connected may not operate normally.

Make sure that the system floppy disk is re-created if the printer is replaced with a different type of unit.

The following explanations assume that an A-1200 printer is connected to your system.

The screen should look like this.

```
⋮  
A> submit setup2 1_
```

When the information on the screen is incorrect, press  and start over again. Pressing  executes the

processing and the screen returns to "A>_".

The CANOBRAIN system floppy disk has been completed.

(2) 5 ¼-inch mini-floppy disks

When using mini-floppy disks, you will need two system disks to operate CANOBRAIN. These disks will be called system disk 1 and system disk 2, respectively. Your first task is to create system disk 1.

- ① Insert the disk containing the CP/M-86 operating system into drive A of the floppy disk unit. Then insert the original CANOBRAIN disk 1 into drive B.
- ② Turn the AS-100 on. Messages from the CP/M-86 system will be displayed sequentially as shown below.


```
⋮  
A>_
```


- ③ Press the following keys in the order shown.

S U B M I T   B  S E T U P 


The screen should look like this.

```
⋮  
A > submit b:setup1_
```

If the characters displayed on the screen are not correct, press  and start re-enter the data.




Press  ; the screen will return to "A>_".


- ④ Remove the original CP/M-86 disk from drive A. Insert the original CANOBRAIN disk from drive B into drive A. Insert a new floppy disk into drive B. After replacing the floppy disks, do the following to inform the computer that disk replacement has been completed.

Press  simultaneously.


```
A > ^ C  
A > _
```

- ⑤ Press the following keys in the order shown below.

```
F O R M A T   B  !
```

Check to see that the screen looks like the one below. If the screen is incorrect, press  and re-enter the data.

```
⋮  
A > format b: _
```


⑥ Press  . The screen should look like this:


```

:
A> format b:

FORMAT V1.03 ← The number displayed on this line will
                vary according to the version used.
Disk B: Will be destroyed,OK?_

```

CANOBRAIN asks you whether it is all right to destroy the contents of the disk inserted in drive B. Make sure that the floppy disk inserted in drive B is the new floppy disk. If the contents of the floppy disk are not to be destroyed, press **N** and  . The screen will return to "A>_".

⑦ Press **Y** and  . The screen will appear as shown

below and processing will begin.

```

:
A> format b:

FORMAT V1.03
Disk B: will be destroyed,OK?y

```

The screen appears as shown below when processing is complete.

```

:
A> format b:

FORMAT V1.03
Disk B: will be destroyed,OK?y
COPYING SECONDARY BOOT.
A>_

```

Now the new floppy disk is ready for use. Formatting takes about 40 seconds from start to finish.


- ⑧ Copy all the original CANOBRAIN disk contents to the new floppy disk.


Press the following keys in the order shown.

V O L C O P Y


Make sure that the screen appears as shown below.

```
⋮  
A > format b:  
  
FORMAT V1.03  
Disk B: will be destroyed,OK?y  
COPYING SECONDARY BOOT.  
A > volcopy
```


If the data on the screen are incorrect, press  and re-enter the data.

- ⑨ Press  . The following screen will appear.

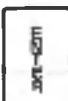
```
⋮  
A > format b:  
  
FORMAT V1.03  
Disk B: will be destroyed,OK?y  
COPYING SECONDARY BOOT.  
A > volcopy  
  
VOLCOPY V1.01 ← The number displayed on this line will  
vary according to the version used.  
Enter Source Disk Drive (A-D) ? _
```

⑩ Press **A** and  . The screen will look like the following:

```
⋮  
A > volcopy  
  
VOLCOPY V1.01  
Enter Source Disk Drive (A-D) ? a  
Destination Disk Drive (A-D) ? _
```

⑪ Press **B** and  . The screen appears as shown below.

```
⋮  
A > volcopy  
  
VOLCOPY V1.01  
Enter Source Disk Drive (A-D) ? a  
Destination Disk Drive (A-D) ? b  
Copying disk A : to disk B :  
Is this what you want to do (Y/N) ? _
```

⑫ Press **Y** and  . The copy will begin. To abort the

process, press **Y** instead of **N** . The screen that appears will look like the one shown below.

```
⋮  
A > volcopy  
  
VOLCOPY V1.01  
Enter Source Disk Drive (A-D) ? a  
Destination Disk Drive (A-D) ? b  
Copying disk A : to disk B :  
Is this what you want to do (Y/N) ? y  
COPY TRACK NUMBER = 0_
```

During the copying process, the display will show the current track being copied from track zero up to track 79. The screen will appear as shown below.

```
⋮  
A > volcopy  
  
VOLCOPY V1.01  
Enter Source Disk Drive (A-D) ? a  
Destination Disk Drive (A-D) ? b  
Copying disk A : to disk B :  
Is this what you want to do (Y/N) ? y  
COPY TRACK NUMBER = 79  
  
Copy another disk (Y/N) ? _
```

Copying is complete. The process takes about three minutes from start to finish. CANOBRAIN will then ask you whether copy processing is to be continued.

Press **N** and **ENTER**. The screen will appear as shown below.

```
⋮  
A > volcopy  
  
VOLCOPY V1.01  
Enter Source Disk Drive (A-D) ? a  
Destination Disk Drive (A-D) ? b  
Copying disk A : to disk B :  
Is this what you want to do (Y/N) ? y  
COPY TRACK NUMBER = 79  
  
Copy another disk (Y/N) ? n  
A > _
```

When using a printer other than the A-1200, A-1210 or A-1250, or when using a system to which no printer is connected, operations stated in step 14 are not needed.

⑭ Press the following keys in the order shown.

S U B M I T " " S E T U P 2 " "

1
2
3
4

The last number differs according to the type of printer(s) connected to your system.

- . When using an A-1200, press [1].
- . When using an A-1210, press [2].
- . When using an A-1250, press [3].
- . When using other printers, press [4].
- . When no printer is connected, press [4].

If an incorrect number is entered, the printer may not operate normally.

If the printer being used is replaced with a different type of unit, make sure that system floppy disk 1 is re-created.

Explanations given here assume that an A-1200 is connected to your system.

The screen should look like this:

```

:
A> submit setup2 1_
```

If the information on the screen is not correct, press



and re-enter the data. Pressing





executes

processing sequentially and the screen returns to "A>_".

Now CANOBRAIN system floppy disk 1 has been created.

The next step is to create system floppy disk 2.

- ① Insert the original CANOBRAIN floppy disk 2 into drive A. Insert a new floppy disk into drive B. Do the following to inform the computer that floppy disk replacement has been completed:

Press   simultaneously.

```
⋮  
A>^C  
A>_
```

- ② Press the following keys in the order shown.

V **O** **L** **C** **O** **P** **Y**


Check to see that the screen looks like the one below.

```
⋮  
A>^C  
A>volcopy
```

If the information on the screen is not correct, press





and re-enter the data.

- ③ Press  . The screen shown below will appear.

```
⋮  
A > volcopy  
  
VOLCOPY V1.01 ← The number displayed on this line will  
vary according to the version used.  
Enter Source Disk Drive (A-D) ? _
```

- ④ Press  and  . The screen appears as shown below.

```
⋮  
A > volcopy  
  
VOLCOPY V1.01  
Enter Source Disk Drive (A-D) ? a  
Destination Disk Drive (A-D) ? _
```

- ⑤ Press  and  . The following screen will appear.

```
⋮  
A > volcopy  
  
VOLCOPY V1.01  
Enter Source Disk Drive (A-D) ? a  
Destination Disk Drive (A-D) ? b  
Copying disk A : to disk B :  
Is this what you want to do (Y/N) ? _
```

- ⑥ The new floppy disk should be inserted into drive B.
Press Y and to initiate the copy process.

Press N instead of Y to stop copying.
The screen appears as shown below.

```
⋮  
A > volcopy  
  
VOLCOPY V1.01  
Enter Source Disk Drive (A-D) ? a  
Destination Disk Drive (A-D) ? b  
Copying disk A : to disk B :  
Is this what you want to do (Y/N) ? y  
COPY TRACK NUMBER = 0_
```

During the copying process, the display will show the current track being copied from track zero up to track 79. The screen appears as shown below.

```
⋮  
A > volcopy  
  
VOLCOPY V1.01  
Enter Source Disk Drive (A-D) ? a  
Destination Disk Drive (A-D) ? b  
Copying disk A : to disk B :  
Is this what you want to do (Y/N) ? y  
COPY TRACK NUMBER = 79  
  
Copy another disk (Y/N) ? _
```

Copying is complete. The process takes about three minutes from start to finish. CANOBRAIN will then ask you whether copying is to be continued.

⑦ Press **N** and **ENTER**. The following screen will appear:

```

:
A > volcopy

VOLCOPY V1.01
Enter Source Disk Drive (A-D) ? a
Destination Disk Drive (A-D) ? b
Copying disk A : to disk B :
Is this what you want to do (Y/N) ? y
COPY TRACK NUMBER = 79

Copy another disk (Y/N) ? n
A > _
```

System disk 2 is now completed.

1.2.2 Sample Data Floppy Disk Creation

For beginners, the floppy disk provided with this manual contains sample data. Copy this sample data to a new floppy disk to create a sample data floppy disk.

If you do not need the sample data, see Section 1.2.3, "Creating data floppy disks".


- ① Insert the system disk (or system disk 1) into drive A with the characters displayed as shown below. Insert a new floppy disk into drive B.


```
⋮  
A>_
```

- ② Press   simultaneously.

```
⋮  
A>^C  
A>_
```

- ③ Press the following keys in the order shown.

S **U** **B** **M** **I** **T**  **S** **E** **T** **U** **P** **3**
(Space)

The screen should appear as shown below. If the data on the screen are incorrect, press  and start over again.

```
⋮  
A> submit setup3_
```

- ④ Press . The screen will look like the one shown below.

```

A> format b :
FORMAT V1.03 ← The number displayed on this line will
                vary according to the version used.
Disk B: Will be destroyed,OK?_

```

CANOBRAIN asks you whether it is all right to destroy the contents of the floppy disk inserted in drive B. Make sure that the floppy disk inserted in drive B is the new one.



- ⑤ Press and . Processing starts, messages are

displayed sequentially on the screen, and the screen then returns to "A>_". The data floppy disk containing the sample data has now been created.

1.2.3 Creating data floppy disks

- ① Insert the original CANOBRAIN disk into drive A with the characters displayed as shown below. Use the original system disk 1 for new 5¼-inch disk creation. Insert a new floppy disk into drive B.


```
⋮  
A>_
```

- ② Press   simultaneously.

```
⋮  
A>^C  
A>_
```

- ③ Press the following keys in the order shown.

F **O** **R** **M** **A** **T**   **B** 

Make sure that the screen appears as shown below. If the screen is incorrect, press  and re-enter the data.

```
⋮  
A> format b:_
```

④ Press . The screen appears as shown below.

```
⋮  
A> format b :  
  
FORMAT V1.03 *-- The number displayed on this line will  
vary according to the version used.  
Disk B: Will be destroyed,OK?_
```

CANOBRAIN asks you that whether it is all right to destroy the contents of the floppy disk inserted into drive B. Make sure that the floppy disk inserted into drive B is the new one. If the floppy disk is not to be destroyed, press and ; the screen will then return to "A>_".

⑤ Press and . The screen will look like the

one shown below, and processing will begin.

```
⋮  
A> format b :  
  
FORMAT V1.03  
Disk B: will be destroyed,OK?y
```

When processing is finished, the screen appears as shown below.

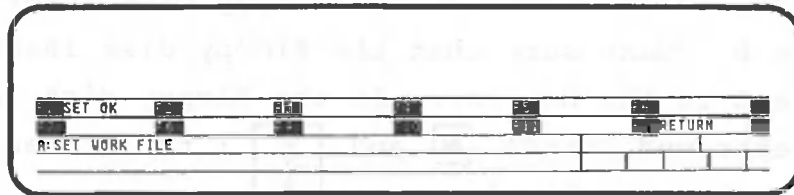
```
⋮  
A> format b :  
  
FORMAT V1.03  
Disk B: will be destroyed,OK?y  
COPYING SECONDARY BOOT.  
A>_
```

Formatting takes about 40 seconds for a 5 ¼-inch disk and 90 seconds for an 8-inch disk.

The new data floppy disk is now completed.

1.2.4 Work Floppy Disk

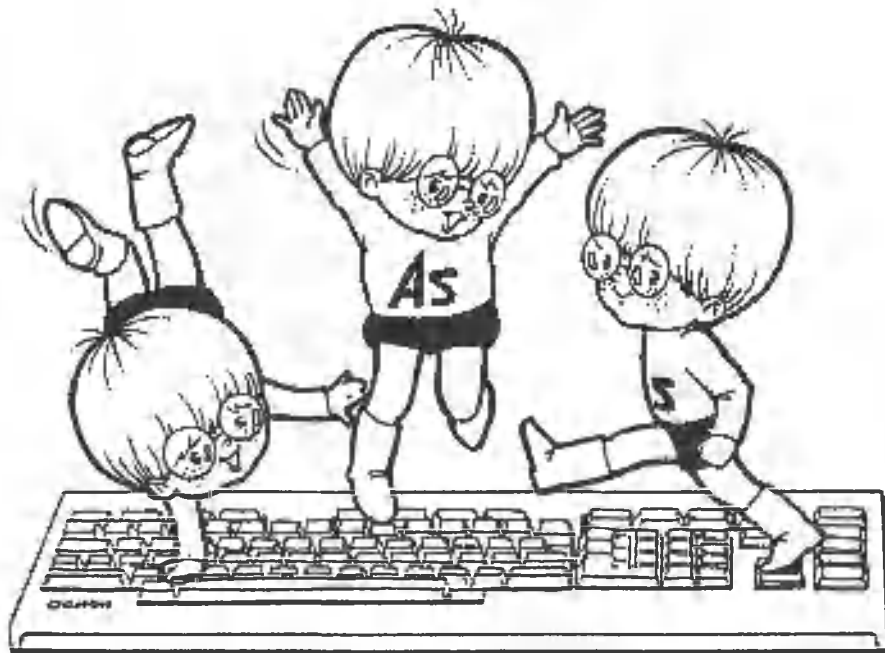
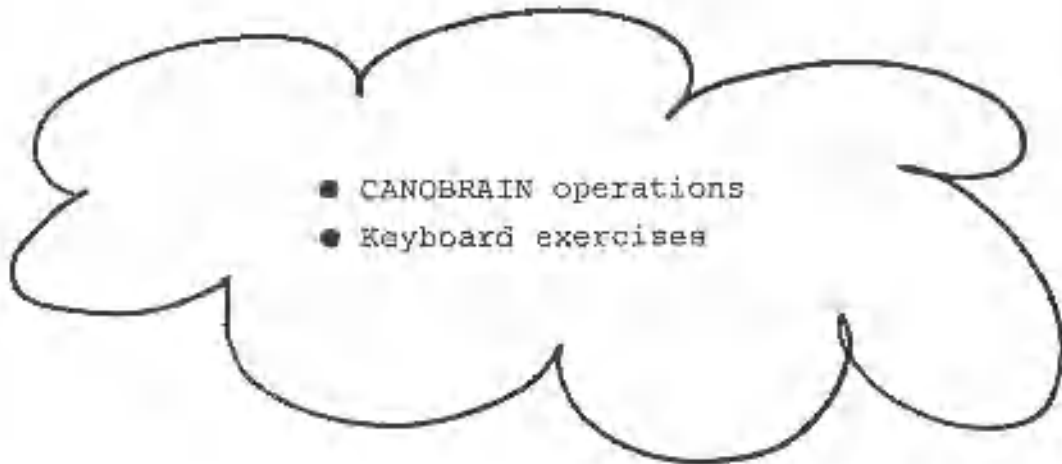
CANOBRAIN displays the following message when it requires additional work area.



This message asks you to insert a work floppy disk into drive A instead of the system floppy disk. You should use a formatted floppy disk as a work floppy disk.

Chapter 2 - Starting To Use CANOBRAIN

This chapter explains CANOBRAIN operations and procedures for using the keyboard. operations

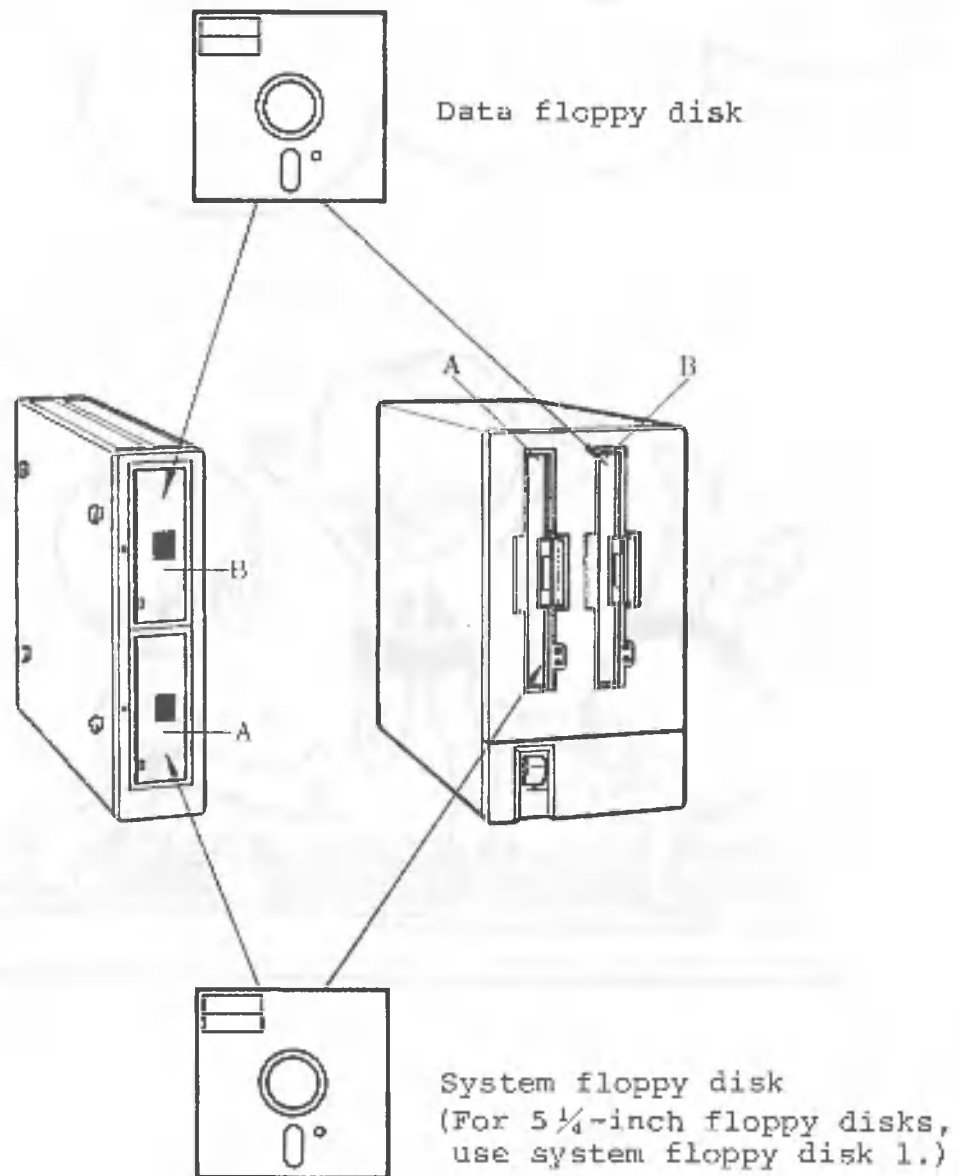


2.1 CANOBRAIN Startup

This section explains the startup procedure used for CANOBRAIN, beginning with the setting of the disks.

2.1.1 Floppy disk insertion

Insert the CANOBRAIN system floppy disk (prepared in Chapter 1) into drive A. For 5¼-inch floppy disks, insert system floppy disk 1 into drive A. Insert a data floppy disk into drive B.



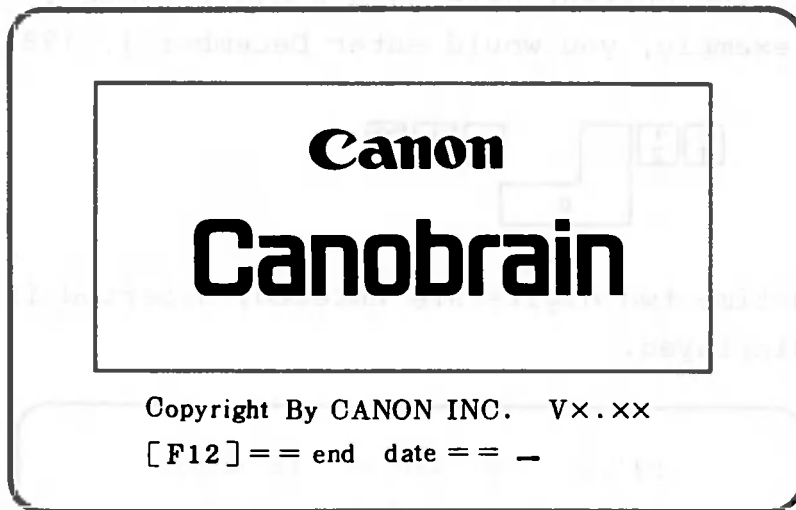
2.1.2 Startup Procedure

When the power is turned on, the CP/M-86 operating system is automatically loaded into the computer. When using 5¼-inch floppy disks, however, CANOBRAIN is not automatically started up; the screen will show "A>". In this case, perform the following procedures:

- ① Remove system disk 1 from drive A.
- ② Set system disk 2 into drive A.
- ③ Press **[L1F]**. At the same time press **[C]**.
- ④ After "A>" is displayed again, press keys in the following order.

C B R A I N **[F12]**

When CANOBRAIN is operational, the following screen appears:



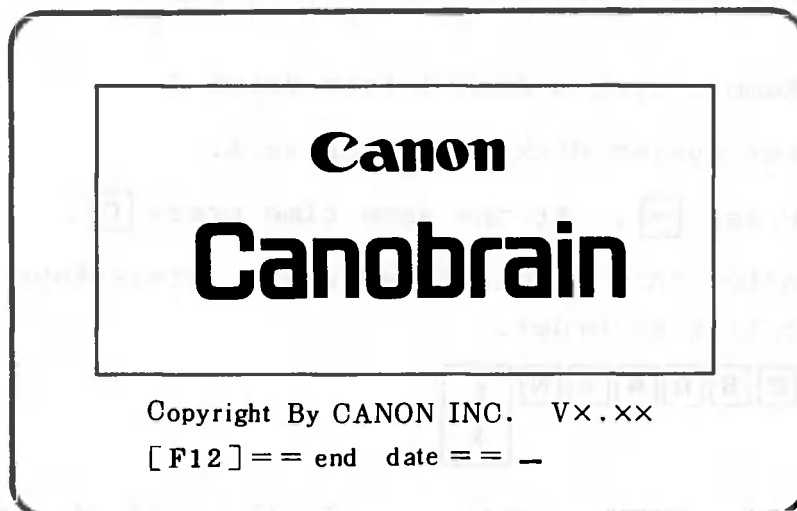
Note: "X" indicates one numeric character.


After this, a series of tables and graphs are displayed. This continues until data entry begins.

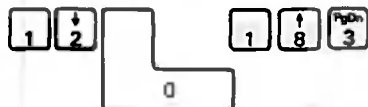
2.2 Basic Key Operations

This section explains basic key operations, using examples stored in the data floppy disk.

2.2.1 Entering the date



Press  once to deactivate the key if its LED is lit. Enter the current date as a 6-digit number. For example, you would enter December 1, 1983 as follows:




Each time two digits are entered, a period is automatically displayed.

[F12] == end date == 12.01.83 _

If you make a mistake, press  and re-enter the date. Then press



If you omit date entry and press only , the date

Press **F3** .

TOTAL PATTERN LIST		
NO	COMMENT	CREATE
1	HOW TO USE KEYBOARD	12.01.83

REGISTER	EXECUTE	DELETE	MODIFY	PRINTOUT	RETURN
SELECT FUNCTION(1,2)					TOTAL PAT.
					MNTR

Press **F2** .

TOTAL PATTERN LIST		
NO	COMMENT	CREATE
1	HOW TO USE KEYBOARD	12.01.83

F1	F2	F3	F4	F5	F6
F7	F8	F9	F10	F11	RETURN
INPUT PATTERN NO.					TOTAL PAT.
					MNTR
					AUTO

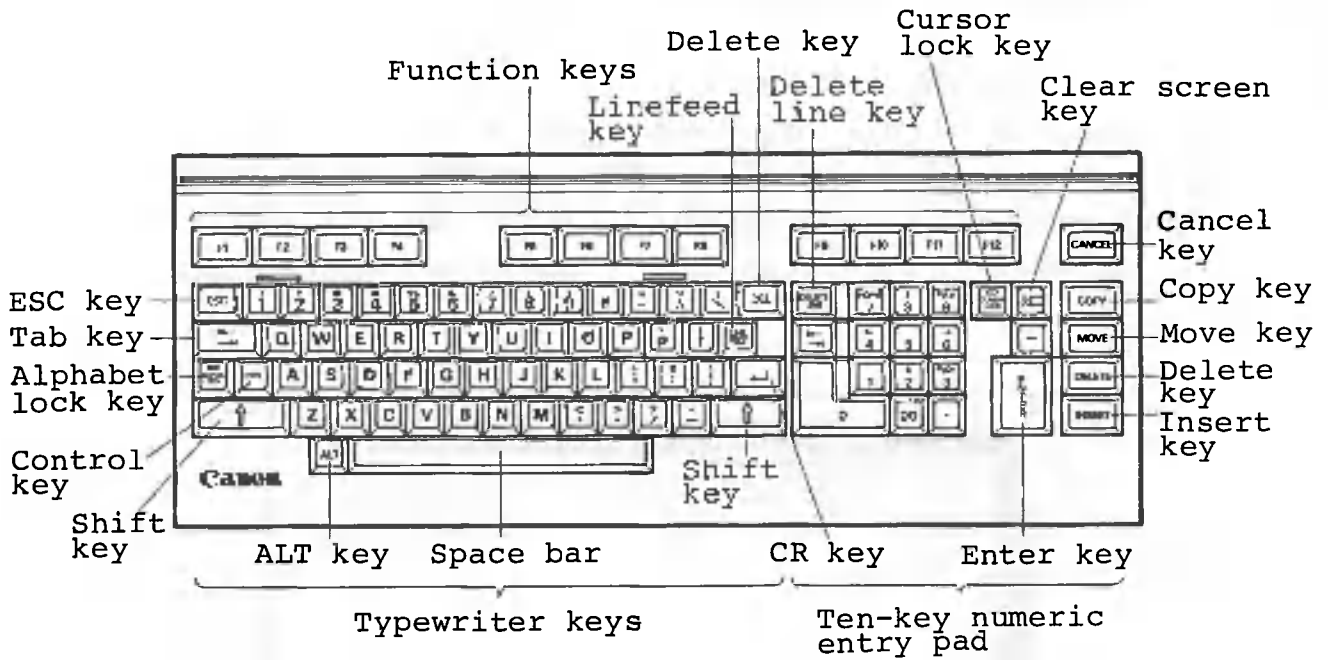
Press **,** and **ENTER** .



2.2.3 CANOBRAIN-processed data



Below is an example of a book table. In this display you can see the different types of data that can be processed by CANOBRAIN. Contrast the screen below with the roll format in Section 2.2.4. We will exercise key operations using the roll. The screen should look like the one below.



OBJECT	PAGE	COL	ROW	PAGE	ROW	PAGE	ROW
1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2
3	3	3	3	3	3	3	3
4	4	4	4	4	4	4	4
5	5	5	5	5	5	5	5
6	6	6	6	6	6	6	6
7	7	7	7	7	7	7	7
8	8	8	8	8	8	8	8
9	9	9	9	9	9	9	9
10	10	10	10	10	10	10	10
11	11	11	11	11	11	11	11
12	12	12	12	12	12	12	12
13	13	13	13	13	13	13	13
14	14	14	14	14	14	14	14
15	15	15	15	15	15	15	15
16	16	16	16	16	16	16	16
17	17	17	17	17	17	17	17
18	18	18	18	18	18	18	18
19	19	19	19	19	19	19	19
20	20	20	20	20	20	20	20


This book table is composed of 20 rows and one column. The column width (number of characters) is 75 characters. That is, the table is as wide as the screen. CANOBRAIN, of course, allows you to create a table that is too large to be displayed on the screen at one time. Note the characters and symbols displayed in the table. These characters and symbols are data that can be processed by CANOBRAIN, and are entered using the keyboard keys. The keyboard layout is as shown in the following figure.

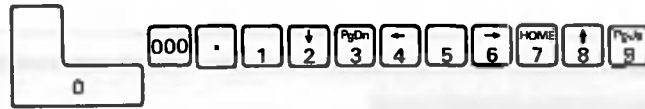


Rows 1 through 4 show that even if the same keys are pressed, characters and symbols entered will register differently on the screen, depending upon the status of the  and  keys. The keys were pressed starting from the space bar and moving up sequentially to the top row in a left to right manner.

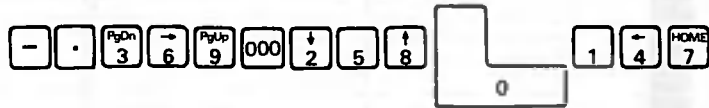
The following table shows the status of the  and  keys for rows 1 through 4:




Row		
1	Lamp off	Not held down
2	Lamp off	Held down
3	Lamp on	Not held down
4	Lamp on	Held down

In rows 5 through 7, numbers are entered via the ten-key pad with the  off. Row 5 data was entered by pressing the following keys:








The numbers on row 6 are entered by pressing keys in the following order under the same conditions as row 5.



In row 7, the same data entered in row 5 is displayed in a different location. This is because the same key operation used for row 5 was performed after entering a double quotation mark ("). This symbol is entered by pressing  with the  key held down. The symbol itself does not appear on the screen.  indicates that numbers to be entered after it should be regarded as characters. Note that numbers entered as characters cannot be used for calculations. In addition, " cannot be entered into a cell.

Press the following key.




Now look at row 1, column 1. This cell is highlighted to indicate that it is being processed. This highlighting is called reverse display, and it can be moved by pressing the arrow keys ( ,  ,  , ) on the ten-key pad while the  is on.

This reverse display is called the cell cursor.


The position of the cell cursor, RxCy, is displayed on the second line from the bottom of the screen.

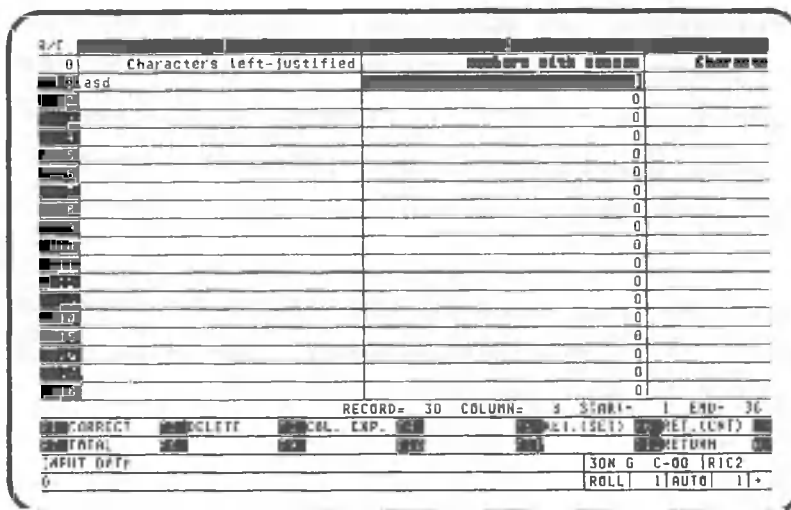
R stands for row, and C stands for column. R1C1 means that the cell cursor is at the first row on the first column. RxCy is called an address since it indicates the position of the cell.


Now press the following keys. If the  key is on, deactivate it.



Characters entered from the keyboard appear before " _ " on the bottom row of the screen. " _ " is called the character cursor.

The character cursor indicates the position into which you can enter characters and numbers. "asd" will also appear at the cell cursor position. Press  . The screen will change as follows:



Next, enter numbers. Deactivate the  and then press the following keys:




"123456789" will appear at the bottom row of the screen. However, unlike characters, nothing appears at the cell cursor position. Numbers are not displayed at the cell cursor's location unless  is pressed. Press .

The screen will change as follows:

0	Numbers with commas	Character left-justified
0	000	
1	001	
2	002	
3	003	
4	004	
5	005	
6	006	
7	007	
8	008	
9	009	
10	010	
11	011	
12	012	
13	013	
14	014	
15	015	

RECORD= 30 COLUMN= 3 START= 1 END= 30
CORRECT DELETE COL. EXP. RET.(SET) RET.(CNT)
TOTAL RETURN
INPUT DATA 30CL 0 IRIC3 ROLL 1 AUTO 1

The right part of column 3, which had not been displayed, has appeared. In addition, commas have been inserted after every third digit in the second column. Character left-justification is specified for column 1, and comma insertion is specified for column 2. Enter any characters you wish in column 3.

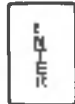
We have entered data in the three columns on row 1. Press . The screen will change as follows:

NO	Characters left-justified	Numbers with commas	Character
0	asd	123,456,789	CANON
1			0
2			0
3			0
4			0
5			0
6			0
7			0
8			0
9			0
10			0
11			0
12			0
13			0
14			0
15			0
16			0
17			0
18			0
19			0
20			0
21			0
22			0
23			0
24			0
25			0
26			0
27			0
28			0
29			0
30			0
RECORD= 30 COLUMN= 3 START= 1 END= 30			
CORRECT	DELETE	COL. EXP.	RET. (SET) RET. (CNT)
TOTAL			RETURN
INPUT DATA		SOCL 0 R2CL	ROLL 1 AUTO 1

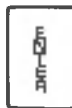
2.2.5 Cell cursor movement

So far, we have explained the screens that are displayed when you select the data input function. You should be familiar now with how the cell cursor moves when data is entered.

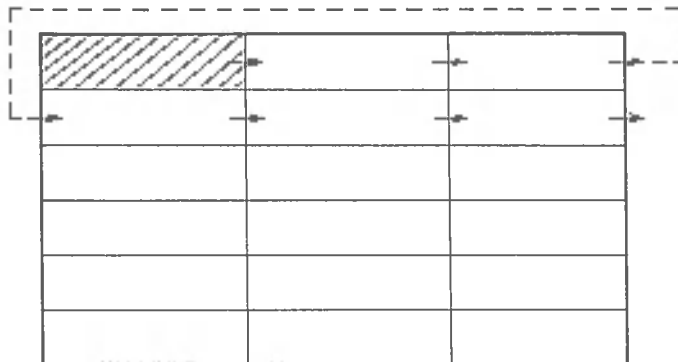
Look at the small arrow in the bottom right corner of the screen. This arrow indicates the direction in which the cell cursor automatically moves when you press









while the data input screen is being displayed. When you entered data before, the cell cursor moved from column 1 to column 2, then to column 3, then to row 2 in column 1. That is, the cell cursor moved right (arrow direction) whenever




the cursor reached the rightmost column, it moved to the beginning of the next row. The movement of the cell cursor is illustrated as follows.




The direction of the arrow in the bottom right corner of the screen changes according to the direction indicated on the key top when , ,  or  is pressed while the  is on. When you do this, the cell cursor will move one cell position in the indicated direction.

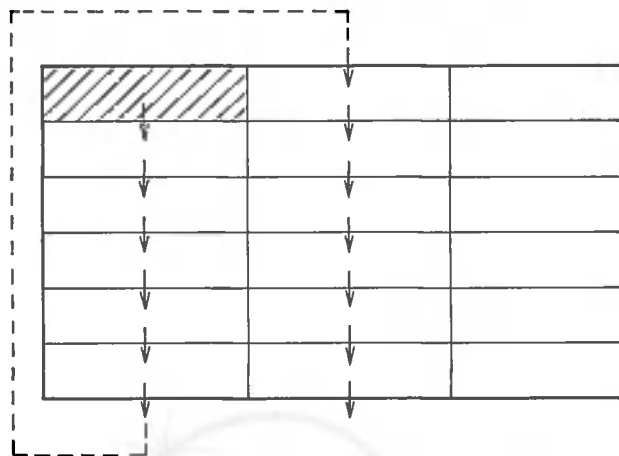
Activate the  and press the following key.




The cell cursor will move to row 3 in column 1, with the arrow pointing downward. If  is pressed, the cell


cursor will move downward one cell, and will continue to move in that direction as long as the arrow points downward and  is pressed. When the cell cursor

reaches the bottom row under these conditions, the cell cursor will then move to the beginning of the next column as illustrated in the following figure.



If the arrow points left, the cursor will move to the rightmost cell on the previous row after reaching the leftmost cell. If the arrow points upward, the cell cursor will move to the bottom row of the column to the left when it reaches the top of a column.






When the cell cursor is moved with an arrow key instead of , it does not move to the next row or column.

Now try moving the cell cursor to various desired positions using the arrow keys and .

After finishing these exercises, press the following keys:

||||| One point lesson: Using a pointing device |||

The optional pointing device has exactly the same function as  ,  ,  , and  when the  is activated. The pointing device can also move the cell cursor and graphic cursor diagonally to save time. In addition, you can increase the speed of cursor movement by pressing the fast button. The other function keys on the pointing device cannot be used with CANOBRAIN.



1	2	3


1	2	3

1	3



1	3

1	3





1	3


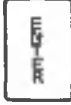
That is, the cell cursor moves to the next row only when the rightmost column is displayed. Column 2 is skipped. In this case, change the arrow direction to the left and press . This also applies when the arrow in the

bottom right corner of the screen points downward.

To return to the previous state, press  and  at the same time. Now you can move the cell cursor wherever you want and enter whatever data you want. Note that only normal characters can be entered in columns 1 and 3, and only numeric data in column 2. Now you are ready to do some data input exercises.

|||||One point lesson: Data entry correction|||||

If you find a mistake in the data you have entered before pressing , press  or .  is used

to delete one character immediately preceding the cell cursor.  is used to delete all data that has been entered. If you find your mistake after pressing ,

move the cell cursor to the appropriate position and enter the correct data.

After finishing the exercise, press the following key to return to the initial screen.

F12

TOTAL PATTERN LIST		
NO	COMMENT	CREATE
1	HOW TO USE KEYBOARD	12.01.03

REGISTER	EXECUTE	DELETE	MODIFY	PRINTOUT	RETURN
SELECT FUNCTION(1,4)					TOTAL PAT.
					HNTR

Press **F12** three times. The screen will look like the one below. Be sure to return the screen to this state before turning off the power. Turning off the power during operation may result in the loss of data.

A> _

VOLUME II

BOOKS

**CanoCalc
CanoGraph**

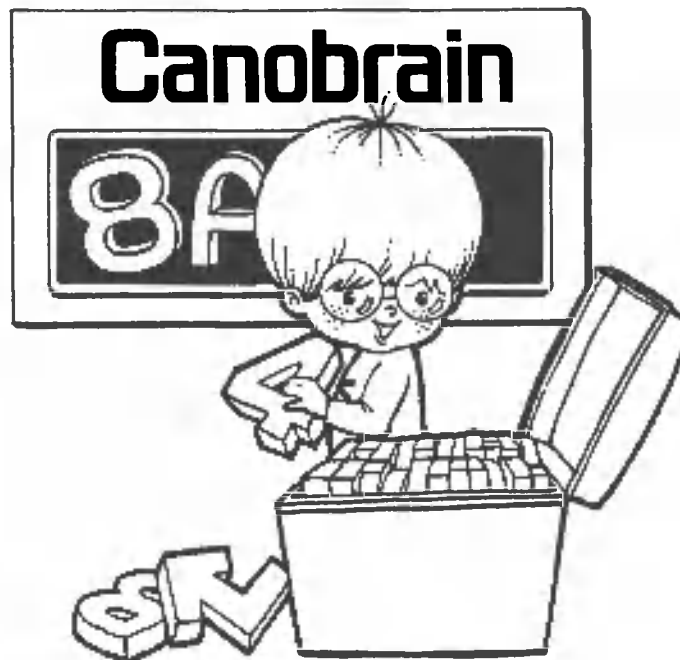
Canon AS-100



Chapter 1 - TABLE DATA CREATION AND MANIPULATION

This chapter uses simple examples to explain CANOBRAIN's table processing functions.

- Table creation
- Data input and corrections
- Data printout
- Data calculation procedures
- Data sorting
- Data retrieval



1.1 Preparation of a Simple Table

The table examples used in Volume I were prepared for you, but in this chapter you will handle the entire process yourself from table preparation and data entry to printer output.

1.1.1 Planning a table

Before creating any table, plan it out by making some notes like those shown below.

For instance, the format notes for the main example in this book would look like this:

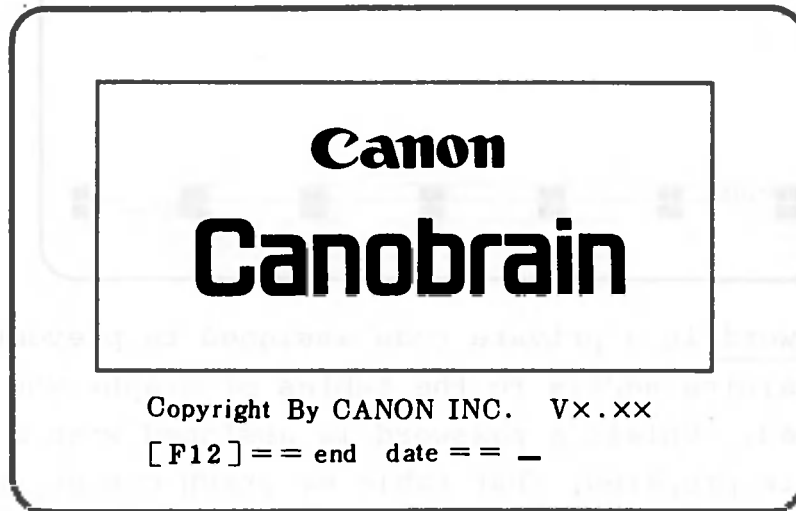
NO.	Branch code	Branch name	Sales this month
3 digits	4 digits	20 characters	10 digits

No. of columns: 20

First determine how many rows there will be in the table according to the number of branches there are. In this example, we'll use 20 rows. Next, determine which items will be included in the columns of the table. This table contains four column items: No., Branch code, Branch name, and Sales this month. The values you use at this stage can be changed later, so rough estimates can be used.

1.1.2 Rules for date input

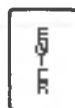
Date entry was covered previously in Section 2.2.1 on page 38. This section describes the rules governing date input. First, turn the AS-100's power on as described on page 37.



▶ 120183 ↵

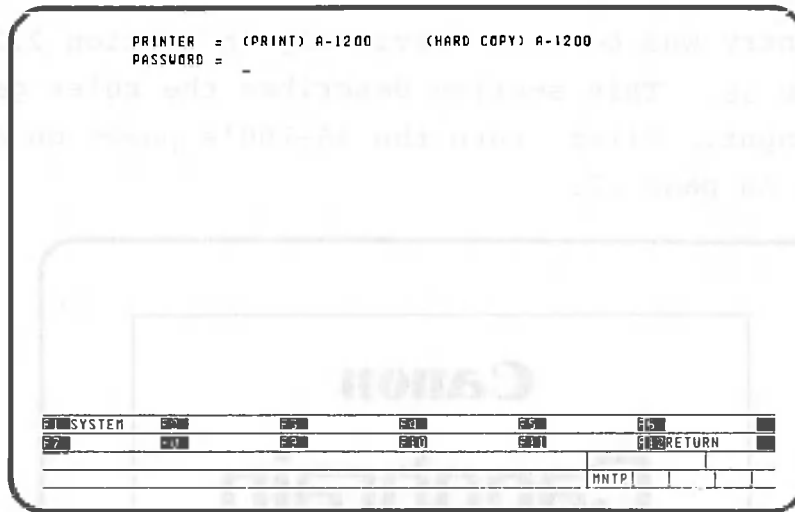
The elements of the date (month, day, and year) can be entered in any order, but each element must be a two-digit number; letters and symbols cannot be used.

Note: In the remaining part of this manual, ▶ will mean that you should enter the key following it. The



key will be indicated by ↵ .

1.1.3 Password input



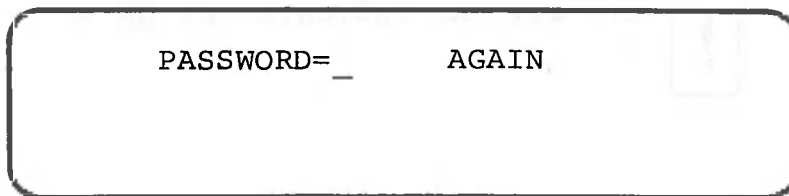
A password is a private code assigned to prevent people from gaining access to the tables or graphs you have prepared. Unless a password is assigned when a table or graph is prepared, that table or graph can be read from or written to by anyone. When a password is specified, only people who know that password can access the table or graph.

- (1) Use the following operation when a password is not assigned.



- (2) Use the following operation to assign a password (in this case "CANON").

CANON



CANON

If you make a mistake when reentering the password, the message shown below is displayed and you must start the operation over again.

PASSWORD= _ UNEQUAL

To prevent other people from seeing your password, the entered password itself is not displayed on the screen.

The same password must be specified whenever you want to read, modify, or delete a table or graph which is password-protected (has a password assigned). If you forget the password, you will not be able to access tables or graphs which you have created, so it's always a good idea to keep a record of assigned passwords for quick reference.

Passwords can contain up to six letters, numbers, or symbols in any combination.



1.1.4 Creating new books

Make sure the screen looks like this.

A terminal window with a menu at the bottom. The menu options are: BOOK, ROLL, TOTAL PAT., and RETURN. Below the menu is a prompt: SELECT FUNCTION. There is a cursor on the 'R' of 'ROLL'.

▶ F1

A terminal window displaying book details. The text is as follows:
BOOK LIST
NO TITLE CREATE UPDATE
1 CANDYBRAIN 12.01.83 12.01.83
At the bottom, there is a menu with options: CREATE, DELETE, MODIFY, PRINTOUT, and RETURN. Below the menu is a prompt: SELECT BOOK (INPUT BOOK NO. 1, ↓). There is a cursor on the '1' of '1, ↓'.

The process of making a book is called book creation.

▶ F1

BOOK LIST		NO	TITLE	CREATE	UPDATE
		1	CANOBRAIN	12.01.83	12.01.83

INPUT BOOK NAME (MAX 20 CHAR.)					CREATE
					BOOK

Enter the name of the book. The name can contain up to 20 letters, numbers, or symbols in any combination.

▶ SALES BY BRANCH ↵

Books are numbered automatically when the name is entered. This completes the procedure for book creation. The screen should now look like the one shown below.

BOOK LIST		NO	TITLE	CREATE	UPDATE
		1	CANOBRAIN	12.01.83	12.01.83
		2	SALES BY BRANCH	12.01.83	12.01.83

CREATE	DELETE	COPY	PRINTOUT	QUIT	RETURN
SELECT BOOK (INPUT BOOK NO. 1)					BOOK

Now enter the number of the book you have just created.

▶ 2 ↵

Enter any comments, like your name or a summary of the page contents.

► WORLDWIDE ↵

PAGE	T I T L E	CREATE	UPDATE
0	P A G E C R E A T E		
1	SALES SUMMARY WORLDWIDE	12.01.83	12.01.83

TABLE GRAPH

COPY PAGE? [ENTER=NO COPY], [INPUT PAGE NO.] ERR. |

BOOK | 2 | |

The screen above asks whether or not the contents of a previously-created page will be copied (saved) to the new page. However, since the book has just been created, there are no pages to copy.

► ↵

TABLE GRAPH

SELECT TABLE/GRAPH CREATE |

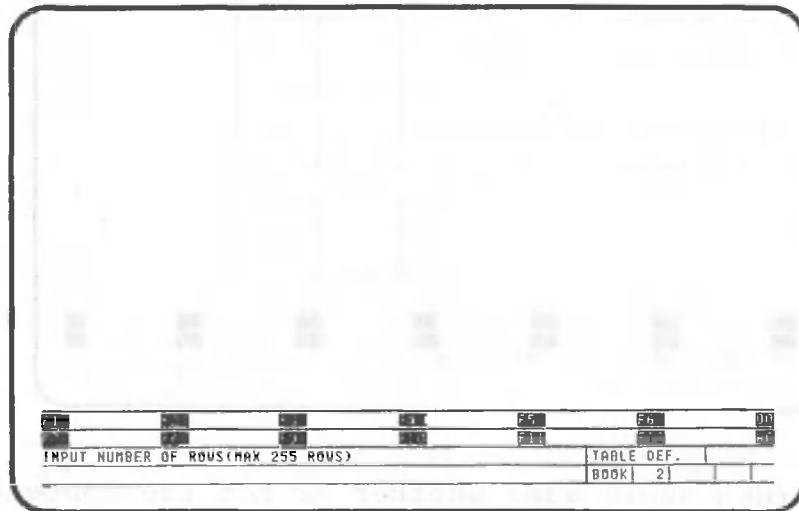
BOOK | 2 | |

Here, CANOBRAIN asks whether a table or a graph will be written on the new page. Since we are now working on tables, specify a table as indicated below. (A graph cannot be written into a book immediately after it is created).

► F1

1.1.6 Specifying table capacity

You will want to refer to the notes you made during the planning stage when specifying table capacity. The screen should look like this.



```
INPUT NUMBER OF ROWS(MAX 255 ROWS)          TABLE DEF.
BOOK | 2 |
```

(1) Specifying the number of rows

Up to 255 rows can be specified. During planning we decided that the table would have 20 rows, so specify 20 as shown below.

```
▶ 20 ↓
```

(2) Specifying the column width

In the notes we made, we decided that the columns of the table would be as follows:

```
No. :                3 digits
Branch code:         4 digits
Branch name:         20 characters
Sales this month:   10 digits
```

Specify these column widths as shown on the next page.

C1 INPUT COLUMN WIDTH(MAX 75 CHAR.)		TABLE DEF.	BOOK 2

Here, CANOBRAIN asks how many characters/digits will be included in the first column (C1). The column can be up to 75 characters/digits wide and is specified as shown below.

▶ 3 ↵

C2 INPUT COLUMN WIDTH(MAX 75 CHAR.)		TABLE DEF.	BOOK 2

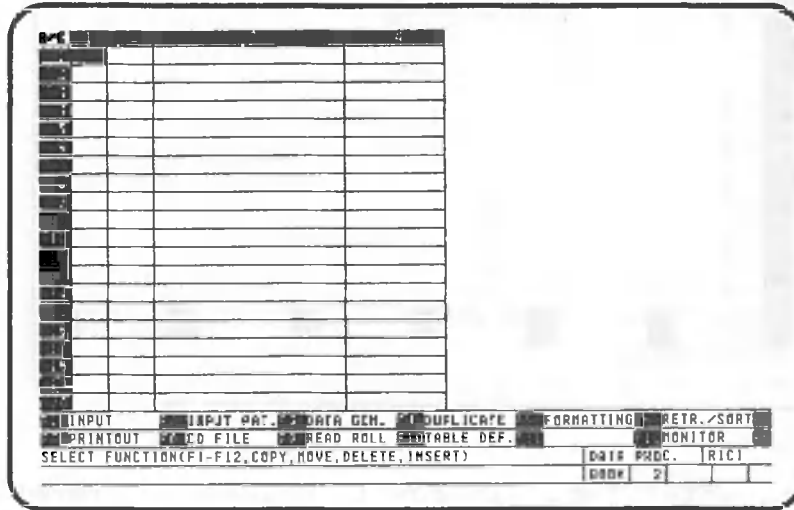
The screen should now show the first column. Specify the width of other columns just as you did for C1.

▶ 4 ↵ 20 ↵ 10 ↵

Up to 99 columns can be specified.

1.2 Data Entry

At this point the screen should look like this.



The cell cursor is positioned at row 1, column 1. This is indicated in the bottom right corner of the screen. RxCy indicates the row number (x) and the column number (y). The RxCy designates the table address, or the cell position. In this case the display shows R1C1 for row 1, column 1. Procedures for specifying the table address will be explained in detail later.

1.2.1 Entering the column titles

The titles of each column are entered in the cells of the first row. Enter the titles decided upon earlier using the following format:

No.:	NO.
Branch code:	CODE
Branch name:	____B____R____A____N____C____H
Monthly sales:	____SALES

Note: " " indicates a space.

► B R A N C H

► S A L E S

CODE	BRANCH	SALES

CORRECT DELETE COL. EXP. RET.(SET) RET.(CMT) RETURN

TOTAL 03D 0 R2C1

INPUT DATA/EXPRESSION BOOK 2

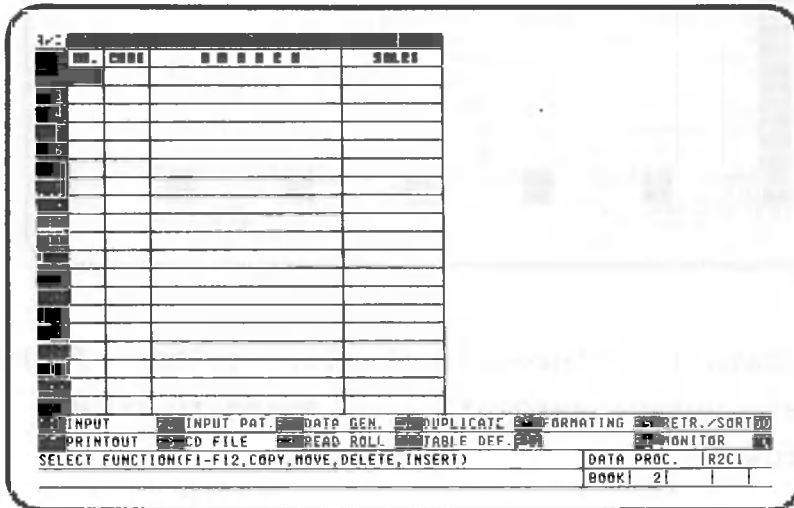
After data is entered in the last column of the table, the cell cursor automatically moves to column 1 of the next row.

► F12

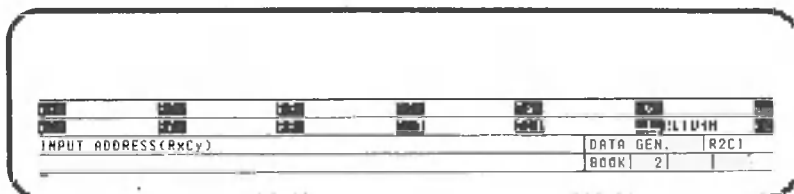
1.2.2 Entering a series of numbers

This section explains the procedures for entering a series of numbers, in ascending or descending order, into a specific row or column of a table.

Here we will enter the series "1, 2, 3 ..." in the "No." column. After all column titles are entered, press **F12**.



► **F3**



For this table we want the series of numbers entered in all rows (2-20) of column 1. This is specified as follows.

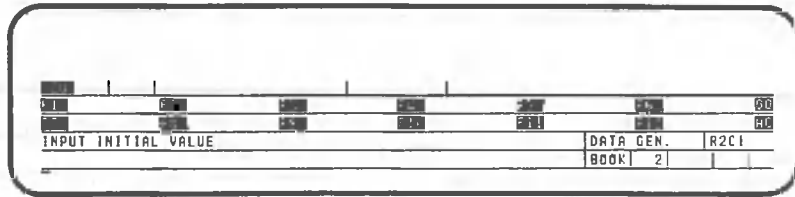
► **R|2|.|.C|1|**

One point lesson: Format for address specification

Row specification	Column specification	Row and column specification	Table position
/	/	One cell (Example: R1C1)	
All columns in a specific row (Example: R2)	All rows of a specific column (Example: C2)	One cell (Example: R2C2)	
Several rows (Example: R1.3)	Several columns (Example: C2.3)	Several cells (Example: R1.3C2.3)	
All rows from the row specified (Example: R4..)	All columns from the column specified (Example: C3..)	Several cells (Example: R4..C3..)	

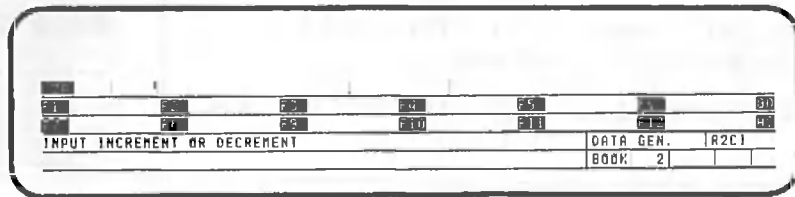
Notes:

- In the table above, row specifications are indicated by , column specifications are indicated by , and row and column specifications are indicated by .
- Some specification formats cannot be used with certain functions. See the explanation of each function for details.



Since the series of numbers that will be entered is "1, 2, 3...", specify the beginning number of the series (the initial value) as follows.

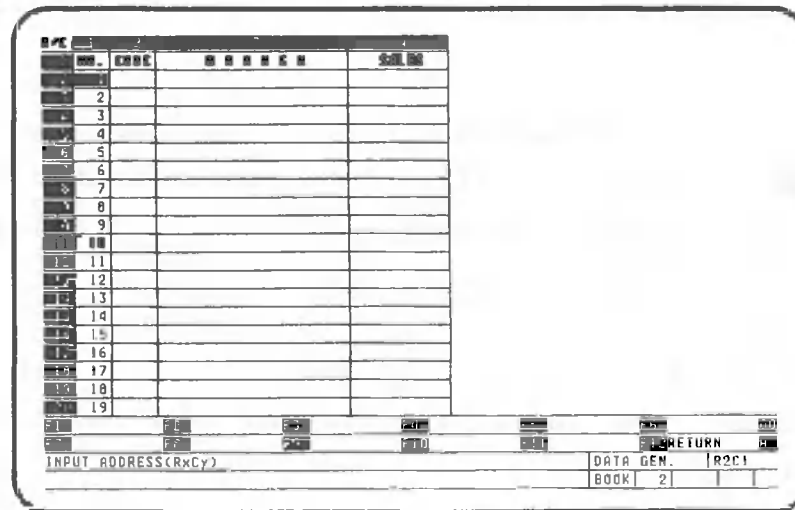
▶ 1 ↵



Next, specify the numbering interval (the increment or decrement) by which the next number will be increased or decreased.

▶ 1 ↵

If "2" is specified, the series "1, 3, 5, 7..." would be entered; if "-1" is specified, "1, 0, -1, -2..." would be entered.



The position of the cell cursor does not change during the entry of a series of numbers.

▶ F12

The screen for data processing should be displayed.

1.2.3 Entering character data

1	01	CODE	BRANCH
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			

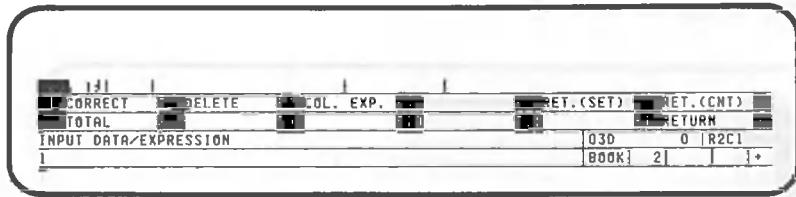
INPUT INPUT (N) DATA GEN. DUPLICATE PARTTIME ETR./SORT
 PRINTOUT CD FILE READ ROLL TABLE DEF. MONITOR
 SELECT FUNCTION(F1-F12,COPY,MOVE,DELETE,INSERT) DATA PROC. R2C1
 MODE 23 1 1

Now we will enter the codes and branch names. Data that will be entered under these column titles is shown below.

No	C O D E	B R A N C H
1	0101	NEW YORK
2	0102	TOKYO
3	0103	LONDON
4	0104	MOSCOW
5	0105	SHANGHAI
6	0106	PARIS
7	0107	OSAKA
8	0108	BUENOS AIRES
9	0109	LOS ANGELES
10	0110	CHICAGO
11	0111	CALCUTTA
12	0112	MEXICO CITY
13	0113	DETROIT
14	0114	BOMBAY
15	0115	RIO DE JANEIRO
16	0116	PHILADELPHIA
17	0117	PEKING
18	0118	HONG KONG
19	0119	AMSTERDAM


The codes are entered as character data, so you cannot use the numeric entry procedure described in the previous section. Use the same procedures that you used to enter the column titles.

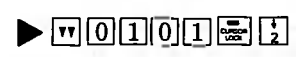
▶ **F1**




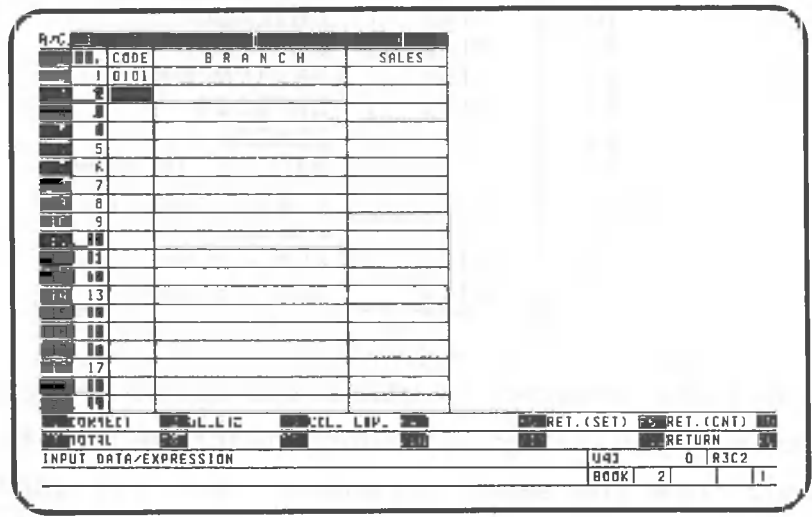
Move the cell cursor to row 2, column 2,




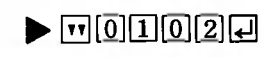
Enter the first code "0101". Be sure to press  before entering the characters for the code.



The last two keys in the sequence above specify the direction in which the cell cursor will move when  is pressed. Note that the direction of the arrow in the bottom right-hand corner of the screen changes from → to ↓.



Turn  off, then enter "0102" as the next code.



R/C	1	2	3	4
	NO.	CODE	B R A N C H	SALES
	1	0101		
	2	0102		
	3			

Enter all of the other codes through row 20 in the same way. Be sure to press **⏏** before entering each code number. After the code is entered in row 20, the cell cursor automatically moves to row 1, column 3.

R/C	1	2	3	4
	NO.	CODE	B R A N C H	SALES
	1	0101		
	2	0102		
	3	0103		
	4	0104		
	5	0105		
	6	0106		
	7	0107		
	8	0108		
	9	0109		
	10	0110		
	11	0111		
	12	0112		
	13	0113		
	14	0114		
	15	0115		
	16	0116		
	17	0117		
	18	0118		
	19	0119		
	20	0120		

COMPLETE DELETE COL. EXP. MET. USE 11 MET. ITEM 12
 TOTAL RETERR
 INPUT DATA-EXPRESS 161 203 0 PIC3
 B R A N C H 703K 7 12

Next, enter the branch names. Start by moving the cell cursor to row 2, column 3.



R/C	1	2	3	4
	NO.	CODE	B R A N C H	SALES
	1	0101		
	2	0102		
	3	0103		

Enter the branch name "New York".



R/C	1	2	3	4
	NO.	CODE	B R A N C H	SALES
	1	0101	NEW YORK	
	2	0102		
	3	0103		

Then enter all of the other branch names through row 20.

NO.	CODE	BRANCH
1	0101	NEW YORK
2	0102	TOKYO
3	0103	LONDON
4	0104	MOSCOW
5	0105	SHANGHAI
6	0106	PARIS
7	0107	OSAKA
8	0108	BUENOS AIRES
9	0109	LOS ANGELES
10	0110	CHICAGO
11	0111	CALCUTTA
12	0112	MEXICO CITY
13	0113	DETROIT
14	0114	BOMBAY
15	0115	RIO DE JANEIRO
16	0116	PHILADELPHIA
17	0117	PEKING
18	0118	HONG KONG
19	0119	AMSTERDAM

CORRECT	DELETE	COL. EXP.	RET. (SET)	RET. (CNT)
TOTAL	END	END	END	RETURN
INPUT DATA/EXPRESSION			LOD	0
SALES			BOOK	2

Finally, enter the monthly sales figures.

CODE	SALES	BRANCH
0101	163100	NEW YORK
0102	297000	TOKYO
0103	334900	LONDON
0104	259200	MOSCOW
0105	261600	SHANGHAI
0106	296500	PARIS
0107	264600	OSAKA
0108	446400	BUENOS AIRES
0109	143700	LOS ANGELES
0110	297000	CHICAGO
0111	297000	CALCUTTA
0112	90800	MEXICO CITY
0113	243000	DETROIT
0114	112400	BOMBAY
0115	201600	RIO DE JANEIRO
0116	458000	PHILADELPHIA
0117	56000	PEKING
0118	217700	HONG KONG
0119	192300	AMSTERDAM

Move the cell cursor to row 2, column 4.



R/C	NO.	CODE	B R A N C H	SALES
	1	0101	NEW YORK	
	2	0102	TOKYO	
	3	0103	LONDON	

Enter the sales figures for each branch in sequence as shown below.

▶ 163100 ↵

R/C	NO.	CODE	B R A N C H	SALES
	1	0101	NEW YORK	163100
	2	0102	TOKYO	
	3	0103	LONDON	

Enter the other branch sales through row 20 in the same way. Note that the cell cursor does not move after data is entered in the last cell of the table (row 20, column 4).




R/C	NO.	CODE	B R A N C H	SALES
	1	0101	NEW YORK	163100
	2	0102	TOKYO	297000
	3	0103	LONDON	334900
	4	0104	MOSCOW	259200
	5	0105	SHANGHAI	261600
	6	0106	PARIS	296500
	7	0107	OSAKA	264600
	8	0108	BUENOS AIRES	446400
	9	0109	LOS ANGELES	143700
	10	0110	CHICAGO	297000
	11	0111	CALCUTTA	297000
	12	0112	MEXICO CITY	90800
	13	0113	DETROIT	243000
	14	0114	BOMBAY	112400
	15	0115	RIO DE JANEIRO	201600
	16	0116	PHILADELPHIA	458000
	17	0117	PEKING	56000
	18	0118	HONG KONG	217700
	19	0119	AMSTERDAM	

CORRECT DELETE COL. EXP. RET.(SET) RET.(CNT)

TOTAL 192300 100 0 R20C4

INPUT DATA/EXPRESSION BOOK 2 ↓

This completes data entry. Next we will learn the procedures for correcting entered data.

When the cell cursor is moved using  and the cell address, the direction of the arrow in the bottom right corner of the screen does not change. If you press  by mistake, simply press .

NO.	CODE	CITY	FARE
1	0101	NEW YORK	163100
2	0102	TOKYO	297000
3	0103	LONDON	334900
4	0104	MOSCOW	259200
5	0105	SHANGHAI	261600
6	0106	PARIS	296500
7	0107	OSAKA	264600
8		BUENOS AIRES	446400
9	0109	LOS ANGELES	143700
10	0110	CHICAGO	297000
11	0111	CALCUTTA	297000
12	0112	MEXICO CITY	90800
13	0113	DETROIT	243000
14	0114	BOMBAY	112400
15	0115	RIO DE JANEIRO	201600
16	0116	PHILADELPHIA	458000
17	0117	PEKING	56000
18	0118	HONG KONG	217700
19	0119	AMSTERDAM	192300

CORRECT (INPUT, +, +, DELETE=DEL, INSERT, DELETE LINE, ENTER) 040 0 R9C2
 TOTAL INPUT DATA/EXPRESSION BOOK | 2 | | 1

(2) Correcting data

After moving the cell cursor to the desired cell, enter the correct data. It is possible to re-enter all data; in this example, however, correct the present data using the data correction method outlined below.


▶ 





19|0119|AMSTERDAM	192300|
CORRECT (INPUT, +, +, DELETE=DEL, INSERT, DELETE LINE, ENTER)	040 0 R9C2
0108	BOOK | 2 | | 1

Turn the  on and press the following key twice:

▶  

19|0119|AMSTERDAM	192300|
CORRECT (INPUT, +, +, DELETE=DEL, INSERT, DELETE LINE, ENTER)	040 0 R9C2
0108	BOOK | 2 | | 1

Turn the  off and change "08" to "20".

▶    

8	0120	BUENOS AIRES	446400
9	0109	LOS ANGELES	143700
10	0110	CHICAGO	297000
11	0111	CALCUTTA	297000

The cell cursor will move to row 10. This is because the arrow in the bottom right corner of the screen points downward. Move the cell cursor to row 9, column 3 using



. Then change "BUENOS AIRES" TO "FRANKFURT".

▶ **R9C3** ↵

8	0120	BUENOS AIRES	446400
9	0109	LOS ANGELES	143700
10	0110	CHICAGO	297000
11	0111	CALCUTTA	297000

▶ **F R A N K F U R T** ↵

8	0120	FRANKFURT	446400
9	0109	LOS ANGELES	143700
10	0110	CHICAGO	297000
11	0111	CALCUTTA	297000

(3) Correcting data without moving the cell cursor

You have learned how to correct data by moving the cell cursor. Now you will learn to correct data in a specific cell by simply specifying the cell address. Use this procedure to change the data in row 9, column 4 from "446400" to "395200."

▶ **:R9C4=395200** ↵

The first colon in the key sequence above indicates that the data to the right of the "=" sign will be written in the cell at the specified row and column address.

NO.	CODE	B R A N C H	SALES
1	0101	NEW YORK	163100
2	0102	TOKYO	297000
3	0103	LONDON	334900
4	0104	MOSCOW	259200
5	0105	SHANGHAI	261600
6	0106	PARIS	296500
7	0107	OSAKA	264600
8	0120	FRANKFURT	395200
9	0109	LOS ANGELES	143700
10	0110		297000
11	0111	CALCUTTA	297000
12	0112	MEXICO CITY	90800
13	0113	DETROIT	243000
14	0114	BOMBAY	112400
15	0115	RIO DE JANEIRO	201600
16	0116	PHILADELPHIA	458000
17	0117	PEKING	56000
18	0118	HONG KONG	217700
19	0119	AMSTERDAM	192300

CORRECT	DELETE	COL. EXP.	REP. (SET)	RET. (CNT)
TOTAL			200	0
INPUT DATA/EXPRESSION			BOOK	2
CHICAGO				1

When this sequence is entered, the data in row 9, column 4 changes to "395200" and the cell cursor moves down one row. This procedure can be used either to enter data or to correct it.

This completes the explanation of data correction.

▶ **F12**

1.2.5 Printing tables

This section explains how to print tables on the printer. Make sure that the screen looks like the one shown below before you proceed.

NO.	CODE	B R A N C H	SALES
1	0101	NEW YORK	163100
2	0102	TOKYO	297000
3	0103	LONDON	334900
4	0104	MOSCOW	259200
5	0105	SHANGHAI	261600
6	0106	PARIS	296500
7	0107	OSAKA	264600
8	0120	FRANKFURT	395200
9	0109	LOS ANGELES	143700
10	0110		297000
11	0111	CALCUTTA	297000
12	0112	MEXICO CITY	90800
13	0113	DETROIT	243000
14	0114	BOMBAY	112400
15	0115	RIO DE JANEIRO	201600
16	0116	PHILADELPHIA	458000
17	0117	PEKING	56000
18	0118	HONG KONG	217700
19	0119	AMSTERDAM	192300

INPUT	DATA GET.	REP. (CNT)	REP. (SET)
PRINTOUT	214F	200	0
SELECT FUNCTION(F1-F12, COPY, MOVE, DELETE, INSERT)		BOOK	2
			1

▶ **F7**

The number of lines per page is 70, assuming that A4-size forms (215mm x 297mm) will be used. The number of lines assigned to a function key can be specified by selecting SYSTEM from the screen displayed when entering passwords.

▶ **F1**

1910119	AMSTERDAM	1923001							
LINE POSITION? (ENTER=3, L/P=2), (INPUT START, END LINE)								PRINTOUT	RILES
								BOOK	2

Omit the starting and ending line specifications. CANOBRAIN automatically specifies 3 as the starting line and 68 as the ending line, just as if **3,68** was entered.

▶ **↵**

1910119	AMSTERDAM	1923001							
CHAR. POSITION? (ENTER=3, RIGHT POS=), (INPUT STAR, END CHAR.)								PRINTOUT	RILES
								BOOK	2

Omit the starting and ending character specifications. CANOBRAIN automatically specifies 3 as the starting character and 80 (standard 80-character printer) as the ending character, just as if **3,80** was entered.

▶ **↵**

1910119	AMSTERDAM	1923001							
SET PAPER ENTER=OK, CANCEL=RETURN								PRINTOUT	RILES
								BOOK	2

Here CANOBRAIN asks whether will you use cut sheets or not. If you are going to use cut sheets, select F2; otherwise, select F1. If you select F2, CANOBRAIN will display a prompt, "SET PAPER ENTER=OK, CANCEL=RETURN", when you start printing. After you set the paper, press

. If you want to cancel the printout, press CANCEL. The prompt will be displayed for every page printed.

CANOBRAIN asks you to input the ruled line option. For this example, select "Ruled". If the printer is not an A-1200 or A-1250, you can only select "Not ruled" or "Ruled".

▶ F1

19|0119|AMSTERDAM	|	192300|							
NO RULCD		RULED103							
SELECT FUNCTION							PRINTOUT	R1C3	
							BOOK	2	

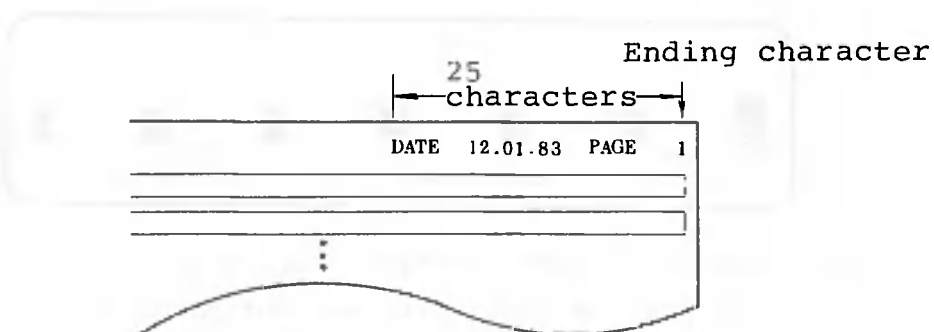
▶ F3

19|0119|AMSTERDAM	|	192300|							
INPUT HEADER							PRINTOUT	R1C3	
							BOOK	2	

Enter the header that will be printed on the starting line as shown below.

▶ S A L E S S U M M A R Y

Together, the date and page number consist of 25 characters, which are right-justified at the ending character position when printed.



Next, specify the rows that will be printed. Since we will be printing all rows of the table, simply press **F1**. Printing starts when **F1** is pressed.

▶ **F1**

You can also print selected rows by specifying their numbers instead of pressing **F1**. When printing specific rows, enter a comma between the first row that will be printed and the last row that will be printed.

```
SALES SUMMARY                                DATE 12.01.83    PAGE 1
NO. CODE   BRANCH      SALES
1 0101 NEW YORK      163100
2 0102 TOKYO        297000
3 0103 LONDON       334900
4 0104 MOSCOW       259200
5 0105 SHANGHAI     261600
6 0106 PARIS        296500
7 0107 OSAKA        264600
8 0120 FRANKFURT    395200
9 0109 LOS ANGELES  143700
10 0110 CHICAGO     297000
11 0111 CALCUTTA    297000
12 0112 MEXICO CITY  90800
13 0113 DETROIT     243000
14 0114 BOMBAY      112400
15 0115 RIO DE JANEIRO 201600
16 0116 PHILADELPHIA 458000
17 0117 PEKING      56000
18 0118 HONG KONG   217700
19 0119 AMSTERDAM   192300
```

This completes the explanation of data printout. Now return to the data processing screen.

▶ **F12** **F12** **F12**

1.2.6 Ending CANOBRAIN operation

This completes the exercises for simple table preparation. Now we will explain how to end CANOBRAIN operation. First, make sure that the screen is the same as shown below, then perform the operations indicated.

NO.	CODE	B R A N C H	SALES
1	0101	NEW YORK	163100
2	0102	TOKYO	297000
3	0103	LONDON	334900
4	0104	MOSCOW	259200
5	0105	SHANGHAI	261600
6	0106	PARIS	296500
7	0107	OSAKA	264600
8	0120	FRANKFURT	395200
9	0109	LOS ANGELES	143700
10	0110	...	297000
11	0111	CALCUTTA	297000
12	0112	MEXICO CITY	90800
13	0113	DETROIT	243000
14	0114	BOMBAY	112400
15	0115	RIO DE JANEIRO	201600
16	0116	PHILADELPHIA	450000
17	0117	PEKING	56000
18	0118	HONG KONG	217700
19	0119	AMSTERDAM	192300

INPUT PRINT COPY MOVE DELETE INSERT CALCULATE FORMAT RETN SORT
 PRINTOUT FILE END QUIT REF. REF. REF. REF.

SELECT FUNCTION(F1-F12, COPY, MOVE, DELETE, INSERT) DATA PROC. R11C3

BOOK | 2 | |

▶ F12

PAGE	T I T L E	CREATE	UPDATE
0	P A G E C R E A T E		
1	SALES SUMMARY WORLDWIDE	12.01.83	12.01.83

DELETE MODIFY PRINTOUT RETURN

SELECT PAGE(INPUT PAGE NO., 1, 4) BOOK | 2 | |

▶ F12

PAGE LIST		LN	TITLE	CREATE	UPDATE
1		1	CANOBRAIN	12.01.83	12.01.83
2		2	SALES BY BRANCH	12.01.83	12.01.83

CREATE	DELETE	MODIFY	PRINTOUT		
			ROLL	RETURN	

SELECT BOOK(INPUT BOOK NO.,↓)

BOOK

▶ F12

BOOK	ROLL	TOTAL PAT.			
				RETURN	

SELECT FUNCTION

FNTR

▶ F12

Canon Canobrain

Copyright By CANON INC. Vx.xx
[F12] == end date == _

At this point, CANOBRAIN's start-up screen should be displayed. To proceed to Section 1.3, enter the date. To end operations, press **[F12]** again. Control will return to the operating system.

^>_

Always be sure to return to this screen before turning off the power.



1.3 Increasing the Size of Tables

This section explains procedures for inserting new rows or columns and editing data in tables.

1.3.1 Specifying the table that will be changed

Copy the table created in Section 1.1 to a new page. The screen examples are displayed again after password entry.

BOOK	ROLL	TOTAL PAY	RETURN

SELECT FUNCTION

▶ F1



BOOK LIST				
NO	TITLE	CREATE	UPDATE	
1	CANOBRAIN	12.01.03	12.01.03	
2	SALES BY BRANCH	12.01.03	12.01.03	

CREATE	DELETE	MODIFY	PRINTOUT	END
SEARCH	HELP	RETURN		
SELECT BOOK(INPUT BOOK NO. 1)				
	BOOK			

Select the "SALES BY BRANCH" book.

▶ 2 ↵

One point lesson: Book catalogue display method

If more than 19 books are catalogued, pressing **[8]** displays book 19 on the screen in place of book 1; pressing it again displays book 20 in place of book 2, etc. This allows you to locate books which are not initially displayed on the screen.

Pressing **[2]** once redisplay book 2 in place of book 20; pressing it again redisplay book 1 in place of book 19, etc.

This operation is called scrolling. Scrolling can be used with the book, page and roll selection screens and the table display screen.

In addition to the cursor keys (2,3,5,7,8 and 9), the key and the number of the book, page or roll you want to display can be specified.

INPUT COMMENT (MAX 22 CHAR.)		CREATE	
		BOOK	2

► WORLDWIDE ↵

INDEX										
PAGE	T	I	T	L	E	CREATE	UPDATE			
0	P	A	G	E	C	R	E	A	T	E
1	S	A	L	E	S	S	U	M	M	A
	W	O	R	L	D	W	I	D	E	
2	S	A	L	E	S	B	Y	B	R	A
	W	O	R	L	D	W	I	D	E	

COPY PAGE? (ENTER=NO COPY), (INPUT PAGE NO.)		CREATE	
		BOOK	2

Copy the data from page 1 to the page just created. Using the following key operation.

► 1 ↵

This copies all data from page 1 to page 2.

ROW	COLUMN	DATA
		SALES
		163104
		297204
		334404
		259204
		251600
		216500
		214600
		319500
		143700
		257000
		297000
		290000
		240000
		112400
		203600
		450000
		500000
		217000
		192305

ROW	COLUMN	DATA	DATA	DATA	DATA	DATA	DATA
SELECT ROW/COLUMN					INSERT	RETURN	
					BOOK	2	

As the screen scrolls to the left, you can see that what was previously column 4 is now column 15, and that 11 columns, with a width of 10 digits each, were inserted.

This completes the procedure for inserting new columns.



1.3.3 Entering data in the new columns

Now we will enter data in the columns which were just inserted. First, make sure that the screen looks like the one shown below.

SALES			
163100			
297000			
359000			
253200			
741600			
396700			
268500			
195200			
143700			
297000			
297300			
40100			
243000			
112000			
231800			
458800			
36000			
217700			
192300			

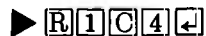
INPUT CELL CURSOR GOTO ADDRESS(RxCy) DATA PROC. R1C4
 BOOK 2 | | |

- (1) First, enter the column titles. Move the cell cursor to row 1, column 4.



			192300				

INPUT CELL CURSOR GOTO ADDRESS(RxCy) DATA PROC. R1C4
 BOOK 2 | | |



R/C		JULY	AUG.	SEP.	OCT.	NOV.		
							163100	
							297000	
							334900	
							259200	
							261600	
							296500	
							264600	
							395200	
							143700	
							297000	
							297000	
							90800	
							243000	
							112400	
							201600	
							458000	
							56000	
							217700	
							192300	
	CORRECT	DELETE	NO. EXP.		RET. (SET)	RET. (CNT)		
	TOTAL					RETURN		
	INPUT DATA/EXPRESSION						100	0 | R1C15
	SALES						BOOK	2 | *

Now change the title of column 15 from "Sales" to "DEC."

► □ □ □ DEC. ↓

R/C	NO.	CODE	B R A N C H	JAN.	FEB.	MAR.	APR.	
	1	0101	NEW YORK					
	2	0102	TOKYO					
	3	0103	LONDON					
	4	0104	MOSCOW					
	5	0105	SHANGHAI					
	6	0106	PARIS					
	7	0107	OSAKA					
	8	0120	FRANKFURT					
	9	0109	LOS ANGELES					
	10	0110	CHICAGO					
	11	0111	CALCUTTA					
	12	0112	MEXICO CITY					
	13	0113	DETROIT					
	14	0114	BOMBAY					
	15	0115	RIO DE JANEIRO					
	16	0116	PHILADELPHIA					
	17	0117	PEKING					
	18	0118	HONG KONG					
	19	0119	AMSTERDAM					
	CORRECT	DELETE	NO. EXP.		RET. (SET)	RET. (CNT)		
	TOTAL					RETURN		
	INPUT DATA/EXPRESSION						03D	0 | R2C1
							BOOK	2 | *

(2) Next, enter sales figures for the months of January through November for each branch. Since this is a lot of data, it has been prerecorded on the data floppy disk for your convenience.

▶ **F12**

19|0119|AMSTERDAM										
INPUT	INPUT PAT.	DATA GEN.	DUPLICATE	FORMATING	RETR./SORT					
PRINTOUT	CD FILE	READ ROLL	TABLE DEF.		MONITOR					
SELECT FUNCTION(F1-F12,COPY,MOVE,DELETE,INSERT)								DATA PROC.	R2C1	
								BOOK	2	

Read the data into the table from the data floppy disk as follows:

▶ **F8**

19|0119|AMSTERDAM										
INPUT	OUTPUT									
SELECT FUNCTION								CD FILE	R2C1	
								BOOK	2	

▶ **F1**

19|0119|AMSTERDAM										
INPUT COMMON DATA FILE NAME								CD FILE	R2C1	
								BOOK	2	

▶ **S A L E S ↵**

19|0119|AMSTERDAM										
HORIZONTAL	VERTICAL									
SELECT DATA OUTPUT ORDER								CD FILE	R2C1	
								BOOK	2	

CANOBRAIN asks whether the floppy disk data should be oriented horizontally (in row units) or vertically (in column units). Data is oriented vertically in this example.

▶ **F2**

R/C	NO.	CODE	B R A N C H	JAN.	FEB.	MAR.	APR.
	1	0101	NEW YORK	446400	344500	509800	322800
	2	0102	TOKYO	264600	305000	98000	316200
	3	0103	LONDON	547200	186400	467200	332900
	4	0104	MOSCOW	130200	177900	291500	177700
	5	0105	SHANGHAI	264600	115000	138500	362900
	6	0106	PARIS	201600	350900	445500	124300
	7	0107	OSAKA	164200	206500	439900	198700
	8	0120	FRANKFURT	201600	396500	359000	202200
	9	0109	LOS ANGELES	280800	426000	271500	234500
	10	0110	CHICAGO	243000	337500	128000	298000
	11	0111	CALCUTTA	164700	213500	155600	589000
	12	0112	MEXICO CITY	201600	354000	466200	245000
	13	0113	DETROIT	264600	284500	197800	468600
	14	0114	BOMBAY	334900	371000	242100	163400
	15	0115	RIO DE JANEIRO	261600	228400	198000	147800
	16	0116	PHILADELPHIA	345600	215800	342100	282200
	17	0117	PEKING	264600	138900	190800	276800
	18	0118	HONG KONG	163100	110100	246700	185800
	19	0119	AMSTERDAM	297000	326500	344400	153000

INPUT INPUT PAT. DATA GEN. DUPLICATE FORMATING RETR. SORT
 PRINTOUT CD FILE READ ROLL TABLE DEF. MONITOR
SELECT FUNCTION(F1-F12,COPY,MOVE,DELETE,INSERT) DATA PROC. R2C1
BOOK | 2 | 1


A common data (CD) file is a file which has been stored on a floppy disk in a format which allows it to be used either as data for a table prepared with CANOBRAIN or by a program written in BASIC. CANOBRAIN can input (read) CD file data to a table or output (write/store) table data as a CD file. See Volume V and Appendix 1 for a detailed explanation of CD files.

The data which will be read into the table is contained in the CD file "SALES".

The data to be read in from this CD file for the months of January through November as well as December is shown below and on the following page.

JAN.	FEB.	MAR.	APR.	MAY	JUNE
446400	344500	509800	322800	586000	497300
264600	305000	98000	316200	398000	465300
547200	186400	467200	332900	737200	227600
130200	177900	291500	177700	432300	397500
264600	115000	138500	362900	194200	246700
201600	350900	445500	124300	537700	324300
164200	206500	439900	198700	393400	315100
201600	396500	359000	202200	276700	292300
280800	426000	271500	234500	375100	486200
243000	337500	128000	298000	217600	329400
164700	213500	155600	589000	387600	513600
201600	354000	466200	245000	294600	246800
264600	284500	197800	468600	547300	96420
334900	371000	242100	163400	354100	253700
261600	228400	198000	147800	323900	456100
345600	215800	342100	282200	215900	258300
264600	138900	190800	276800	438200	374400
163100	110100	246700	185800	334200	298900
297000	326500	344400	153000	162400	325500

JULY	AUG.	SEP.	OCT.	NOV.	DEC.
341200	474600	236500	221100	398200	163100
444300	536100	468300	432500	94700	297000
318200	498200	287700	332400	295500	334900
324300	319200	463700	529300	406300	259200
467100	506400	299800	406200	462500	261600
210200	454600	305200	377800	397200	296500
300300	354200	435300	411900	299000	264600
456600	290000	264400	580600	308900	395200
311500	563200	379600	407500	245100	143700
256600	411200	298300	364800	233100	297000
470600	502300	346200	298900	440900	297000
587100	591200	483400	302700	332900	90800
389500	329000	264600	290800	411600	243000
342900	384400	156200	321900	504600	112400
209800	468200	489200	506000	372800	201600
571000	375100	283500	472800	197600	458000
339300	346200	472600	377500	509200	56000
497200	255300	356500	433100	419300	217700
199000	522300	207000	274800	412600	192300

Now move the cell cursor to row 1, column 1 using the operation shown below. Make sure that  is on.

CODE	BRANCH	JAN.	FEB.	MAR.	APR.
0101	NEW YORK	446400	344500	509800	322800
0102	TOKYO	264600	305000	98000	316200
0103	LONDON	547200	186400	467200	332900
0104	MOSCOW	130200	177900	291500	177700
0105	SHANGHAI	264600	115000	138500	362900
0106	PARIS	201600	350900	445500	124300
0107	OSAKA	164200	206500	439900	190700
0120	FRANKFURT	201600	396500	359000	202200
0109	LOS ANGELES	280800	426000	271500	234500
0110	CHICAGO	243000	337500	128000	298000
0111	CALCUTTA	164700	213500	155600	589000
0112	MEXICO CITY	201600	354000	466200	245000
0113	DETROIT	264600	284500	197800	468600
0114	BOMBAY	334900	371000	242100	163400
0115	RIO DE JANEIRO	261600	228400	198000	147800
0116	PHILADELPHIA	345600	215800	342100	282200
0117	PEKING	264600	138900	190800	276800
0118	HONG KONG	163100	110100	246700	185800
0119	AMSTERDAM	297000	326500	344400	153000

INPUT INPUT PAT. DATA GEN. DUPLICATE FORMATING RETR./SORT
 PRINTOUT CD FILE READ ROLL TABLE DEF. INITIAL P.
SELECT FUNCTION(F1-F12, COPY, MOVE, DELETE, INSERT) PATT REC AICI
BOOK 2

1.3.4 Inserting rows

Now let's insert some extra rows into the table. Four new rows will be inserted immediately following row 20.

▶ **INSERT**

19	0119	AMSTERDAM	297000	326500	344400	153000	
20	20	COLUM				RETURN	
SELECT ROW/COLUMN						INSERT	21
						BOOK	2

▶ **F1**

19	0119	AMSTERDAM	297000	326500	344400	153000	
20	20	COLUM				RETURN	
INSERT? (ENTER=CURSOR ROW, 1), (INPUT ROW NO., NUMBER OF ROWS)						INSERT	21
						BOOK	2

Here, the new rows will be inserted immediately following row 20. **INSERT** inserts new rows or columns between existing rows or columns.

▶ **2 1, 4**

▶ **3**

19	0119	AMSTERDAM	297000	326500	344400	153000
20	20	COLUM				RETURN
21						
22						
23						

This completes the procedure for inserting rows. Now enter the following data into these rows.

▶ **F12**

▶ **F1**

NO. CODE	B R A N C H	JAN.	FEB.	MAR.	APR.	MAY	JUNE
20	0108 BUENOS AIRES	236000	209400	372100	258300	31500	411200
21	0121 LENINGRAD	351100	242200	335300	276100	261500	367600
22	0122 CAIRO	178000	213200	346200	299000	342500	409200
23	0123 SAN FRANCISCO	209800	331800	305300	249700	307500	290400
		JULY	AUG.	SEP.	OCT.	NOV.	DEC.
		500300	213100	411900	296600	388500	274400
		429000	434100	327800	365100	245200	176300
		102400	375600	229100	322600	425800	311100
		223900	407300	356100	237700	407800	260400

▶ **HOME**
7 **F12**

1.4 Table calculations

This section explains the procedure for calculating totals using the sample data already entered. The explanation begins with the following screen, which is displayed when data entry is completed.


R	C	CODE	BRANCH	JAN.	FEB.	MAR.	APR.
1	0101	NEW YORK		446400	344500	509800	322800
2	0102	TOKYO		264600	305000	98000	316200
3	0103	LONDON		547200	186400	467200	332900
4	0104	MOSCOW		130200	177900	291500	177700
5	0105	SHANGHAI		264600	115000	138500	362900
6	0106	PARIS		201600	350900	445500	124300
7	0107	OSAKA		164200	206500	439900	198700
8	0120	FRANKFURT		201600	396500	359000	202200
9	0109	LOS ANGELES		280800	426000	271500	234500
10	0110	CHICAGO		243000	337500	128000	298000
11	0111	CALCUTTA		164700	213500	155600	589000
12	0112	MEXICO CITY		201600	354000	466200	245000
13	0113	DETROIT		264600	284500	197800	468600
14	0114	BOMBAY		334900	371000	242100	163400
15	0115	RIO DE JANEIRO		261600	228400	198000	147800
16	0116	PHILADELPHIA		345600	215800	342100	282200
17	0117	PEKING		264600	138900	190800	276800
18	0118	HONG KONG		163100	110100	246700	185800
19	0119	AMSTERDAM		297000	326500	344400	153000

INPUT INPUT PAT. DATA GEN. DUPLICATE PRINT RETR. SORT
 PRINTOUT FILE READ ROLL FULL CLP. MONITOR
 SELECT FUNCTION(F1-F12, COPY, MOVE, DELETE, INSERT) DATA PROC. (F1)

BOOK 2


1.4.1 Inserting rows and columns for totals

The table we have prepared does not include rows and columns for displaying totals. Required rows/columns can be inserted using the procedures described previously. First, add a new row (row 25) for totals.

Make sure that the  is on. Then do the following:



20	0108	BUENOS AIRES		236000	209400	372100	258300
21	0121	LENINGRAD		351100	242200	335300	276100
22	0122	CAIRO		178000	213200	346200	299000
23	0123	SAN FRANCISCO		209800	331800	305300	249700

Turn off  .



▶ INSERT

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
SELECT ROW/COLUMN																INSERT	R25C15		
																BOOK	2		

▶ F2

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
INSERT? (CENTER=CURSOR COL., 1), [INPUT COL. NO., NUMBER OF COL.]																INSERT	R25C15		
																BOOK	2		

▶ 16, 1 ↵

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
C16 INPUT COLUMN WIDTH (MAX 75 CHAR.)																INSERT	R25C15		
																BOOK	2		

Specify the column width as 10 digits.

▶ 10 ↵

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
2	500300	213100	411900	296600	383500	274400													
3	429000	434100	327800	365100	245200	176300													
4	102400	375600	229100	322600	425800	311100													
5	223900	407300	356100	237700	407800	260400													

▶ F12

This completes the procedures for inserting a row and column for totals. Now enter the heading "Total" in row 1, column 16 and row 25, column 3.

▶ F1

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
CORRECT	DELETE	COL. EXP.			RET. (SET)	RET. (CMT)													
TOTAL																			
INPUT DATA/EXPRESSION																100	0	R25C15	
																BOOK	2		

▶ 16, 1, 25, 3 ↵

CORRECT	DELETE	COL. EXP.	RET. (SET)	RET. (CNT)
TOTAL			RETURN	
INPUT DATA/EXPRESSION			100	0 R25C16
			BOOK	2 | | *

▶ :R25C3= T O T A L ↵

CORRECT	DELETE	COL. EXP.	RET. (SET)	RET. (CNT)
TOTAL			RETURN	
INPUT DATA/EXPRESSION			100	0 R25C16
			BOOK	2 | | *

One point lesson: Calculation functions

CANOBRAIN provides the following calculation functions.

@ AVE (Value): Calculates the average value of data items specified for Value.

@COUNT (address, retrieval condition, value 1, value 2): Searches the table for data satisfying the conditions set (limited by value 1 and value 2) and returns the number of items that fall within those limits. Only numeric data is processed; character data are ignored. The following table contains the retrieval conditions and values used for the conditions:

Retrieval condition	Meaning	Value 1	Value 2
#GT	Greater than (a)	a	—
#GE	Greater than or equal to (a =)	a	—
#LT	Less than (a)	a	—
#LE	Less than or equal to (= a)	a	—
#EQ	Equal (= a)	a	—
#NE	Not equal (a)	a	—
#BT	Between (a =data =b)	a	b
#NB	Not between (data a , data b)	a	b
#DT	Numeric value	—	—

Note: a and b are numeric values.

If both value 1 and value 2 are omitted, the comma (,) must also be omitted.

#DT cannot be used for a roll.

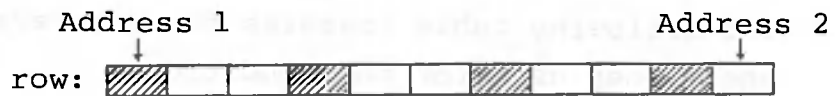
@LN(Value): Calculates the natural logarithm of a data item specified as a value.

@ LOG (Value): Calculates the base 10 logarithm of the data items specified for Value.

@ MAX (List): Determines the maximum value from the data items specified for List.

@ MIN (List): Determines the minimum value from the data items specified for List.

- @ SQRT (Value): Calculates the square root of the data item specified for Value.
- @ SUM (List): Calculates the total of the data items specified for List.
- @ TSUM (Address 1, Address 2, Step):
Calculates the total of data items in the cells specified by the Step between Address 1 and Address 2. Both addresses must specify the same row or column.



When Step=3, the total is calculated for cells indicated by .

The terms used above are defined as follows.

- Value: A number, address, or any combination of numbers and addresses with an arithmetic operator.
- List: A series of several values separated by commas.
- Address 1: A cell address.
- Address 2: A cell address.
- Step: A number.

A range of addresses cannot be specified for the @LN, @LOG and @SORT functions.

Examples: @AVE(R1.2C1.2,20,R3C1,@SUM(R1C3.5))

@COUNT(R2.15C2.10,#BT,100,200)

@LN(R1C1)

@LOG(R1C1)

@SQRT(R1C1)

@MAX(R1C1.5)

@SUM(R1.5C1)

@MIN(R1C1,R1C2,10,R2C1) @TSUM(R1C1,R5C1,2)

.....

1.4.2 Column totals

Now that you have finished adding the row and column for totals, it's time to calculate the totals for the total column. The cell cursor should be positioned at row 25, column 4 as shown below.

K	L	M	N	O	P	Q
5	0105	SHANGHAI	264600	115000	138500	362900
6	0106	PARIS	201600	350900	445500	124300
7	0107	OSAKA	164200	206500	439900	198700
8	0120	FRANKFURT	201600	396500	359000	202200
9	0109	LOS ANGELES	280800	426000	271500	234500
10	0110	CHICAGO	243000	337500	128000	298000
11	0111	CALCUTTA	164700	213500	155600	589000
12	0112	MEXICO CITY	201600	354000	466200	245000
13	0113	DETROIT	264600	284500	197800	468600
14	0114	BOMBAY	334900	371000	242100	163400
15	0115	RIO DE JANEIRO	261600	228400	198000	147800
16	0116	PHILADELPHIA	345800	215800	342100	282200
17	0117	PEKING	264600	138900	190800	276800
18	0118	HONG KONG	163100	110100	246700	185800
19	0119	AMSTERDAM	297000	326500	344400	153000
20	0108	BUENOS AIRES	236000	209400	372100	258300
21	0121	LENINGRAD	351100	242200	335300	276100
22	0122	CAIRO	178000	213200	346200	299000
23	0123	SAN FRANCISCO	209300	331800	305300	249700
24		TOTAL				

CORRECT DELETE COL. EXP. RET. (SET) RET. (CNT)
 INPUT DATA/EXPRESSION 100 0 R25C4 800K 21 *

Perform the following operation to calculate totals for the total column:

▶ @SUM(R(2)~(24)C(4))

This key sequence instructs CANOBRAIN to calculate the totals of data items in rows 2 ~ 24 of column 4. Special character strings like @SUM, which are preceded by "@", are called functions. Functions are built-in expressions to make calculation easy. Any combination of numbers and addresses with an arithmetic operator, like +, -, etc., is called an expression.

Make sure that the screen looks like the one shown below.

5	0105	SHANGHAI	264600	115000	138500	362900
6	0106	PARIS	201600	350900	445500	124300
7	0107	OSAKA	164200	206500	439900	198700
8	0120	FRANKFURT	201600	396500	359000	202200
9	0109	LOS ANGELES	280800	426000	271500	234500
10	0110	CHICAGO	243000	337500	128000	298000
11	0111	CALCUTTA	164700	213500	155600	589000
12	0112	MEXICO CITY	201600	354000	466200	245000
13	0113	DETROIT	264600	284500	197800	468600
14	0114	BOMBAY	334900	371000	242100	163400
15	0115	RIO DE JANEIRO	261600	228400	198000	147800
16	0116	PHILADELPHIA	345600	215800	342100	282200
17	0117	PEKING	264600	136900	190800	276800
18	0118	HONG KONG	163100	110100	246700	185800
19	0119	AMSTERDAM	297800	326500	344400	153000
20	0108	BUENOS AIRES	236000	209400	372100	258300
21	0121	LENINGRAD	351100	242200	335300	276100
22	0122	CAIRO	178000	213200	346200	299000
23	0123	SAN FRANCISCO	209800	331800	305300	249700
T O T A L			6016800			

CORRECT DELETE COL. EXP. RET. (SET) RET. (CMT)

INPUT DATA/EXPRESSION 100 0 152500

BOOK 2 +

The results of calculations are displayed on the screen, but the function itself is not.

Enter the following expressions to obtain the totals for columns 5 ~ 15, just as you did before.

Address	Expression
R 2 5 C 5	@SUM(R 2.24 C 5)
R 2 5 C 6	@SUM(R 2.24 C 6)
R 2 5 C 7	@SUM(R 2.24 C 7)
R 2 5 C 8	@SUM(R 2.24 C 8)
R 2 5 C 9	@SUM(R 2.24 C 9)
R 2 5 C 10	@SUM(R 2.24 C 10)
R 2 5 C 11	@SUM(R 2.24 C 11)
R 2 5 C 12	@SUM(R 2.24 C 12)
R 2 5 C 13	@SUM(R 2.24 C 13)
R 2 5 C 14	@SUM(R 2.24 C 14)
R 2 5 C 15	@SUM(R 2.24 C 15)

Although these expressions can be entered through the keyboard one at a time as previously described, it is also possible to use what is called the duplication function to save time.

Return to the data processing screen.

▶ **F12**

9611800	7822900	8564600	8204300	5603800	
INPUT	INPUT PAT.	DATA GEN.	DUPLICATE	FORMATING	RETR. < SORT
PRINTOUT	CD FILE	READ ROLL	TABLE DEF.		
SELECT FUNCTION(F1-F12,COPY,MOVE,DELETE,INSERT)				DATA PROC.	R25C16
				BOOK	2

Select the duplication function.

▶ **F4**

9611800	7822900	8564600	8209300	5603800	
					RETURN
TABLE? (ENTER=SAME TABLE), (INPUT TABLE NAME OR PAGE NO.)				DUPLICATE	R25C16
				BOOK	2

▶ **↵**

9611800	7822900	8564600	8209300	5603800	
					RETURN
FROM ADDRESS? (ENTER=CURSOR ADDRESS), (INPUT ADDRESS(RxCy))				DUPLICATE	R25C16
				BOOK	2

▶ **R25C4**

9611800	7822900	8564600	8209300	5603800	
					RETURN
TO ADDRESS? (ENTER=CURSOR ADDRESS), (INPUT ADDRESS(RxCy))				DUPLICATE	R25C16
				BOOK	2

▶ **R25C5.15**

9611800	7822900	8564600	8209300	5603800	
DATA	PRESSION	ERRAT			
SELECT DUPLICATE				DUPLICATE	R25L16
				BOOK	2

▶ **F2**

9611800	7822900	8564600	8209300	5603800	
RELATIVE	ABSOLUTE	SPECIFY			
SELECT RELATIVE, ABSOLUTE				DUPLICATE	R25C16
				BOOK	2

▶ **F1**

	A	B	C	D	E	F
0000	SHANGHAI	264600	115000	138500	362900	19
0000	PARIS	201600	350900	445500	124300	53
0000	OSAKA	164200	206500	439900	198700	39
0000	FRANKFURT	201600	396500	359000	202200	27
0109	LOS ANGELES	280800	426000	271500	234500	37
0110	CHICAGO	243000	337500	128000	298000	21
0111	CALCUTTA	164700	213500	155600	589000	38
0112	MEXICO CITY	201600	354000	466200	245000	29
0113	DETROIT	264600	284500	197800	468600	54
0114	BOMBAY	334900	371000	242100	163400	35
0115	RIO DE JANEIRO	261600	228400	198000	147800	32
0116	PHILADELPHIA	345600	215800	342100	282200	21
0117	PEKING	264600	138900	190800	276800	43
0118	HONG KONG	163100	110100	246700	185800	33
0119	AMSTERDAM	297000	326500	344400	153000	16
0108	BUENOS AIRES	236000	209400	372100	258300	3
0121	LENINGRAD	351100	242200	335300	276100	26
0122	CAIRO	178000	213200	346200	299000	34
0000	SAN FRANCISCO	209800	331800	305300	249700	30
25	T O T A L	6016800	6891500	6891500	6164900	814

TABLE?(CENTER=SAME TABLE),(INPUT TABLE NAME OR PAGE NO.) DUPLICATE R25C5
 BOOK 2 | |

As the calculations were made, the contents of row 25 starting from column 5 changed first to asterisks (*), and then were replaced by numbers, showing how the duplication function is used to copy an expression.

The duplication function can be used to copy data, expressions, etc. from one cell to another. It can also be used to copy data from another table to the table being processed. See Volume V for details. Now, let's take a look at the copied function.

▶ F12

TOTAL	6016800	6891500	6164900	814	
CMFUT	INPUT PAT.	DATA GEN.	DUPLICATE	FORMATING	RETR./SORT
FR11111	WCD FILE	BLFD YD.L	TABLE DEF.	MONITOR	
SELECT FUNCTION(F1-F12,COPY,MOVE,DELETE,INSERT)			DATA PROC.	R25C5	
			BOOK	2	

▶ F1

TOTAL	6016800	6891500	6164900	814
CORRECT	DELETE	DEF TI. EXP.	RET.(SET)	RET.(CNT)
TOTAL	0	0	0	0
INPUT DATA/EXPRESSION			103	0 R25C5
BSUM(R2.24C5)			BOOK	2


@SUM(R2.24C5), the function copied, is displayed on the bottom line. However, you will notice that it is not quite the same; the original function copied was @SUM(R2.24C4). This is because "RELATIVE" was selected for duplication.


If you specify "RELATIVE", CANOBRAIN automatically adjusts the address so that the function (or expression) is moved to the correct position when it is copied.

You usually use "RELATIVE" when you duplicate functions or expressions. If you want to permanently fix an expression address, you must specify "ABSOLUTE."

If "ABSOLUTE" is selected, the expression in row 25, column 5 would be @SUM(R2.24C4).

If "SPECIFY" is selected, you can specify RELATIVE or ABSOLUTE for each expression address.

Look at the columns from row 25, column 6 on. Make sure that  is on.

▶  ... (11 times)

As you can see, the functions for calculating totals are displayed on the bottom line of the screen and the result of the calculation function are displayed in the cell. Now, let's calculate the row totals.

One point lesson: Relative addresses and absolute addresses

When RELATIVE is selected, the addresses in an expression are converted so that the positional relationship between the expression and the addresses does not change when copied. When ABSOLUTE is selected, the addresses in an expression are copied unchanged.

	1	2	3	4
1				
2		+R1C1+R1C2+R1C3		
3				
4				

The expression in R2C2 is relatively copied to R4C3.



	1	2	3	4
1				
2				
3				
4			+R3C2+R3C3+R3C4	

The expression in R2C2 is absolutely copied to R4C3.



	1	2	3	4
1				
2				
3				
4			+R1C1+R1C2+R1C3	

1.4.3 Row totals

Now let's calculate the row totals. Make sure that the screen looks like the one shown below.

506400	299800	406200	462500	261600
454600	305200	377800	397200	296500
354200	435300	411900	299000	264600
290000	264400	580600	308900	395200
563200	379600	407500	245100	143700
411200	298300	364800	233100	297000
502300	346200	298900	440900	297000
591200	483400	302700	332900	90800
329000	264600	290800	411600	243000
384400	156200	321900	504600	112400
468200	489200	506000	372800	201600
375100	283500	472800	197600	458000
346200	472600	377500	509200	56000
255300	356500	433100	419300	217700
522300	207000	274800	412600	192300
213100	411900	296600	388500	274400
434100	327800	365100	245200	176300
375600	229100	322600	425800	311100
407300	356100	237700	407800	260400
9611800	7822900	8564600	8209300	5603800


CORRECT DELETE OL EXT NET (LEFT) FCT (ENT)

TOTAL

INPUT DATA/EXPRESSION 100 0 R25C16

BOOK: 2

First, move the cell cursor to row 2, column 16.

▶ 

9611800	7822900	8564600	8209300	5603800	
---------	---------	---------	---------	---------	--

CURSOR LOCK

INPUT CELL CURSOR GOTO ADDRESS(RxCy) 100 0 R25C16

BOOK: 2

Be sure  is off.

▶ R2C16

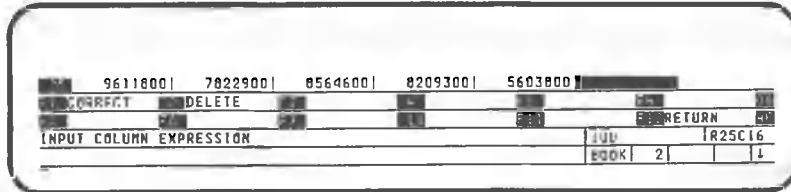
Now, specify the following to calculate totals just as you did for row 2, columns 4 ~ 15.

`@SUM(R2C4..15)`

You may be wondering what would be required if there were 50 or 100 rows. Although it would be possible to perform the calculations by entering the expression for each row, an overwhelming amount of work would be entailed.

When the same type of calculation will be performed for all rows, you can use what is called a column expression. Let's try using a column expression.

▶ `F3`



▶ `@SUM(C4..15)`

The row specification is omitted with column expressions.

Now move the cell cursor to row 1, column 16.

▶ `F16`

▶ `R1C16`

R/C	AUG.	SEP.	OCT.	NOV.	DEC.	TOTAL
	474600	236500	221100	398200	163100	4541500
	536100	468300	432500	94700	297000	4120000
	498200	287700	332400	295500	334900	4565400
	319200	463700	529300	406300	259200	3909100
	506400	299800	406200	462500	261600	3725500
	454600	305200	377800	397200	296500	4025800
	354200	435300	411900	299000	264600	3783100
	290000	264400	580600	308900	395200	4024000
	563200	379600	407500	245100	143700	4124700
	411200	298300	364800	233100	297000	3414500
	502300	346200	298900	440900	297000	4379900
	591200	483400	302700	332900	90800	4196300
	329000	264600	290800	411600	243000	3787720
	384400	156200	321900	504600	112400	3541600
	468200	489200	506000	372800	201600	3863400
	375100	283500	472800	197600	458000	4017900
	346200	472600	377500	509200	56000	3784500
	255300	356500	433100	419300	217700	3517900
	522300	207000	274800	412600	192300	3416800
CORRECT	DELETE					RETURN
INPUT COLUMN EXPRESSION					100	RIC16
RSUM(C4..15)					BOOK 2	↓

As you can see, the column expression is displayed on the bottom line of the screen, but "Total" is still displayed at the cell cursor position. If a cell contains character data, column expression results are not displayed.

This completes the procedures for obtaining row totals.

▶ F12

▶ F12



1.4.4 General calculations

We have seen that CANOBRAIN's built-in functions make it easy to obtain results for fixed-format calculations, like totals. This section explains procedures for performing more complex calculations that cannot be handled by these functions. Here's an example.

$$\frac{\text{Dec. sales}}{\text{Total sales for Jan.-Dec.}} \times 100$$

First, insert a new column, column 17, with a width of 6 digits. Our explanation starts with the following screen.

R/C	12	13	14	15	16	17
	AUG.	SEP.	OCT.	NOV.	DEC.	TOTAL
1	474600	236500	221100	398200	163100	4541500
2	536100	468300	432500	94700	297000	4120000
3	498200	287700	332400	295500	334900	4565400
4	319200	463700	529300	406300	259200	3909100
5	506400	299800	406200	462500	261600	3725500
6	454600	305200	377800	397200	296500	4025800
7	354200	435300	411900	299000	264600	3783100
8	290000	264400	580600	308900	395200	4024000
9	563200	379600	407500	245100	143700	4124700
10	411200	298300	364800	233100	297000	3414500
11	502300	346200	298900	440900	297000	4379900
12	591200	483400	382700	332900	90800	4196300
13	329000	264600	290600	411600	243000	3787720
14	384400	156200	321900	504600	112400	3541600
15	468200	489200	506000	372800	201600	3863400
16	375100	283500	472800	197600	458000	4017900
17	346200	472600	377500	509200	56000	3784500
18	255300	756500	433100	419300	217700	3517900
19	522300	207000	274800	412600	192300	3416800

INPUT INPUT PAT. DATA GEN. DUPLICATE FORMATING REPR. OP
 PRINTOUT FILE READ ROLL TABLE DEF. MONITOR
 SELECT FUNCTION(F1-F12,COPY,MOVE,DELETE,INSERT) DATA PROC. RIC17
 BOOK 2

Assign the title "Ratio" to this column.

►

20	522300	207000	274800	412600	192300	3416800	
<input type="checkbox"/>	<input type="checkbox"/> CORRECT	<input type="checkbox"/> DELETE	<input type="checkbox"/> COL. EXP.	<input type="checkbox"/>	<input type="checkbox"/> RET. (SET)	<input type="checkbox"/> RET. (CNT)	<input type="checkbox"/> DIS
<input type="checkbox"/>	<input type="checkbox"/> TOTAL	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> RETURN
INPUT DATA/EXPRESSION						060	0 RIC17
						BOOK	2

►

Note: Make sure that is on before pressing .

AVG.	SMP.	DET.	IMP.	SEC.	TOTAL	RATIO
474600	236500	221100	398200	163100	4541500	
536100	468300	432500	94700	297000	4120000	
498200	287700	332400	295500	334900	4565400	
319200	463700	529300	406300	259200	3909100	
506400	299800	406200	462500	261600	3725500	
454600	305200	377800	397200	296500	4025800	
354200	435300	411900	299000	264600	3783100	
290000	264400	580600	308900	395200	4024000	
563200	379600	407500	245100	143700	4124700	
411200	298300	364800	233100	297000	3414500	
502300	346200	298900	440900	297000	4379900	
591200	483400	302700	332900	90800	4196300	
329000	264600	290800	411600	243000	3787720	
384400	156200	321900	504600	112400	3541600	
468200	469200	506000	372800	201600	3863400	
375100	283500	472800	197600	458000	4017900	
346200	472600	377500	509200	56000	3784500	
255300	356500	433100	419300	217700	3517900	
522300	207000	274800	412600	192300	3416800	

CORRECT DELETE COL. EXP. RET. (SET) RET. (CNT)
 TOTAL P2E17
 INPUT DATA/EXPRESSION 06D 0 P2E17
 BOOK | 2 | 1

(1) Now let's calculate the "Ratio" for row 2.

▶ **+R2C15/R2C16*100**

Pressing "+" at the beginning of this sequence specifies that an expression follows. The slash (/) is the operator for division and the asterisk (*) is the operator for multiplication.

You can combine cell addresses and arithmetic operators in arithmetic expressions. The following symbols can be used as arithmetic operators:

- + : Addition
- : Subtraction
- * : Multiplication
- / : Division
- = : Substitution
- ^ : Exponentiation
- () : Determination of calculation sequence
- [] : Results from other cells

Now make sure that you have obtained the following result.

R#	AUG.	SEP.	OCT.	NOV.	DEC.	T O T A L	RATIO
1	474600	236500	221100	398200	163100	4541500	4E+00
2	536100	468300	432500	94700	297000	4120000	
3	498200	287700	332400	295500	334900	4565400	
4	319200	463700	529300	406300	259200	3989100	
5	506400	299800	406200	462500	261600	3725500	
6	454800	305200	377800	397200	296500	4025800	
7	354200	435300	411900	299000	264600	3783100	
8	290000	264400	580600	308900	395200	4024000	
9	563200	379600	407500	245100	143700	4124700	
10	411200	298300	364800	233100	297000	3414500	
11	502300	346200	298900	440900	297000	4379900	
12	591200	483400	302700	332900	90800	4196300	
13	329000	264600	290800	411600	243000	3787720	
14	384400	156200	321900	504600	112400	3541600	
15	468200	489200	506000	372800	201600	3863400	
16	375100	283500	472800	197600	458000	4017900	
17	346200	472600	377500	509200	56000	3784500	
18	255300	356500	433100	419300	217700	3517900	
19	522300	207000	274800	412600	192300	3416000	

CORRECT DELETE COL. EXP. RET. (SET) RET. (CNT) RETURN
 INPUT DATA/EXPRESSION 06D 0 R2C17
 BOOK 2 1

"4E+00" should be displayed. This indicates that the result of division performed by the expression is not an even number and that the result cannot be displayed with 6 digits. This is called the E-type display format and indicates a result of 4.0×10^0 . Internally, the result of the calculation performed by CANOBRAIN is 3.5913244522734.

- (2) Since this display format is not suitable for our table, let's try a different approach. First, delete the data and expression.



20	522300	207000	274800	412600	192300	3416000		
<input type="checkbox"/>	<input type="checkbox"/> CORRECT	<input type="checkbox"/> DELETE	<input type="checkbox"/> COL. EXP.	<input type="checkbox"/>	<input type="checkbox"/> RET. (SET)	<input type="checkbox"/> RET. (CNT)	<input type="checkbox"/> 06D	
<input type="checkbox"/>	<input type="checkbox"/> TOTAL	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> RETURN	<input type="checkbox"/> 00	
<input type="checkbox"/>	<input type="checkbox"/> INPUT DATA/EXPRESSION					<input type="checkbox"/> 06D	0	<input type="checkbox"/> R2C17
<input type="checkbox"/>	<input type="checkbox"/> *R2C15/R2C16*J00					<input type="checkbox"/> BOOK	2	<input type="checkbox"/> 1



<input type="checkbox"/>	522300	207000	274800	412600	192300	3416000		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> 06D	
<input type="checkbox"/>	<input type="checkbox"/> ADDRESS?(ENTER=CURSOR ADDRESS],[INPUT ADDRESS(RxCy))							
<input type="checkbox"/>						<input type="checkbox"/> BOOK	2	<input type="checkbox"/> 1



<input type="checkbox"/>	522300	207000	274800	412600	192300	3416000		
<input type="checkbox"/>	<input type="checkbox"/> DATA	<input type="checkbox"/> EXPRESSION	<input type="checkbox"/> BOTH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> 06D	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> 00	
<input type="checkbox"/>	<input type="checkbox"/> SELECT FUNCTION					<input type="checkbox"/> 06D	0	<input type="checkbox"/> R2C17
<input type="checkbox"/>						<input type="checkbox"/> BOOK	2	<input type="checkbox"/> 1



50	522300	207000	274800	412600	192300	3416800	
F1	YES	F2	NO	F3		F4	OK
F7		F8		F9		F10	
R2C17	DELETE OK ?					060	0 R2C17
					BOOK	2	T

▶ **F1**

R/C	AUG.	SEP.	OCT.	NOV.	DEC.	T O T A L	RATIO
0	474600	236500	221100	398200	163100	4541500	
1	536100	468300	432500	94700	297000	4120000	
2	498200	287700	332400	295500	334900	4565400	
3	319200	463700	529300	406300	259200	3909100	
4	506400	299800	406200	462500	261600	3725500	
5	454600	305200	377800	397200	296500	4025800	
6	354200	435300	411900	299000	264600	3783100	
7	290000	264400	580600	308900	395200	4024000	
8	563200	379600	407500	245100	143700	4124700	
9	411200	298300	364800	233100	297000	3414500	
10	502300	346200	298900	440900	297000	4379900	
11	591200	483400	302700	332900	90800	4196300	
12	329000	264600	290800	411600	243000	3787720	
13	384400	156200	321900	504600	112400	3541600	
14	468200	489200	506000	372800	201600	3863400	
15	375100	283500	472800	197600	458000	4017900	
16	346200	472600	377500	509200	56000	3784500	
17	255300	356500	433100	419300	217700	3517900	
18	522300	207000	274800	412600	192300	3416800	

F1		F2		F3		F4	RETURN
F7		F8		F9		F10	
R2C17	ADDRESS? (ENTER=CURSOR ADDRESS, [INPUT ADDRESS(RxCy)])					060	0 R2C17
					BOOK	2	T

This deletes both the data and expression. To prevent data from being deleted accidentally, CANOBRAIN uses different operations for deleting data, expressions, and column expressions. A confirmation message is displayed whenever an attempt is made to delete data.

Now return to the data processing screen.

▶ **F12** **F12**

(3) Tables, columns, and cells each have certain characteristics called attributes. For example, only numbers can be entered in some columns, while only letter entry is permitted for certain cells. Let's change the attribute of the "Ratio" column so that "Ratio" is displayed as a decimal fraction.

Make sure that the screen looks like the one shown below.

NO	AGE	SEX	TOT.	HEV.	DL.	TOTAL	RATIO
0000	0000	0000	0000	0000	0000	000000	
0001	0000	0000	0000	0000	0000	000000	
0002	0000	0000	0000	0000	0000	000000	
0003	0000	0000	0000	0000	0000	000000	
0004	0000	0000	0000	0000	0000	000000	
0005	0000	0000	0000	0000	0000	000000	
0006	0000	0000	0000	0000	0000	000000	
0007	0000	0000	0000	0000	0000	000000	
0008	0000	0000	0000	0000	0000	000000	
0009	0000	0000	0000	0000	0000	000000	
0010	0000	0000	0000	0000	0000	000000	
0011	0000	0000	0000	0000	0000	000000	
0012	0000	0000	0000	0000	0000	000000	
0013	0000	0000	0000	0000	0000	000000	
0014	0000	0000	0000	0000	0000	000000	
0015	0000	0000	0000	0000	0000	000000	
0016	0000	0000	0000	0000	0000	000000	
0017	0000	0000	0000	0000	0000	000000	
0018	0000	0000	0000	0000	0000	000000	
0019	0000	0000	0000	0000	0000	000000	
0020	0000	0000	0000	0000	0000	000000	
0021	0000	0000	0000	0000	0000	000000	
0022	0000	0000	0000	0000	0000	000000	
0023	0000	0000	0000	0000	0000	000000	
0024	0000	0000	0000	0000	0000	000000	
0025	0000	0000	0000	0000	0000	000000	
0026	0000	0000	0000	0000	0000	000000	
0027	0000	0000	0000	0000	0000	000000	
0028	0000	0000	0000	0000	0000	000000	
0029	0000	0000	0000	0000	0000	000000	
0030	0000	0000	0000	0000	0000	000000	
0031	0000	0000	0000	0000	0000	000000	
0032	0000	0000	0000	0000	0000	000000	
0033	0000	0000	0000	0000	0000	000000	
0034	0000	0000	0000	0000	0000	000000	
0035	0000	0000	0000	0000	0000	000000	
0036	0000	0000	0000	0000	0000	000000	
0037	0000	0000	0000	0000	0000	000000	
0038	0000	0000	0000	0000	0000	000000	
0039	0000	0000	0000	0000	0000	000000	
0040	0000	0000	0000	0000	0000	000000	
0041	0000	0000	0000	0000	0000	000000	
0042	0000	0000	0000	0000	0000	000000	
0043	0000	0000	0000	0000	0000	000000	
0044	0000	0000	0000	0000	0000	000000	
0045	0000	0000	0000	0000	0000	000000	
0046	0000	0000	0000	0000	0000	000000	
0047	0000	0000	0000	0000	0000	000000	
0048	0000	0000	0000	0000	0000	000000	
0049	0000	0000	0000	0000	0000	000000	
0050	0000	0000	0000	0000	0000	000000	
0051	0000	0000	0000	0000	0000	000000	
0052	0000	0000	0000	0000	0000	000000	
0053	0000	0000	0000	0000	0000	000000	
0054	0000	0000	0000	0000	0000	000000	
0055	0000	0000	0000	0000	0000	000000	
0056	0000	0000	0000	0000	0000	000000	
0057	0000	0000	0000	0000	0000	000000	
0058	0000	0000	0000	0000	0000	000000	
0059	0000	0000	0000	0000	0000	000000	
0060	0000	0000	0000	0000	0000	000000	
0061	0000	0000	0000	0000	0000	000000	
0062	0000	0000	0000	0000	0000	000000	
0063	0000	0000	0000	0000	0000	000000	
0064	0000	0000	0000	0000	0000	000000	
0065	0000	0000	0000	0000	0000	000000	
0066	0000	0000	0000	0000	0000	000000	
0067	0000	0000	0000	0000	0000	000000	
0068	0000	0000	0000	0000	0000	000000	
0069	0000	0000	0000	0000	0000	000000	
0070	0000	0000	0000	0000	0000	000000	
0071	0000	0000	0000	0000	0000	000000	
0072	0000	0000	0000	0000	0000	000000	
0073	0000	0000	0000	0000	0000	000000	
0074	0000	0000	0000	0000	0000	000000	
0075	0000	0000	0000	0000	0000	000000	
0076	0000	0000	0000	0000	0000	000000	
0077	0000	0000	0000	0000	0000	000000	
0078	0000	0000	0000	0000	0000	000000	
0079	0000	0000	0000	0000	0000	000000	
0080	0000	0000	0000	0000	0000	000000	
0081	0000	0000	0000	0000	0000	000000	
0082	0000	0000	0000	0000	0000	000000	
0083	0000	0000	0000	0000	0000	000000	
0084	0000	0000	0000	0000	0000	000000	
0085	0000	0000	0000	0000	0000	000000	
0086	0000	0000	0000	0000	0000	000000	
0087	0000	0000	0000	0000	0000	000000	
0088	0000	0000	0000	0000	0000	000000	
0089	0000	0000	0000	0000	0000	000000	
0090	0000	0000	0000	0000	0000	000000	
0091	0000	0000	0000	0000	0000	000000	
0092	0000	0000	0000	0000	0000	000000	
0093	0000	0000	0000	0000	0000	000000	
0094	0000	0000	0000	0000	0000	000000	
0095	0000	0000	0000	0000	0000	000000	
0096	0000	0000	0000	0000	0000	000000	
0097	0000	0000	0000	0000	0000	000000	
0098	0000	0000	0000	0000	0000	000000	
0099	0000	0000	0000	0000	0000	000000	
0100	0000	0000	0000	0000	0000	000000	

INPUT PAT. DATA GEN. DUPLICATE FORMATING PREP. SORT
 PRINTOUT CD FILE READ ROLL TABLE DEF. MONITOR

SELECT FUNCTION(F1-F12, COPY, MOVE, DELETE, INSERT) DATA PROC. R2C17

BOOK 2

F5

522300	207000	274800	412600	192300	3416000
F1	F2	F3	F4	F5	F6
DATA	SHIFT	NUM.FOR	NUM.PUNCT	MODF	WIDTH
06D					
BOOK	2				

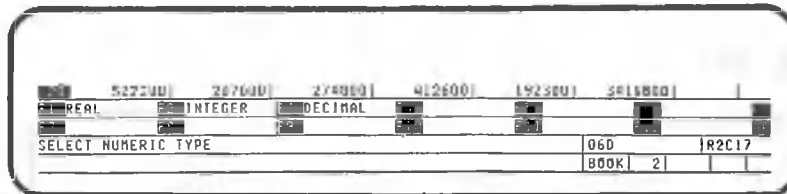
F2

522300	207000	274800	412600	192300	3416000
F1	F2	F3	F4	F5	F6
DATA	SHIFT	NUM.FOR	NUM.PUNCT	MODF	WIDTH
06D					
BOOK	2				

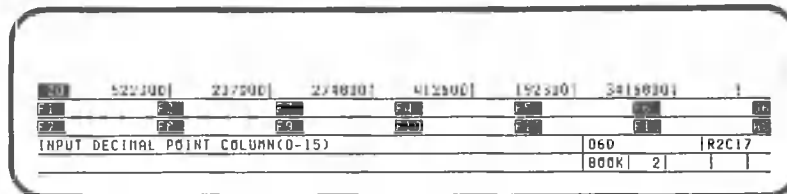
F3


522300	207000	274800	412600	192300	3416000
F1	F2	F3	F4	F5	F6
COLUMN NO.	(CENTER-CURSOR COLUMN)	(INPUT COLUMN NO.)			
06D					
BOOK	2				


↩

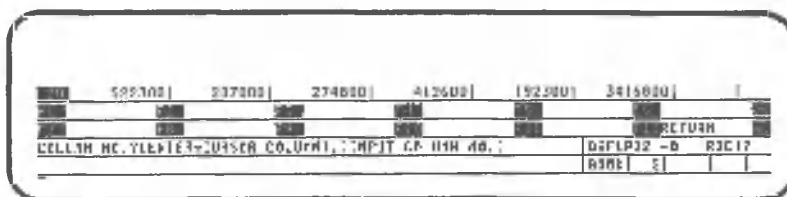


▶ **F3**



Make sure the  is off.

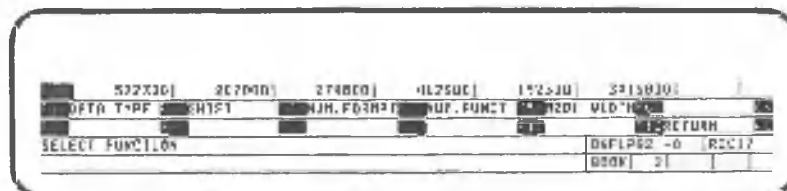
▶ **2** 



Take a close look at the second row from the bottom; you will see that the display has changed from "06D" to "06FLP02-0". This part of the display indicates the attribute of the cell at the cell cursor position when either input or formatting is selected. A change in this indicator means that the attribute has changed. See Volume V for an explanation of the attribute indicator.

Remember that changing the data type attribute of the cell deletes the current data in that cell.

▶ **F12**



▶ F12

20	512700	207000	274800	412600	192300	3416800
FORMAT =	GENERAL INV	INVT				OFFSHR
SELECT FORMAT					FORMATING	R2C17
					BOOK	2

▶ F12

--	--	--	--	--	--	--

--	--	--	--	--	--	--

||||| One point lesson: Types of format definitions |||||

The different types of format definitions which can be specified are shown in the table below.

Table	Column	Cell
Data type <ul style="list-style-type: none"> • Character • Numeric • Both 	Data type <ul style="list-style-type: none"> • Character • Numeric • Both • Table-dependent 	Data type <ul style="list-style-type: none"> • Character • Numeric • Column-dependent
Character shift <ul style="list-style-type: none"> • Left-justified • Right-justified 	Character shift <ul style="list-style-type: none"> • Left-justified • Right-justified 	Character shift <ul style="list-style-type: none"> • Left-justified • Right-justified
Numeric type <ul style="list-style-type: none"> • Real • Integer • Decimal 	Numeric type <ul style="list-style-type: none"> • Real • Integer • Decimal 	Numeric type <ul style="list-style-type: none"> • Real • Integer • Decimal
Numeric punctuation <ul style="list-style-type: none"> • Commas every 3 digits • Floating insertion character 0, \$, +, -, *, space • Rounding 	Numeric punctuation <ul style="list-style-type: none"> • Commas every 3 digits • Floating insertion character 0, \$, +, -, *, space • Rounding 	Numeric punctuation <ul style="list-style-type: none"> • Commas every 3 digits • Floating insertion character 0, \$, +, -, *, space • Rounding
Calculation <ul style="list-style-type: none"> • Automatic • Manual 	/	/
Order of calculation <ul style="list-style-type: none"> • Vertical • Horizontal 	/	/
/	Modify column width	/
/	/	Protect data

See Volume V for details on the use of these format definitions.



(4) Calculate "Ratio" using a column expression.

F1	F2	F3	F4	F5	F6	F7	F8
AUG.	SEP.	OCT.	NOV.	DEC.	T O T A L	RATIO	
474600	236500	221100	398200	163100	4541500		
536100	468300	432500	94700	297000	4120000		
498200	287700	332400	295500	334900	4565400		
319200	463700	529300	406300	259200	3909100		
506400	299800	406200	462500	261600	3725500		
454600	305200	377800	397200	296500	4025800		
354200	435300	411900	299000	264600	3783100		
290000	264400	580600	308900	395200	4024000		
563200	379600	407500	245100	143700	4124700		
411200	298300	364800	233100	297000	3414500		
502300	346200	298900	440900	297000	4379900		
591200	483400	302700	332900	90800	4196300		
329900	264600	290800	411600	243000	3787720		
384400	156200	321900	504600	112400	3541600		
468200	489200	506000	372800	201600	3863400		
375100	283500	472800	197600	458000	4017900		
346200	472600	377500	509200	56000	3784500		
255300	356500	433100	419300	217700	3517900		
522300	207000	274800	412600	192300	3416800		

INPUT PRINTOUT FILE DATA GEN. DUPLICATE ENGR. HL RETR./SORT
 CORRECT DELETE COL. EXP. RET.(SET) RET.(CNT) MONITOR
 SELECT FUNCTION(F1-F12,COPY,MOVE,DELETE,INSERT) DATA PROC. R2C17
 BOOK 21

F1

F1	F2	F3	F4	F5	F6	F7	F8
522300	207000	274800	412600	192300	3416800		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
INPUT DATA/EXPRESSION						06D	0 R2C17
						BOOK	21

F3

F1	F2	F3	F4	F5	F6	F7	F8
522300	207000	274800	412600	192300	3416800		
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
INPUT COLUMN EXPRESSION						06FLP02 -0	R2C17
						BOOK	21

+C15/C16*100

F1	F2	F3	F4	F5	F6	F7	F8
AUG.	SEP.	OCT.	NOV.	DEC.	T O T A L	RATIO	
474600	236500	221100	398200	163100	4541500	3.59	
536100	468300	432500	94700	297000	4120000	7.21	
498200	287700	332400	295500	334900	4565400		
319200	463700	529300	406300	259200	3909100	6.63	
506400	299800	406200	462500	261600	3725500	7.02	
454600	305200	377800	397200	296500	4025800	7.36	
354200	435300	411900	299000	264600	3783100	6.99	
290000	264400	580600	308900	395200	4024000	9.02	
563200	379600	407500	245100	143700	4124700	3.48	
411200	298300	364800	233100	297000	3414500	8.70	
502300	346200	298900	440900	297000	4379900	6.78	
591200	483400	302700	332900	90800	4196300	2.16	
329900	264600	290800	411600	243000	3787720	6.42	
384400	156200	321900	504600	112400	3541600	3.17	
468200	489200	506000	372800	201600	3863400	5.22	
375100	283500	472800	197600	458000	4017900	11.40	
346200	472600	377500	509200	56000	3784500	1.48	
255300	356500	433100	419300	217700	3517900	6.19	
522300	207000	274800	412600	192300	3416800	5.63	

CORRECT DELETE COL. EXP. RET.(SET) RET.(CNT) MONITOR
 INPUT COLUMN EXPRESSION 06FLP02 -0 R4C17
 +C15/C16*100 BOOK 21

You should have obtained the calculation results shown in the previous figure. Since two decimal places were specified for the calculation results, the decimal was automatically rounded off to the nearest hundredth. You can also specify one of three rounding modes (round off, round up, round down). Now return to the input screen.

▶ **F12**

- (5) When an expression is specified as shown above, the results of that expression are automatically recalculated when the data changes. This is called recalculation. Now let's actually try using the recalculation function. Change the value shown in row 18, column 15 from "56000" to "156000".

▶ **F9**

▶ **F10**

▶ **R18C15**

R/C	1	2	3	4	5	6	7
	255300	356500	433100	419300	217700	3517900	6.19
	522300	207000	274800	412600	192300	3416000	5.63
	213100	411900	296600	388500	274400	3603300	7.62
	434100	327800	365100	245200	176300	3811300	4.63
	375600	229100	322600	425800	311100	3454700	9.01
	407300	356100	237700	407800	260400	3587700	7.26
	9611800	7822900	8564600	8209300	5603800	89196620	6.28

SEARCH	DELETE	COL. EXP.	SET	21. FSET	REF. LOCK
DATA	EDIT	EDIT	EDIT	EDIT	RETURN
INPUT DATA/EXPRESSION				100	3
55000				MODE	21



▶ 1 5 6 0 0 0 ◀

1	346200	472600	377500	509200	156000	3884500	4.02
2	255300	356500	433100	419300	192300	3517900	6.19
3	522300	207000	274800	412600	192300	3416800	5.63
4	213100	411900	296600	388500	274400	3603300	7.62
5	434100	327800	365100	245200	176300	3811300	4.63
6	375600	229100	322600	425800	311100	3454700	9.01
7	407300	356100	237700	407800	260400	3587700	7.26
8	9611800	7822900	8564600	8209300	5703800	89296620	6.39

CORRECT	DELETE	COL. EXP.	RET. (SET)	RET. (CNT)
TOTAL			RETURN	
INPUT DATA/EXPRESSION			100	0 R19C15
217700			BOOK 2	1

As you can see, the figures in the corresponding row total, column total, and ratio cells changed to reflect the new value.

Now return to the data processing screen.

▶ F12

▶



1.5 Data Sorting Procedures

This section explains the procedure for sorting table data in either ascending or descending order.

Using the data processing screen, move the cell cursor to row 1, column 17 so that the screen is like the one shown below.

Now let's sort rows 2 to 24 so that the totals in column 16 are arranged in descending order. If there are any branches which have the same total, we will want to sort them in descending order using the figures in the "Ratio" column.

R/C	AUG.	SEP.	OCT.	NOV.	DEC.	T O T A L	
1	474600	236500	221100	398200	163100	4541500	3.59
2	536100	468300	432500	94700	297000	4120000	7.21
3	498200	287700	332400	295500	334900	4565400	7.34
4	319200	463700	529300	406300	259200	3909100	6.63
5	506400	299800	406200	462500	261600	3725500	7.02
6	454600	305200	377800	397200	296500	4025800	7.36
7	354200	435300	411900	299000	264600	3783100	6.99
8	290000	264400	580600	308900	395200	4024000	9.82
9	563200	379600	407500	245100	143700	4124700	3.48
10	411200	298300	364800	233100	297000	3414500	8.70
11	502300	346200	298900	440900	297000	4379900	6.78
12	591200	483400	302700	332900	90800	4196300	2.16
13	329000	264600	290800	411600	243000	3787720	6.42
14	384400	156200	321900	504600	112400	3541600	3.17
15	468200	489200	506000	372800	201600	3863400	5.22
16	375100	283500	472800	197600	458000	4017900	11.40
17	346200	472600	377500	509200	156000	3884500	4.02
18	255300	356500	433100	419300	217700	3517900	6.19
19	522300	207000	274800	412600	192300	3416800	5.63

MPIT REPORT PRT PRINT (EH) DUPLICATE FORMATING RETR./SORT
 PRINTOUT BCD FILE READ ROLL FUL = DEL. 200 SPECIAL D*
 SELECT FUNCTION (F1-F12, COPY, MOVE, DELETE, INSERT) DATA PROC. RIC17
 BOOK 2

▶ F6

522300	207000	274800	412600	192300	3416800	5.63
RETRIEVAL	SORT					02
					RETURN	00
SELECT FUNCTION					RETR./SORT	RIC17
					BOOK	2

▶ F2

522300	207000	274800	412600	192300	3416800	5.63
SORT	REGISTER	DELETE	EXECUTE		RETURN	
SELECT FUNCTION					SORT	RIC17
					BOOK	2

▶ F1

522300	207000	274800	412600	192300	3416800	5.63
					RETURN	
#1 SORT KEY COLUMN?(ENTER=END),(INPUT KEY COLUMN NO.)					SORT	RIC17
					BOOK	2

Here CANOBRAIN asks which column the sorting will be based on. Specify column 16 (the "Total" column) as follows.

▶ 16 ↵

522300	207000	274800	412600	192300	3416800	5.63
ASCENDING						
SELECT ASCENDING,DESCENDING					SORT	RIC17
					BOOK	2

Now CANOBRAIN asks whether the rows will be sorted in ascending order or descending order. Specify descending order as follows:

▶ F2

522300	207000	274800	412600	192300	3416800	5.63
					RETURN	
#2 SORT KEY COLUMN?(ENTER=END),(INPUT KEY COLUMN NO.)					SORT	RIC17
					BOOK	3

Now CANOBRAIN asks which column the sorting will be based on if two figures are the same. Specify column 17 (the "Ratio" column) as follows:

▶ 17 ↵

522300	207000	274800	412600	192300	3416800	5.63
ASCENDING	DESCENDING					
SELECT ASCENDING, DESCENDING					SORT	RIC17
					BOOK	2

Specify descending order sorting for this column, too.

▶ F2

522300	207000	274800	412600	192300	3416800	5.63
					RETURN	
#3	SORT KEY COLUMN? (ENTER=END), (INPUT KEY COLUMN NO.)				SORT	RIC17
					BOOK	2

A total of five sorting columns can be specified. Here we will specify only two.

▶ ↵

522300	207000	274800	412600	192300	3416800	5.63
ALL						
INPUT SORT START, END ROW NO.					RETURN	
					SORT	RIC17
					BOOK	2

Here CANOBRAIN asks for the range of rows that will be sorted. Since rows 1 and 25 will be left as is, specify the following:

▶ 2, 24 ↵

R/C	AUG.	SEP.	OCT.	NOV.	DEC.	TOTAL	
1	498200	287700	332400	295500	334900	4565400	7.34
2	474600	236500	221100	398200	163100	4541500	3.59
3	502300	346200	298900	440900	297800	4379900	6.78
4	591200	483400	302700	332900	90800	4196300	2.16
5	563200	379600	407500	245100	143700	4124700	3.48
6	536100	468300	432500	94700	297000	4120000	7.21
7	454600	305200	377800	397200	296500	4025800	7.36
8	290000	264400	580600	308900	395200	4024000	9.02
9	375100	283500	472800	197600	458000	4012900	11.40
10	319200	463700	529300	406300	259200	3909100	6.63
11	346200	472600	377500	509200	156000	3884500	4.02
12	468200	489200	506000	372800	201600	3863400	5.22
13	434100	327800	365100	245200	176300	3811300	4.63
14	329000	264600	290800	411600	243000	3787720	6.42
15	354200	435300	411900	299000	264600	3783100	6.99
16	506400	299800	406200	462500	261600	3725500	7.02
17	213100	411900	296600	388500	274400	3603300	7.62
18	407300	356100	237700	407800	260400	3587700	7.26
19	384400	156200	321900	504600	112400	3541600	3.17

INPUT SORT START, END ROW NO.					RETURN	
					SORT	RIC17
					BOOK	2

This completes sorting. Now return for a moment to the data processing screen.

▶ F12

|||||One point lesson: When sorting is not performed|||||

If sorting is not performed when specified, check for one of the following problems:

- Both numeric and character data are included in the same column.
- If a cell expression is in the column, CANOBRAIN informs you of its presence and then asks whether or not the expression may be deleted. If you answer affirmatively, CANOBRAIN deletes the expression and sorts the data.
- If the column has an empty cell (containing neither data nor a column expression), that cell is placed at the end of the table.

|||||



```

100-INC | 156200 | 321900 | 504600 | 112400 | 3541600 | 3.17 |
-----|-----|-----|-----|-----|-----|-----|
RETURN
01 SORT KEY COLUMN?ENTER=END).(INPUT KEY COLUMN NO.) | SORT | RIC17
BOOK | 2 | |

```

▶ F12

```

384400 | 156200 | 321900 | 504600 | 112400 | 3541600 | 3.17 |
-----|-----|-----|-----|-----|-----|-----|
RETRIEVAL SORT | | | | | | |
SELECT FUNCTION | RETR./SORT | RIC17
BOOK | 2 | |

```

▶ F12

```

384400 | 156200 | 321900 | 504600 | 112400 | 3541600 | 3.17 |
-----|-----|-----|-----|-----|-----|-----|
INPUT INPUT PAT. DATA GEN. DUPLICATE FORMATING RETR./SORT
PRINTOUT FILE READ ROLL TABLE DEF. MONITOR
SELECT FUNCTION(F1-F12,COPY,MOVE,DELETE,INSERT) | DATA PROC. | RIC17
BOOK | 2 | |

```

Now let's take a look at the first column.

▶ [F1] [F2] [F3]

CODE	BRANCH	JAN.	FEB.	MAR.	APR.
3 0103	LONDON	547200	186400	467200	332900
1 0101	NEW YORK	446400	344500	509800	322800
11 0111	CALCUTTA	164700	213500	155600	589000
12 0112	MEXICO CITY	201600	354000	466200	245900
9 0109	LOS ANGELES	280800	426000	271500	234500
2 0102	TOKYO	264600	305000	98000	316200
6 0106	PARIS	201600	350900	445500	124300
8 0120	FRANKFURT	201600	396500	359000	202200
16 0116	PHILADELPHIA	345600	215800	342100	282200
4 0104	MOSCOW	130200	177900	291500	177700
17 0117	PEKING	264600	138900	190800	276800
15 0115	RIO DE JANEIRO	261600	228400	198000	147800
21 0121	LENINGRAD	351100	242200	335300	276100
13 0113	DETROIT	264600	284500	197800	468600
7 0107	OSAKA	164200	206500	439900	198700
5 0105	SHANGHAI	264600	115000	138500	362900
21 0108	BUENOS AIRES	236000	209400	372100	258300
23 0123	SAN FRANCISCO	209800	331800	305300	249700
14 0114	BOMBAY	334900	371000	242100	163400

As you can see, the numbers in this column are now in complete disarray. This is because sorting was performed in row units. Renumber the rows using the data generation function.

▶ F3

1410114	BOMBAY	334900	371000	242100	163400
INPUT ADDRESS(RxCy)				DATA GEN.	RIC1
				BOOK	2

► R|2|.2|4|C|1|↵

1410114	BOMBAY	334900	371000	242100	163400
INPUT INITIAL VALUE				DATA GEN.	RIC1
				BOOK	2

► 1|↵

1410114	BOMBAY	334900	371000	242100	163400
INPUT INCREMENT OR DECREMENT				DATA GEN.	RIC1
				BOOK	2

► 1|↵

R/C	CODE	B R A N C H	JAN.	FEB.	MAR.	APR.
1	0103	LONDON	547200	186400	467200	332900
2	0101	NEW YORK	446400	344500	509800	322800
3	0111	CALCUTTA	164700	213500	155600	589000
4	0112	MEXICO CITY	201600	354000	466200	245000
5	0109	LOS ANGELES	280800	426000	271500	234500
6	0102	TOKYO	264600	305000	98000	316200
7	0106	PARIS	201600	350900	445500	124300
8	0120	FRANKFURT	201600	396500	359000	202200
9	0116	PHILADELPHIA	345600	215800	342100	282200
10	0104	MOSCOW	130200	177900	291500	177700
11	0117	PEKING	264600	138900	190800	276800
12	0115	RIO DE JANEIRO	261600	220400	198000	147800
13	0121	LENINGRAD	351100	242200	335300	276100
14	0113	DETROIT	264600	284500	197800	468600
15	0107	OSAKA	164200	206500	439900	198700
16	0105	SHANGHAI	264600	115000	138500	362900
17	0108	BUENOS AIRES	236000	209400	372100	258300
18	0123	SAN FRANCISCO	209800	331800	305300	249700
19	0114	BOMBAY	334900	371000	242100	163400

INPUT ADDRESS(RxCy)				DATA GEN.	RIC1
				BOOK	2

This completes the procedures for data sorting. Now return to the data processing screen.

► F12

1.6 Data Retrieval Procedures

This section explains procedures for retrieving and printing selected data items from those in the table. Our explanation begins with the screen shown below.

LINE	BRANCH	JAN.	FEB.	MAR.	APR.
1	0103 LONDON	547200	186400	467200	332900
2	0101 NEW YORK	446400	344500	509800	322800
3	0111 CALCUTTA	164700	213500	155600	589000
4	0112 MEXICO CITY	201600	354000	466200	245000
5	0109 LOS ANGELES	280800	426000	271500	234500
6	0102 TOKYO	264600	305000	98000	316200
7	0106 PARIS	201600	350900	445500	124300
8	0120 FRANKFURT	201600	396500	359000	202200
9	0116 PHILADELPHIA	345600	215800	342100	282200
10	0104 MOSCOW	130200	177900	291500	177700
11	0117 PEKING	264600	138900	190800	276800
12	0115 RIO DE JANEIRO	261600	228400	198000	147800
13	0121 Leningrad	351100	242200	335300	276100
14	0113 DETROIT	264600	284500	197800	468600
15	0107 OSAKA	164200	206500	439900	198700
16	0105 SHANGHAI	264600	115000	136500	362900
17	0108 BUENOS AIRES	236000	209400	372100	258300
18	0123 SAN FRANCISCO	209800	331800	305300	249700
19	0114 BOMBAY	334900	371000	242100	163400

PRINT INPUT PAT. SORT DEL. REPUBLICITE FORMATING SORT SORT
 PRINT FILE READ ROLL TABLE DEF.
 SELECT FUNCTION(F1-F12,COPY,MOVE,DELETE,INSERT) DATA PROC. [RIC]

1.6.1 Retrieving data

First we will explain the procedures for retrieving data items which satisfy specific conditions.

F6

19|0114|BOMBAY	|	334900|	371000|	242100|	163400|
RETRIEVAL	RETURN				
SELECT FUNCTION				RETR./SORT	[RIC]
				BOOK	2

F1

19|0114|BOMBAY	|	334900|	371000|	242100|	163400|
RETRIEVAL	DELETE	EXCHG			
SELECT FUNCTION				RETRIEVA.	[RIC]
				BOOK	2

F1

19|0114|BOMBAY	|	334900|	371000|	242100|	163400|
RETRIEVAL	DELETE	EXCHG			
INPUT RETRIVAL EXPRESSION(COLUMN NO., +=AND, +=OR, (,))				RETRIEVAL	[RIC]
				BOOK	2

Here CANOBRAIN asks from which column(s) the data will be retrieved. For our example, we will specify those data items for which sales during the months of January and December were less than or equal to 100,000. So specify columns 4 to 15.

▶ 4+5+6+7+8+9+10+11+12+13+14+15↵

The plus (+) sign in the sequence above means "OR". It tells CANOBRAIN to retrieve the entire row if the data in even one of the specified columns satisfies the retrieval conditions.

Retrieval conditions can also be specified using an asterisk (*) which means "AND". If "*" is specified instead of "+", CANOBRAIN retrieves only those rows in which table data in all columns satisfies the specified conditions. "+" and "*" can be specified in combinations using parentheses.

19|01|14|BOMBAY	334900|	371000|	242100|	163400|
CHARACTER	NUMERIC			
SELECT DATA TYPE				
5+6+7+8+9+10+11+12+13+14+15			RETRIEVAL	RICI
			BOOK	2|

CANOBRAIN will ask whether or not the data in column 4 is character or numeric data. Since column 4 contains numeric data, specify the following:

▶ F2

19|01|14|BOMBAY	334900|	371000|	242100|	163400|
GT(=)	GE(=)	LE(=)	LT(=)	NE(=)
LT(=)	GE(=)	LE(=)	LT(=)	NE(=)
SELECT RETRIEVAL CONDITION				
5+6+7+8+9+10+11+12+13+14+15			RETRIEVAL	RICI
			BOOK	2|

Next, specify the condition which will be used to determine which data items will be retrieved. The meanings of the symbols displayed here are as follows:

- GT: Greater than (data>a)
- GE: Greater than or equal to (data≥a)
- LE: Less than or equal to (data≤a)
- LT: Less than (data<a)
- NE: Not equal (data≠a)
- EQ: Equal (data=a)
- BT: Between (b≤data≤c)
- NB: Not between (data<b, data>c)

Note: a, b, and c indicate specific numbers or letters.

Enter the following to specify the retrieval of data items for months with sales less than or equal to 100,000.

▶ **F3**

19|0110|BOMBAY	334900	371000	242100	163400
CHARACTER	NUMERIC			
INPUT UNIT VALUE	4+5+6+7+8+9+10+11+12+13+14+15			RETRIEVAL (R)C
			BOOK	2

▶ 1000000

19|0114|BOMBAY	334900	371000	242100	163400
CHARACTER	NUMERIC			
SELECT DATA TYPE	4+5+6+7+8+9+10+11+12+13+14+15			RETRIEVAL (R)C
			BOOK	2

Repeat this sequence through column 15.

▶ **F2** **F3** 1000000 ... (11 times)

19|0114|BOMBAY	334900	371000	242100	163400
ALL				RETURN
RETRIEVAL RANGE?	(CENTER=NEXT, LAST), (INPUT START, END ROW NO)			RETRIEVAL (R)C
			BOOK	2

Here CANOBRAIN asks for the range of rows which will be searched for the data items that will be retrieved. Enter the following to specify all rows except rows 1 and 25.

▶ 2,24

NO	NAME CITY	200000	200000	200000	200000
0109	LOS ANGELES	280800	426000	271500	234500
0102	TOKYO	264600	305000	98000	316200
7 0106	PARIS	201600	350900	445500	124300
0120	FRANKFURT	201600	396500	359000	202200
9 0116	PHILADELPHIA	345600	215800	342100	282200
0104	MOSCOW	130200	177900	291500	177700
0117	PEKING	264600	138900	190800	276800
0115	RIO DE JANEIRO	261600	228400	198000	147800
0121	LENINGRAD	351100	242200	335300	276100
0113	DETROIT	264600	284500	197800	468600
15 0107	OSAKA	164200	206500	439900	198700
0105	SHANGHAI	264600	115000	138500	362900
17 0108	BUENOS AIRES	236000	209400	372100	258300
18 0123	SAN FRANCISCO	209800	331800	305300	249700
0114	BOMBAY	334900	371000	242100	163400
0118	HONG KONG	163100	110100	246700	185800
0122	CAIRO	178000	213200	246200	299000
22 0119	AMSTERDAM	297000	326500	344400	153000
0110	CHICAGO	243000	337500	128000	298000

RETRIEVAL RANGE (ENTER=NEXT,LA TJ, (INPUT START,END,ROW NO) RETRIEVAL [RSC:

 BOOK 2

You should find that row 5 is displayed as the top row of the table. After retrieval, CANOBRAIN always displays the item retrieved on the top line of the screen and positions the cell cursor in the far left column of that particular row. Although none of the sales figures visible with the cell cursor in this position are less than or equal to 100,000, moving the cell cursor right to column 15 will show that the row does include such an item (90800).

Now perform the following key operation to see whether there are any other data items which satisfy the specified condition.



536100	468300	432500	94700	297000	4120000	
210200	454600	305200	377800	392200	296500	4025800
456600	290000	264400	580600	308900	395200	4024000
571000	375100	283500	472800	197600	458000	4017900
324300	319200	463700	529100	406300	259200	3909100
339300	346200	472600	377500	509200	156000	3884500
209800	468200	489200	506000	372800	201600	3863400
429000	434100	327800	365100	245200	176300	3811300
389500	329000	264600	290800	411600	243000	3787720
300300	354200	435300	411900	299000	264600	3783100
467100	506400	299800	406200	462500	261600	3725500
500300	213100	411900	296600	388500	274400	3603300
223900	407300	356100	237700	407800	260400	3587700
342900	384400	156200	321900	504600	112400	3541600
497200	255300	356500	433100	419300	217700	3517900
102400	375600	229100	322600	425800	311100	3454700
199000	522300	207000	274800	412600	192300	3416800
256600	411200	298300	364800	233100	297000	3414500
8292300	9611800	7822900	8564600	8209300	5703800	89296620

RETRIEVAL RANGE? (ENTER=NEXT, LAST), (INPUT START, END, ROW NO) RETRIEVAL [RSC:10

 BOOK 2

This time row 7, whose 14th item meets the retrieval conditions, is displayed at the top of the table. Try moving the cell cursor to the left; you will see that the data in column 6 also meets the specified condition. Actually, row 7 contains two data values which satisfy the specified condition that at least one data item be less than or equal to 100,000.



439900	198700	393400	315100	300300	354200	435300
138500	362900	194200	246700	467100	506400	299800
372100	258300	31500	411200	500300	213100	411900
305300	249700	307500	290400	223900	407300	356100
242100	163400	354100	253700	342900	384400	156200
246700	185800	334200	298900	497200	255300	356500
246200	299000	342500	409200	102400	375600	229100
344400	153000	162400	325500	199000	522300	207000
128000	298000	217600	329400	256600	411200	298300
6791500	6164900	8149400	7883820	8292300	9611800	7822900

RETRIEVAL RANGE?(ENTER=NEXT, LAST) [INPUT START, END ROW NO] RETRIEVAL | R15C6
BOOK | 2 |

Now row 15 is displayed at the top of the table. The data value satisfying the condition is in column 9.

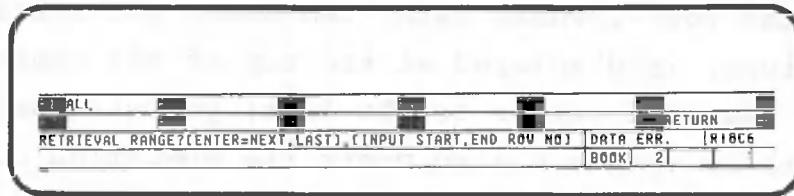


305300	249700	307500	290400	223900	407300	356100
242100	163400	354100	253700	342900	384400	156200
246700	185800	334200	298900	497200	255300	356500
246200	299000	342500	409200	102400	375600	229100
344400	153000	162400	325500	199000	522300	207000
128000	298000	217600	329400	256600	411200	298300
6791500	6164900	8149400	7883820	8292300	9611800	7822900

RETRIEVAL RANGE?(ENTER=NEXT, LAST) [INPUT START, END ROW NO] RETRIEVAL | R18C6
BOOK | 2 |

This time row 18 is retrieved. Here, the data value in column 8 satisfies the condition.





The phrase "DATA ERR.", displayed on the second line from the bottom, indicates that there is no more data which satisfies the specified condition.

When there is more than one item which satisfies a specified retrieval condition, CANOBRAIN retrieves the first item found, displays it at the top of the table, and pauses to allow range specification entry. If is pressed at this time, CANOBRAIN resumes the search starting on the next line. If a range specification is entered, CANOBRAIN searches between the two lines specified.

In this example, the following five items were found to satisfy the retrieval conditions.

```

Row 5, column 15: 90800
Row 7, column 6: 98000 Row 7, column 14: 94700
Row 15, column 9: 96420
Row 18, column 8: 31500

```

▶ F12 ... (3 times)

|||||One point lesson: When retrieval is not performed |||

Check for the following problem if retrieval is not performed when specified:

- Do all cells in the column(s) for which the retrieval condition is specified have the same attribute?

This can be checked by returning to the input screen and moving the cell cursor to each cell in the column. As you move the cell cursor, check the attribute display column on the second line from the bottom of the screen.



1.6.2 Correcting Retrieved Data

The following explains how to input or correct data during retrieval. The explanation begins with the following screen:

1	2	3	4	5	6	7	8
105300	258300	31500	411200	500300	213100	411900	
242100	249700	307500	290400	223900	407300	356100	
246700	163400	354100	253700	342900	384400	156200	
246200	185800	334200	298900	497200	255300	356500	
344400	299000	342500	409200	102400	375600	229100	
128000	153000	162400	325500	199000	522300	207000	
128000	298000	217600	329400	256600	411200	298300	
6791500	6164900	8149400	7883820	8292300	9611800	7822900	

INPUT	INPUT PAT.	DATA GEN.	DUPLICATE	FORMATING	RETR./SORT
PRINTOUT	CD FILE	READ ROLL	TABLE DEF.	MONITOR	
SELECT FUNCTION(F1-F12,COPY,MOVE,DELETE,INSERT)					DATA PROC. | R18C6
					BOOK | 2 |

Select INPUT.

▶ F1

CORRECT	DELETE	COL. EXP.	RET.(SET)	RET.(CNT)
TOTAL				RETURN
INPUT DATA/EXPRESSION			100	0 | R18C6
372100			BOOK | 2 |	*

Select RETRIEVAL.

▶ F5

INPUT RETRIEVAL EXPRESSION	COLUMN NO., +=000, +-00.1, 11	100	0 | R18C6
		BOOK | 2 |	

The same retrieval expression as before is used to retrieve data whose value is not greater than 100000 from columns 4 through 15.


R/C	1	2	3	4	5	6	7
1	271500	234500	375100	486200	311500	563200	379600
2	98000	316200	398000	465300	444300	536100	468300
3	445500	124300	537700	324300	210200	454600	305200
4	359000	202200	276700	292300	456600	290000	264400
5	342100	282200	215900	258300	571000	375100	283500
6	291500	177700	432300	397500	324300	319200	463700
7	190800	276800	438200	374400	339300	346200	472600
8	198000	147800	323900	456100	209800	468200	489200
9	335300	276100	261500	367600	429000	434100	327800
10	197800	468600	547300	96420	389500	329000	264600
11	439900	198700	393400	315100	300300	354200	435300
12	138500	362900	194200	246700	467100	506400	299800
13	372100	258300	31500	411200	500300	213100	411900
14	305300	249700	307500	290400	223900	407300	356100
15	242100	163400	354100	253700	342900	384400	156200
16	246700	185800	334200	298900	497200	255300	356500
17	246200	299000	342500	409200	102400	375600	229100
18	344400	153000	162400	325500	199000	522300	207000
19	128000	298000	217600	329400	256600	411200	298300

CORRECT DELETE COL. EXP. RET. (SET) RET. (CNT)

TOTAL RETURN

INPUT DATA/EXPRESSION 100 0 R5C6

466200 BOOK 2 +

The cell cursor has moved to row 5, column 6, indicating that data satisfying the condition exists there. Make sure the  is on.



R/C	1	2	3	4	5	6
1	179500	302700	312900	90000	419500	2.18
2	407500	407500	83500	143700	912200	2.14
3	453500	453500	34700	296500	412200	2.11
4	277500	277500	31700	296500	432800	2.15
5	286500	286500	53800	298200	432700	2.12
6	476500	476500	127800	45800	481700	11.43
7	361700	361700	466200	259200	380700	1.63
8	509500	509500	509500	15200	3887500	7.69
9	485200	485200	339700	201650	376300	5.29
10	327500	327500	205500	75700	781100	4.61
11	260400	260400	411600	24300	370700	6.42
12	43200	43200	25900	26860	278500	6.95
13	295800	295800	482500	26160	372500	7.02
14	511500	511500	389500	279400	380300	7.62
15	396000	396000	407600	26800	358700	7.20
16	196800	196800	504600	11200	3541600	5.12
17	356200	356200	413700	313700	351700	6.19
18	279100	279100	425800	215100	302400	9.01
19	207000	207000	412600	132100	348600	5.55
20	290300	290300	253100	25900	3484500	8.70

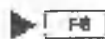
CORRECT DELETE COL. EXP. RET. (SET) RET. (CNT)

TOTAL RETURN

INPUT DATA/EXPRESSION 100 0 R5C12

483400 BOOK 2 +

90800 is in column 15. At this time, you can move the cell cursor to column 15 and enter data. Press the following key to find another data item satisfying the condition.



R/C	1	2	3	4	5	6
	483400	302700	332900	90800	4196300	2.16
	379600	407500	245100	143700	4124700	3.48
		432500	94700	297000	4120000	7.21
	305200	377800	397200	296500	4025800	7.36
	264400	580600	308900	395200	4024000	9.82
	283500	472800	197600	458000	4017900	11.40
	463700	529300	406300	259200	3909100	6.63
	472600	377500	509200	156000	3884500	4.02
	489200	506000	372800	201600	3863400	5.22
	327800	365100	245200	176300	3811300	4.63
	264600	290800	411600	243000	3787720	6.42
	435300	411900	299000	264600	3783100	6.99
	299800	406200	462500	261600	3725500	7.02
	411900	296600	388500	274400	3603300	7.62
	356100	237700	407800	260400	3587700	7.26
	156200	321900	504600	112400	3541600	3.17
	356500	433100	419300	217700	3517900	6.19
	229100	322600	425800	311100	3454700	9.01
	207000	274800	412600	192300	3416800	5.63
	298300	364800	233100	297000	3414500	8.70
<input type="checkbox"/> CORRECT	<input type="checkbox"/> DELETE	<input type="checkbox"/> COL. EXP.	<input type="checkbox"/>	<input type="checkbox"/> RET. (SET)	<input type="checkbox"/> RET. (CNT)	<input type="checkbox"/> DS
<input type="checkbox"/> TOTAL	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> RETURN	<input type="checkbox"/> RC
INPUT DATA/EXPRESSION				100	0	R7C12
468300				BOOK	2	| +

A data item satisfying the condition is in column 14 on row 7. You can continue this retrieval process by selecting the CON. RETR. function. Unless you have specified a condition for RETRIEVAL, however, you cannot select CONT. RETR.

In the previous retrieval, row 7 had another data item satisfying the condition. Press the following key to retrieve it:

▶ 0

R/C	1	2	3	4	5	6	7
	465200	245300	224600	248300	527100	591200	483500
	271500	234500	375100	486200	311500	563200	379600
	98000	316200	398000	465300	444300		468300
	445500	124300	537700	324300	210200	454600	305200
	359000	202200	276700	292300	456600	290000	264400
	342100	282200	215900	258300	571000	375100	283500
	291500	177700	432300	397500	324300	319200	463700
	198000	276800	438200	374400	339300	346200	472600
	198000	147800	323900	456100	209800	468200	489200
	335300	276100	261500	367600	429000	434100	327800
	197800	468600	547300	96420	389500	329000	264600
	439900	198700	393400	315100	300300	354200	435300
	138500	362900	194200	246700	467100	506400	299800
	372100	258300	31500	411200	500300	213100	411900
	305300	249700	307500	290400	223900	407300	356100
	242100	163400	354100	253700	342900	384400	156200
	246700	185800	334200	298900	497200	255300	356500
	224200	299000	342500	409200	102400	375600	229100
	344400	153000	162400	325500	199000	522300	207000
	128000	298000	217600	329400	256600	411200	298300
<input type="checkbox"/> CORRECT	<input type="checkbox"/> DELETE	<input type="checkbox"/> COL. EXP.	<input type="checkbox"/>	<input type="checkbox"/> RET. (SET)	<input type="checkbox"/> RET. (CNT)	<input type="checkbox"/> DS	
<input type="checkbox"/> TOTAL	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> RETURN	<input type="checkbox"/> RC	
INPUT DATA/EXPRESSION				100	0	R7C11	
5 6100				BOOK	2	| +	

Column 6 also contains data satisfying the condition. Note that, if retrieval is initiated via the data input screen, the cell cursor does not move to the data satisfying the condition. Continue retrieval.

▶ F6

1	2	3	4	5	6	7	8
271500	234500	375100	486200	311500	563200	379600	
98000	316200	398000	465300	444300	536100	468300	
445500	124300	537700	324300	210200	454600	305200	
359000	202200	276700	292300	456600	290000	264400	
342100	282200	215900	258300	571000	375100	283500	
291500	177700	432300	397500	324300	319200	463700	
190800	276800	438200	374400	339300	346200	472600	
198000	147800	323900	456100	209800	468200	489200	
335300	276100	261500	367600	429000	434100	327800	
	468600	547300	96420	389500	329000	264600	
439900	198700	393400	315100	300300	354200	435300	
138500	362900	194200	246700	467100	506400	299800	
372100	258300	31500	411200	500300	213100	411900	
305300	249700	307500	290400	223900	407300	356100	
242100	163400	354100	253700	342900	384400	156200	
246700	185800	334200	298900	497200	255300	356500	
246200	299000	342500	409200	102400	375600	229100	
344400	153000	162400	325500	199000	522300	207000	
128000	298000	217600	329400	256600	411200	298300	
CORRECT	DELETE	COL. EXP.	RET. (SET)	RET. (CNT)			
TOTAL			RETURN				
INPUT DATA/EXPRESSION					100	0	R18C6
197800					BOOK	2	+

▶ F6

1	2	3	4	5	6	7	8
271500	234500	375100	486200	311500	563200	379600	
98000	316200	398000	465300	444300	536100	468300	
445500	124300	537700	324300	210200	454600	305200	
359000	202200	276700	292300	456600	290000	264400	
342100	282200	215900	258300	571000	375100	283500	
291500	177700	432300	397500	324300	319200	463700	
190800	276800	438200	374400	339300	346200	472600	
198000	147800	323900	456100	209800	468200	489200	
335300	276100	261500	367600	429000	434100	327800	
197800	468600	547300	96420	389500	329000	264600	
439900	198700	393400	315100	300300	354200	435300	
138500	362900	194200	246700	467100	506400	299800	
	258300	31500	411200	500300	213100	411900	
305300	249700	307500	290400	223900	407300	356100	
242100	163400	354100	253700	342900	384400	156200	
246700	185800	334200	298900	497200	255300	356500	
246200	299000	342500	409200	102400	375600	229100	
344400	153000	162400	325500	199000	522300	207000	
128000	298000	217600	329400	256600	411200	298300	
CORRECT	DELETE	COL. EXP.	RET. (SET)	RET. (CNT)			
TOTAL			RETURN				
INPUT DATA/EXPRESSION					100	0	R18C6
372100					BOOK	2	+

▶ F6

128000	298000	217600	329400	256600	411200	298300	
CORRECT	DELETE	COL. EXP.	RET. (SET)	RET. (CNT)			
TOTAL			RETURN				
INPUT DATA/EXPRESSION					DATA ERR.	R18C6	
372100					BOOK	2	+

The message "DATA ERR." will be displayed on the second line from the bottom, indicating that there is no more data satisfying the condition. Once DATA ERR. is displayed, retrieval has ended. If you want to perform

retrieval using the same condition, it will be necessary to specify the condition again. Perform the following to return to the data processing screen:



1	120000	298000	217600	329400	256600	411200	298300
2	CORRECT	DELETE	COL. EXP.		RET. (SET)	RET. (CNT)	
3	TOTAL					RETURN	
INPUT DATA/EXPRESSION						100	0
258300						BOOK	2



R/C	1	2	3	4	5	6	7
1	466200	245000	294600	246800	587100	591200	483400
2	271500	234500	375100	486200	311500	563200	379600
3	98000	316200	398000	465300	444300	536100	468300
4	445500	124300	537700	324300	210200	454600	305200
5	359000	202200	276700	292300	456600	290000	264400
6	342100	282200	215900	258300	571000	375100	283500
7	291500	177700	432300	397500	324300	319200	463700
8	190800	276800	438200	374400	339300	346200	472600
9	198000	147800	323900	456100	209800	468200	489200
10	335300	276100	261500	367600	429000	434100	327800
11	197800	468600	547300	96420	389500	329000	264600
12	439900	198700	393400	315100	300300	354200	435300
13	138500	362900	194200	246700	467100	506400	299800
14	372100		31500	411200	500300	213100	411900
15	305300	249700	307500	290400	223900	407300	356100
16	242100	163400	354100	253700	342900	384400	156200
17	246700	185800	334200	298900	497200	255300	356500
18	246200	299000	342500	409200	102400	375600	229100
19	344400	153000	162400	325500	199000	522300	207000
20	128000	298000	217600	329400	256600	411200	298300

INPUT INPUT PAT DATA GEN. DUPLICATE FORMATING RETR./SORT
 PRINT FILE READ ROLL TABLE DEF. JIM.F4
 SELECT FUNCTION(F1-F12,COPY,MOVE,DELETE,INSERT) DATA PROC. R1BC7
 BOOK 2 | |

1.6.3 Printing retrieved data

This section explains procedures for compiling retrieved data into a list and then printing it. Our explanation begins with the screen shown below.

1	271500	234500	375100	486200	311500	563200	379600
2	98000	316200	398000	465300	444300	536100	468300
3	445500	124300	537700	324300	210200	454600	305200
4	359000	202200	276700	292300	456600	290000	264400
5	342100	282200	215900	258300	571000	375100	283500
6	291500	177700	432300	397500	324300	319200	463700
7	190800	276800	438200	374400	339300	346200	472600
8	198000	147800	323900	456100	209800	468200	489200
9	335300	276100	261500	367600	429000	434100	327800
10	197800	468600	547300	96420	389500	329000	264600
11	439900	198700	393400	315100	300300	354200	435300
12	138500	362900	194200	246700	467100	506400	299800
13	372100	31500	31500	411200	500300	213100	411900
14	305300	249700	307500	290400	223900	407300	356100
15	242100	163400	354100	253700	342900	384400	156200
16	246700	185800	334200	298900	497200	255300	356500
17	246200	299000	342500	409200	102400	375600	229100
18	344400	153000	162400	325500	199000	522300	207000
19	128000	298000	217600	329400	256600	411200	298300

INPUT INPUT PRT. DATA GEN. DUPLICATE PRINTING SORT
 PRINTOUT FILL LOAD HELL TABLE DEF. MONITOR
 SELECT FUNCTION(F1-F12,COPY,MOVE,DELETE,INSERT) DATA PROC. R18C7
 BOOK 2

F7

128000	298000	217600	329400	256600	411200	298300
PRINTOUT	REGISTER	DELETE	EXECUTE		RETURN	
SELECT FUNCTION					PRINTOUT	R18C7
					BOOK	2

F1

128000	298000	217600	329400	256600	411200	298300
70	66	50	55	55	40	
LINE/PAGE?(SELECT F1-F3),(INPUT NUMBER OF LINES)					PRINTOUT	R18C7
					BOOK	2

F1

128000	298000	217600	329400	256600	411200	298300
LINE POSITION?(CENTER=3,L/P=2),(INPUT START,END LINE)					PRINTOUT	R18C7
					BOOK	2

↵

128000	298000	217600	329400	256600	411200	298300
CHAR. POSITION?	(ENTER=3, RIGHT MOST)	(INPUT START, END CHAR.)	PRINTOUT	R18C7		
			BOOK	2		




128000	298000	217600	329400	256600	411200	298300
H2H STOP	STOP					
SELECT PAGE SET SIZE					PRINTOUT	R18C7
					BOOK	2



128000	298000	217600	329400	256600	411200	298300
NO RULED	RULED(V)					
SELECT FUNCTION					PRINTOUT	R18C7
					BOOK	2



128000	298000	217600	329400	256600	411200	298300
INPUT -F13						
					PRINTOUT	R18C7
					BOOK	2

Be sure  is off when entering 100,000.

▶ LIST OF SALES
 UNDER \$100000 ↵

128000	298000	217600	329400	256600	411200	298300
ALL						
PRINT COLUMN NO.?	(ENTER=END)	(INPUT PRINT COLUMN NO.)	PRINTOUT	R18C7		
			BOOK	2		

Here CANOBRAIN asks which columns will be printed. Specify the branch name and the columns containing the retrieved data (3, 6, 8, 9, 14, and 15) as follows.

▶ 3 ↓ 6 ↓ 8 ↓ 9 ↓ 14 ↓ 15 ↓ ↓

Specification is completed when is pressed twice in succession.

1280001	2980001	2176001	3294001	2566001	4112001	298300
NO RETR.	RETRIVAL					
SELECT FUNCTION					PRINTOUT	R18C7
					BOOK	2

To print only the data meeting the retrieval conditions, perform the following key operations.

▶

1280001	2980001	2176001	3294001	2566001	4112001	298300
INPUT RETRIEVAL EXPRESSION(COLUMN NO., +=AND, +=OR, (,))						
					PRINTOUT	R18C7
					BOOK	2

From this point on, operation is the same as when retrieving data.

▶ 4 + 5 + 6 + 7 + 8 + 9 + 10 + 11 + 12 + 13 + 14 + 15 ↓ ↓

1280001	2980001	2176001	3294001	2566001	4112001	298300
CHARACTER	NUMERIC					
SELECT DATA TYPE					PRINTOUT	R18C7
0-5+6+7+8+9+10+11+12+13+14+15					BOOK	2

▶

1280001	2980001	2176001	3294001	2566001	4112001	298300
GT(>)	GE(≥)	LE(≤)	LT(<)	NE(≠)	EQ(=)	
BT(≤X<=)	NB(≤X>)					
SELECT RETRIEVAL CONDITION					PRINTOUT	R18C7
0-5+6+7+8+9+10+11+12+13+14+15					BOOK	2

▶ 1 0 0 0 0 0 0 ↓

Specify the same condition for the rest of the columns through column 15.

1.7 Deleting Unnecessary Data

This section explains the procedures for deleting data, expressions, column expressions, rows, columns, pages, or books.

1.7.1 Deleting data

When a cell contains only data (letters or numbers), the data in that cell can be deleted using the following procedure. Our explanation of this procedure begins with the screen shown below.

CODE	BRANCH	JAN	FEB	MAR	APR
1 0103	LONDON	547200	104400	067500	122900
2 0101	NEW YORK	448400	346500	229500	152600
3 0111	CALCUTA	164700	213500	155600	509000
4 0112	MEXICO CITY	201600	354000	466200	249000
5 0109	LOS ANGELES	280800	426000	271500	234500
6 0102	TEKYE	264600	205000	98000	116200
7 0106	PARIS	201600	250900	405500	124300
8 0120	BRANDELBURG	201600	296500	279000	208200
9 0126	PHILADELPHIA	345500	219000	262100	208200
10 0104	MOSCOW	130200	177600	291500	175700
11 0113	BEIJING	264600	138500	193800	276300
12 0115	RIO DE JANEIRO	261600	278700	199000	147300
13 0121	LEHLEHLEH	351100	207500	135700	276000
14 0112	ELIHO-LI	264600	204500	197000	050600
15 0107	CSABA	164700	204500	175900	130700
16 0105	SINGAPORE	264600	119000	136500	362900
17 0108	BUENOS AIRES	235000	209400	372100	259200
18 0123	SAN FRANCISCO	207800	253800	235300	249200
19 0114	BOMBAY	356900	171000	191200	163400

INPUT INPUT PAT. DATA GEN. DUPLICATE REPATTN RETR./SORT
 PRINTOUT CD FILE READ ROLL TABLE DEF. MONITOR
 SELECT FUNCTION(F1-F12,COPY,MOVE,DELETE,INSERT) DATE: PROF. (RIC)
 BOOK 2

Let's delete the word "TOTAL" from row 25, column 3.

▶
 ▶

LINE	CODE	CITY	AMOUNT	AMOUNT	AMOUNT	AMOUNT
6	0102	TOKYO	264600	305000	98000	316200
7	0106	PARIS	201600	350900	445500	124300
8	0120	FRANKFURT	201600	396500	359000	202200
9	0116	PHILADELPHIA	345600	215800	342100	282200
10	0104	MOSCOW	130200	177900	291500	177700
11	0117	PEKING	264600	136900	190800	276800
12	0115	RIO DE JANEIRO	261600	226400	198000	147800
13	0121	LENINGRAD	351100	242200	335300	276100
14	0113	DETROIT	264600	284500	197800	468600
15	0107	OSAKA	164200	206500	439900	198700
16	0105	SHANGHAI	264600	115000	138500	362900
17	0108	BUENOS AIRES	236000	209400	372100	258300
18	0123	SAN FRANCISCO	209800	331800	305300	249700
19	0114	BOMBAY	334900	371000	242100	163400
20	0118	HONG KONG	163100	110100	246700	185800
21	0122	CAIRO	178000	213200	246200	299000
22	0119	AMSTERDAM	297000	326500	344400	153000
23	0110	CHICAGO	243000	337500	128000	298000
			6016800	6085500	6791500	6164900

Now delete "6016800" from row 25, column 4.

▶ R25C4

DATA	EXPRESSION	BOTH	6016800	6085500	6791500	6164900
SELECT FUNCTION					200	0 R25C3
					BOOK	2


▶ F1

YES	DELETE OK ?		6016800	6085500	6791500	6164900
DELETE					200	0 R25C3
					BOOK	2

▶ F1

If you were watching the screen, you probably noticed that "6016800" was momentarily replaced by a line of asterisks ("*****"); the original number was then displayed again. The reason for this is that, even though the data was deleted, the expression used to calculate the total for this column still remains, so the total was recalculated after it was deleted. Now let's go on to the procedure for deleting expressions. First, return to the input screen.

▶ F12

▶ 

			6085500	6791500	6164900
DATA	XPRLSSIGN	R5TH			
SELECT FUNCTION			100	3	R25C4
			BOOK	2	| +

▶ **F2**

			6085500	6791500	6164900
YES	NO				
R25C4	DELETE OK ?		100	0	R25C4
			BOOK	2	| +

▶ **F1**

			6085500	6791500	6164900
ADDRESS? (ENTER=CURSOR ADDRESS), (INPUT ADDRESS(RxCy))			100	0	R25C4
			BOOK	2	| +

The expression should now be deleted; let's make sure.

▶ **F12**

			6085500	6791500	6164900
CORRECT	DELETE	EXP. CL. EXP.	REF. (SFT)	RET. CNT?	
TOTAL				RETURN	
INPUT DATA/EXPRESSION			100	0	R25C4
6016800			BOOK	2	| +

As you can see, the expression "@SUM(R2.24C4) has been deleted and "6016800" is displayed in its place. This shows that only the expression, not the data, has been deleted. Now let's delete the data.

▶ **F2**

			6085500	6791500	6164900
ADDRESS? (ENTER=CURSOR ADDRESS), (INPUT ADDRESS(RxCy))			100	0	R25C4
			BOOK	2	| +



6016800	6085500	6791500	6164900
SELECT FUNCTION		100	0 R25C4
	BOOK	2	+



R25C4	6085500	6791500	6164900
DELETE OK ?		100	0 R25C4
	BOOK	2	+



ADDRESS?(ENTER=CURSOR ADDRESS), (INPUT ADDRESS(RxCy))	6085500	6791500	6164900
		100	0 R25C4
	BOOK	2	+

"6016800" should now be deleted, too. But it's a lot of trouble to delete each item of data separately, so there is a procedure for deleting data along with expressions.

Let's try deleting the data and expression in row 25, column 5 simultaneously.



ADDRESS?(ENTER=CURSOR ADDRESS), (INPUT ADDRESS(RxCy))	6791500	6164900	
		100	0 R25C5
	BOOK	2	+



DATA	EXPRESSION	6791500	6164900
SELECT FUNCTION		100	0 62505
		3000	2



F3

DATA	EXPRESSION	6791500	6164900
DELETE OK		100	0 62505
		3000	2



F1

As you can see, both the data and expression have been deleted.

Now let's go on to the procedure for deleting column expressions.



F12

	AUG.	SEP.	OCT.	NOV.	DEC.	T O T A L	R A T I O
498200	287700	332400	295500	334900	4565400	7.34	
474600	236500	221100	398200	163100	4541500	3.59	
502300	346200	298900	440900	297000	4379900	6.78	
591200	483400	302700	332900	90800	4196300	2.16	
563200	379600	407500	245100	143700	4124700	3.48	
536100	468300	432500	94700	297000	4120000	7.21	
454600	305200	377800	397200	296500	4025800	7.36	
290000	264400	580600	308900	395200	4024000	9.82	
375100	283500	472800	197600	458000	4017900	11.40	
319200	463700	529300	406300	259200	3909100	6.63	
346200	472600	377500	509200	156000	3884500	4.02	
468200	489200	506000	372800	201600	3863400	5.22	
434100	327800	365100	245200	176300	3811300	4.63	
329000	264600	290800	411600	243000	3787720	6.42	
354200	435300	411900	299000	264600	3783100	6.99	
506400	299800	406200	462500	261600	3725500	7.02	
213100	411900	296600	388500	274400	3603300	7.62	
407300	356100	237700	407800	260400	3587700	7.26	
384400	156200	321900	504600	112400	3541600	3.17	

CORRECT DELETE YES NO RETURN

INPUT DATA/EXPRESSION 06D 0 RIC17

RATIO BOOK 2 | +

F3

384400	156200	321900	504600	112400	3541600	3.17
CORRECT	DELETE	YES	NO	RETURN		
INPUT COLUMN EXPRESSION						06FLP02 -0 RIC17
+C15/C16*100						BOOK 2 | +

Note that the column expression "+C15/C16*100" is displayed on the bottom line of the screen.

F2

384400	156200	321900	504600	112400	3541600	3.17
YES	NO	RETURN				
COLUMN EXPRESSION DELETE OK ?						06FLP02 -0 RIC17
						BOOK 2 | +

Here, CANOBRAIN asks for confirmation that the column expression will be deleted.

F1

	AUG.	SEP.	OCT.	NOV.	DEC.	T O T A L	R A T I O
498200	287700	332400	295500	334900	4565400	7.34	
474600	236500	221100	398200	163100	4541500	3.59	
502300	346200	298900	440900	297000	4379900	6.78	
591200	483400	302700	332900	90800	4196300	2.16	
563200	379600	407500	245100	143700	4124700	3.48	
536100	468300	432500	94700	297000	4120000	7.21	
454600	305200	377800	397200	296500	4025800	7.36	
290000	264400	580600	308900	395200	4024000	9.82	
375100	283500	472800	197600	458000	4017900	11.40	
319200	463700	529300	406300	259200	3909100	6.63	
346200	472600	377500	509200	156000	3884500	4.02	
468200	489200	506000	372800	201600	3863400	5.22	
434100	327800	365100	245200	176300	3811300	4.63	
329000	264600	290800	411600	243000	3787720	6.42	
354200	435300	411900	299000	264600	3783100	6.99	
506400	299800	406200	462500	261600	3725500	7.02	
213100	411900	296600	388500	274400	3603300	7.62	
407300	356100	237700	407800	260400	3587700	7.26	
384400	156200	321900	504600	112400	3541600	3.17	

CORRECT DELETE YES NO RETURN

INPUT COLUMN EXPRESSION 06FLP02 -0 RIC17

BOOK 2 | +

Now both the data and column expression are deleted from column 17. Return to the data processing screen.

▶ F12

384400	156200	321900	504600	112400	3541600	|	
CORRECT	DELETE	COL. EXP.	RET. (SET)	RET. (CNT)	00		
TOTAL					RETURN	00	
INPUT DATA/EXPRESSION					060	0	RIC17
					BOOK	2	1

▶ F12

1.7.4 Deleting columns

Now let's delete column 17. Our explanation begins with the screen shown below.

R/C	000	SEP.	OCT.	NOV.	DEC.	TOTAL
000	498200	287700	332400	295500	334900	4565400
001	474600	236500	221100	398200	163100	4541500
002	502300	346200	298900	440900	297000	4379900
003	591200	483400	302700	332900	90800	4196300
004	563200	379600	407500	245100	143700	4124700
005	536100	468300	432500	94700	297000	4120000
006	454600	305200	377800	397200	296500	4025800
007	290000	264400	580600	308900	395200	4024000
008	375100	283500	472800	197600	458000	4017900
009	319200	463700	529300	406300	259200	3909100
010	346200	472600	377500	509200	156000	3884500
011	468200	489200	506000	372800	201600	3863400
012	434100	327600	365100	245200	176300	3811300
013	329000	264600	290800	411600	243000	3787720
014	354200	435300	411900	289000	264600	3783100
015	506400	399800	406400	462500	261600	3725500
016	213100	411900	296600	388500	274400	3603300
017	407300	356100	237700	407800	260400	3587700
018	384400	156200	321900	504600	112400	3541600

INPUT PAT. DATA GEN. DUPLICATE REPORTING RETP. SORTED
 PRINTING DATA FILE THE BILL TABLE DEF. UNIT EDITOR
 SELECT FUNCTION(F1-F12, COPY, MOVE, DELETE, INSERT) DATA PROC. RIC17
 BOOK 2

▶ DELETE

384400	156200	321900	504600	112400	3541600	|
ROW	COLUMN				RETURN	00
SELECT ROW/COLUMN					R/C DELETE	RIC17
					BOOK	2

▶ F2

384400	156200	321900	504600	112400	3541600	|
					RETURN	00
DELETE?(ENTER=CURSOR COL.), (INPUT START, END COL. NO.)					R/C DELETE	RIC17
					BOOK	2

Here, CANOBRAIN asks for the range of columns that will be deleted. Press without entering any values; this automatically deletes the column where the cell cursor is located.



20	384400	156200	321900	504600	112400	3541600	
YES	NO						
R/C DELETE						RIC17	
BOOK						21	



	AUG.	SEP.	OCT.	NOV.	DEC.			
1	498200	287700	332400	295500	334900	4565400		
2	474600	236500	221100	398200	163100	4541500		
3	502300	346200	298900	440900	297000	4379900		
4	591200	483400	302700	332900	90800	4196300		
5	563200	379600	407500	245100	143700	4124700		
6	536100	468300	432500	94700	297000	4120000		
7	454600	305200	377800	397200	296500	4025800		
8	290000	264400	580600	308900	395200	4024000		
9	375100	283500	472800	197600	458000	4017900		
10	319200	463700	529300	406300	259200	3909100		
11	346200	472600	377500	509200	156000	3884500		
12	468200	489200	506000	372800	201600	3863400		
13	434100	327800	365100	245200	176300	3811300		
14	329000	264600	290800	411600	243000	3787700		
15	354200	435300	411900	299000	264600	3783100		
16	506400	299800	406200	462500	261600	3725500		
17	213100	411900	296600	388500	274400	3603300		
18	407300	356100	237700	407800	260400	3587700		
19	384400	156200	321900	504600	112400	3541600		
	COLUMN							DE
							RETURN	
SELECT ROW/COLUMN						R/C DELETE	RIC16	
BOOK						21		

Has column 17 been deleted?

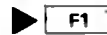
Now let's learn how to delete rows.

Delete the row where the cell cursor is located (row 25).



9611800	7822900	8564600	8209300	5203100	
DELETE OK ?					R/C DELETE | R25C16
					BOOK | 2 |

This screen asks for confirmation that the row will be deleted.



R/C	1	2	3	4	5	6
563200	379600	407500	245100	143700	4124700	
536100	468300	432500	94700	297000	4120000	
454600	305200	377800	397200	296500	4025800	
290000	264400	580600	308900	395200	4024000	
375100	283500	472800	197600	458000	4017900	
319200	463700	529300	406300	259200	3909100	
346200	472600	377500	509200	156000	3884500	
468200	489200	506000	372800	201600	3863400	
434100	327800	365100	245200	176300	3811300	
329000	264600	290800	411600	243000	3787720	
354200	435300	411900	299000	264600	3783100	
506400	299800	406200	462500	261600	3725500	
213100	411900	296600	388500	274400	3603300	
407300	356100	237700	407800	260400	3587700	
384400	156200	321900	504600	112400	3541600	
255300	356500	433100	419300	217700	3517900	
375600	229100	322600	425800	311100	3454700	
522300	207000	274800	412600	192300	3416800	
411200	298300	364800	233100	297000	3375000	

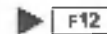
SELECT ROW/COLUMN					R/C DELETE | R24C16
					BOOK | 2 |

Row 25 is now deleted. Return to the data processing screen.



INPUT	INPUT PAT.	DATA GEN.	DUPLICATE	FORMATING	RETR./SORT
PRINTOUT	CO FILE	READ ROLL	TABLE DEF.	MONITOR	
SELECT FUNCTION(F1-F12, COPY, MOVE, DELETE, INSERT)					DATA PROC. | R24C16
					BOOK | 2 |

This completes table processing.



UPDATE	NO UPDATE				
SELECT UPDATE DATA					DATA PROC. | R24C16
					BOOK | 2 |

Here, CANOBRAIN asks whether the data in the table being processed ("Sales by Branch 1") will be updated.

If "No update" is selected, any table modifications made will not be stored on the floppy disk. To store the data and expressions entered, you must specify the update. Let's do this now.

▶ F1

YES	NO						
UPDATE OK ?						DATA PROC.	R24C16
						BOOK	2

▶ F1

1.7.6 Deleting pages

This section explains the procedures for deleting pages. Since deleting a page at this point would delete the data we have been working with, do not use the procedures shown below until you actually have a page that should be deleted. Our explanation begins with the screen shown below.

INDEX			
PAGE	T I T L E	CREATE	UPDATE
0	P A G E C R E A T E		
1	SALES SUMMARY WORLDWIDE	12.01.83	12.01.83
2	SALES BY BRANCH 1 WORLDWIDE	12.01.83	12.01.83

DELETE	MODIFY	PRINTOUT		
SELECT PAGE (INPUT PAGE NO., ↑, ↓)				BOOK 2

Delete page 1.

▶ F2

1.7.7 Deleting books

This section explains the procedure for deleting books. As with the preceding section, there are no books which can be deleted; if you delete a book now, you will delete the data we have been working with. So do not use these procedures until you actually want to delete a book.

BOOK LIST				
NO	TITLE	CREATE	UPDATE	
1	CANOBRAIN	12.01.83	12.01.83	
2	SALES BY BRANCH	12.01.83	12.01.83	

CREATE	DELETE	MODIFY	PRINTOUT				
				POLL	RETURN		
SELECT BOOK(INPUT BOOK NO.1,1)							
					BOOK		

Delete book 2.

▶ F2

					RETURN	
INPUT BOOK NO.					DELETE	
					BOOK	

▶ 2 ↵

A terminal window showing a confirmation screen for deleting a book. The screen has a header bar with several menu options. Below the header, the text reads: "BOOK NO. 2 DELETE OK?". To the right of this text, there are two columns of options: "DELETE" and "BACK".

We will use this book as an example later, so specify "NO".

▶ F2

A terminal window displaying a "BOOK LIST". The list contains two entries:

NO	TITLE	CREATE	UPDATE
1	CAMBRAIN	12.01.83	12.01.85
2	SALES BY BRANCH	12.01.83	12.01.83

Below the list, there is a header bar with menu options. At the bottom of the screen, the text "SE. FFF. BOOKS IN THE BOOK NO. 1 11" is visible, along with a "BOOK" label and some input fields.

This completes the explanation on how to delete books. If there are several books and an intermediate book is deleted, that book number will remain unused.



1910114	BOMBAY	334900	371000	242100	163400
CORRECT	DELETE	COL. EXP.	RET. (SET)	RET. (CNT)	
TOTAL				RETURN	
INPUT DATA/EXPRESSION				03D	0 RICI
NO.				BOOK	2

Press the following key to calculate the total:

▶ **F7**

1910114	BOMBAY	334900	371000	421000	163400
				RETURN	
INPUT TABLE NAME OR PAGE NO. (ENTER=END)				03D	0 RICI
				BOOK	2

Specify the names of the tables or page numbers as necessary. In this example, only page 2 needs to be specified.

▶ **2** **↓**

1910114	BOMBAY	334900	371000	242100	163400
YES	NO				
TABLE NAME OK ?				03D	0 RICI
SALES BY BRANCH				BOOK	2

CANOBRAIN displays a message prompt asking you to confirm the table name.

▶ **F1**

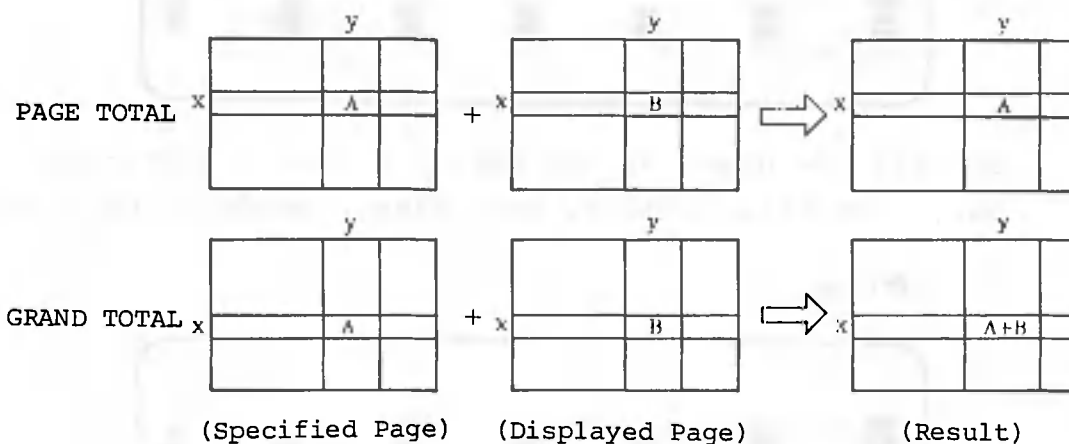
1910114	BOMBAY	334900	371000	242100	163400
				RETURN	
INPUT TABLE NAME OR PAGE NO. (ENTER=END)				03D	0 RICI
				BOOK	2

If there are many pages to be processed, specify them. In this example, press the following key to end page specification:

▶ **↓**

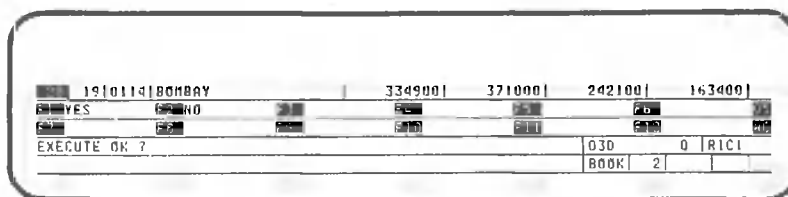


PAGE TOTAL and GRAND TOTAL are displayed. If PAGE TOTAL is selected, the total of the numbers in the specified page is written in the table being displayed. If GRAND TOTAL is selected, the number in the table being displayed is added.



In this example, specify GRAND TOTAL.

► F2



CANOBRAIN asks you whether you are going to calculate the grand total.

► F1

CODE	B R A N C H	JAN.	FEB.	MAR.	APR.
2 0103	LONDON	1094400	372800	934400	665800
0101	NEW YORK	892800	689000	1019600	645600
0111	CALCUTTA	329400	427000	311200	1178000
0112	MEXICO CITY	403200	708000	932400	490000
0109	LOS ANGELES	561600	852000	543000	469000
0102	TOKYO	529200	610000	196000	632400
0106	PARIS	403200	701800	891000	248600
0120	FRANKFURT	403200	793000	718000	404400
0116	PHILADELPHIA	691200	431600	684200	564400
0104	MOSCOW	260400	355800	583000	355400
0117	PEKING	529200	277800	381600	553600
0115	RIO DE JANEIRO	523200	456800	396000	295600
0121	LENINGRAD	702200	484400	670600	552200
0113	DETROIT	529200	569000	395600	937200
0107	OSAKA	328400	413000	879800	397400
0105	SHANGHAI	529200	230000	277000	725800
0108	BUENOS AIRES	472000	418800	744200	516600
0123	SAN FRANCISCO	419600	663600	610600	499400
0114	BOMBAY	669800	742000	484200	326800

CORRECT DELETE OL. EXP. RET. (SET) RET. (CNT) DS
 TOTAL INPUT DATA/EXPRESSION 030 0 RIC1
 MF. BOOK 2 | *

Look at column 1, column 4 and the following columns. These are the grand total columns. Because column 1 contains numeric data, it is automatically added to the grand total. Note that, when calculating totals or grand totals, the numeric data in the table is processed.

▶ **F12**

38|0114|BOMBAY	|	669800|	742000|	484200|	326800|
INPUT	INPUT FILE	DATA PROC.	DUPLICATE	FORMATING	WRITE - PART
PRINTOUT	READ ONLY	TABLE DEF.	INITIALS		
SELECT FUNCTION(F1-F12, COPY, MOVE, DELETE, INSERT)				DATA PROC.	RIC1
				BOOK	2 |

▶ **F12**

38|0114|BOMBAY	|	669800|	742000|	484200|	326800|
PDFIL	NO UPDATE				
SELECT UPDATE DATA				DATA PROC.	RIC1
				BOOK	2 |

▶ **F1**

38|0114|BOMBAY	|	669800|	742000|	484200|	326800|
YES	NO				
UPDATE OK ?				DATA PROC.	RIC1
				BOOK	2 |

▶ **F1**

INDEX			
PAGE	T I T L E	CREATE	UPDATE
0	P A G E C R E A T E		
1	TOTAL BY BRANCH	12.01.83	12.01.83
2	SALES BY BRANCH I WORLDWIDE	12.01.83	12.01.83

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	DELETE	<input type="checkbox"/>	MODIFY	<input type="checkbox"/>	PRINTOUT
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	RETURN
SELECT PAGE(INPUT PAGE NO.,1,1)					BOOK 2

► **F12**

1.9 Reading Roll Data Input Tables

Roll data can be read into a table, with conditions specified if necessary. When generating graphs using roll data, the data must be converted into a book table first. In the example in this section, the roll data "Sample Data" is read into the book "BOOK 1".

The process begins with the following screen:

BOOK LIST			
NO	TITLE	CREATE	UPDATE
1	CANOBRAIN	12.01.83	12.01.83
2	SALES BY BRANCH	12.01.83	12.01.83

CREATE	DELETE	MODIFY	PRINTOUT	F5	F7
END	END	END	END	ROLL	RETURN
SELECT BOOK (INPUT BOOK NO. 1, 2)					BOOK

▶ **F1**

INPUT BOOK NAME (MAX 20 CHAR.)					CREATE
					BOOK

Create a book into which the roll data is to be read.

▶ **BOOK1**

BOOK LIST					
NO	TITLE	CREATE	UPDATE		
1	CANOBRAIN	12.01.83	12.01.83		
2	SALES BY BRANCH	12.01.83	12.01.83		
3	BOOK	12.01.83	12.01.83	CREATE	

CREATE	DELETE	MODIFY	PRINTOUT	ROLL	RETURN
SELECT BOOK(INPUT BOOK NO.,1,1)					
					BOOK: 1

Input the number of the book just created.

▶ **3** ↵

INDEX				
PAGE	T	I	T	E
U	P	A	G	E

DELETE	MODIFY	PRINTOUT	ROLL	RETURN
SELECT PAGE(INPUT PAGE NO.,1,1)				
				BOOK: 3

Create the page of the table into which roll data is to be read.

▶ **0** ↵

SAVE	NO SAVE	PRINT	ROLL	RETURN
SELECT FUNCTION				
				BOOK: 3

▶ **F1**

The table name is "ROLL DATA".

► ROLL DATA ↵

INPUT COMMENT (MAX 22 CHAR.)		CREATE	
		BOOK	3

There is no need for a comment, but you may add one if you like.

► ↵

COPY PAGE? (ENTER=NO COPY). (INPUT PAGE NO.)		CREATE	
		BOOK	3

There is no page to copy.

► ↵

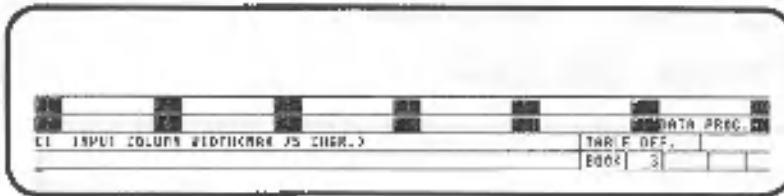
TABLE	GRAPH				
SELECT TABLE/GRAPH		CREATE			
		BOOK	3		

► F1

INPUT NUMBER OF ROWS TO READ (55 ROWS)		TABLE OFF	
		BOOK	3

Specify 50, because the roll "Sample Data" has 50 rows. If all the rows are not read, the number of rows of the roll need not match that of the book table. Specify the number of rows as follows:

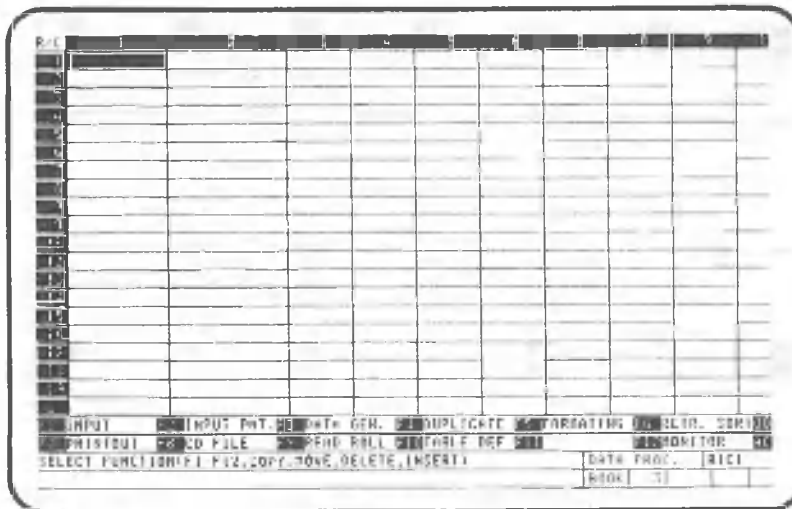
► 50 ↵



The column widths of the roll "Sample Data" are shown below. Specify the same widths.

Column No.	Column Width	Column No.	Column width
1	10	8	6
2	12	9	6
3	6	10	6
4	6	11	6
5	6	12	6
6	6	13	6
7	6	14	6

- ▶
- ▶ (12 times)
- ▶



We have created the page into which "Sample Data" is to be read. Press the following key to transfer the roll data:

- ▶

READ ROLL	DELETE	RETURN		
SELECT FUNCTION		READ ROLL	RICT	
		BOOK	3	

▶ **F1**

INPUT ROLL NO. OR NAME (MAX. 20 CHAR.)		READ ROLL	RICT	
		BOOK	3	

Input the roll name "Sample Data".

▶ **S A M P L E D A T A ↵**

READ ROLL DATA TO C1 ? (ENTER=NO READ), (INPUT ROLL COL. NO.)		READ ROLL	RICT	
		BOOK	3	

CANOBRAIN will ask you to enter the number of the roll column which is to be read into table column 1. If you wanted to read all the roll columns into the book table at once, you would press the F1 key. For this example, however, please enter each roll column separately so that you will become familiar with the specified procedure. Read roll column 1 into table column 1.

▶ **1 ↵**

READ ROLL DATA TO C2 ? (ENTER=NO READ), (INPUT ROLL COL. NO.)		READ ROLL	RICT	
		BOOK	3	

Read roll column 2 into table column 2.

▶ **2 ↵**

READ ROLL	RETURN
INPUT READ START,END ROLL ROW NO.	READ ROLL RICI
	BOOK 3

CANOBRAIN asks you to enter the numbers of the roll rows to be read. Note that row 0 of the roll cannot be specified. In this example, all rows are read. You can specified this as "1,50", or simply press the following key:

▶ **F1**

TO FIRST	RETURN
READ TO?(INPUT START ROW NO.)	READ ROLL RICI
	BOOK 3

▶ **F1**

INDEX	TITLE	CREATE	UPDATE
0	PAGE CREATE		
1	TOTAL BY BRANCH	12.01.83	12.01.83
2	SALES BY BRANCH 1 WORLDWIDE	12.01.83	12.01.83

DELETE	MODIFY	PRINTOUT	RETURN
SELECT PAGE (INPUT PAGE NO., T, I)			
			BOOK 2

Roll data has been read into columns 1,2, and 4 as specified. Note that row 0 of the roll cannot be read. Therefore, you must input the column titles on row 2 and the subsequent rows.

Press the following key to return to the data generation screen:

▶ **F12** (5 times)



CAMBRIDGE asks you to enter the number of the roll row to be read. Note that row 0 of the roll cannot be specified. In this example, all rows are read. You can specify this as "1,50", or simply press the following key:

▲ []



▲ []



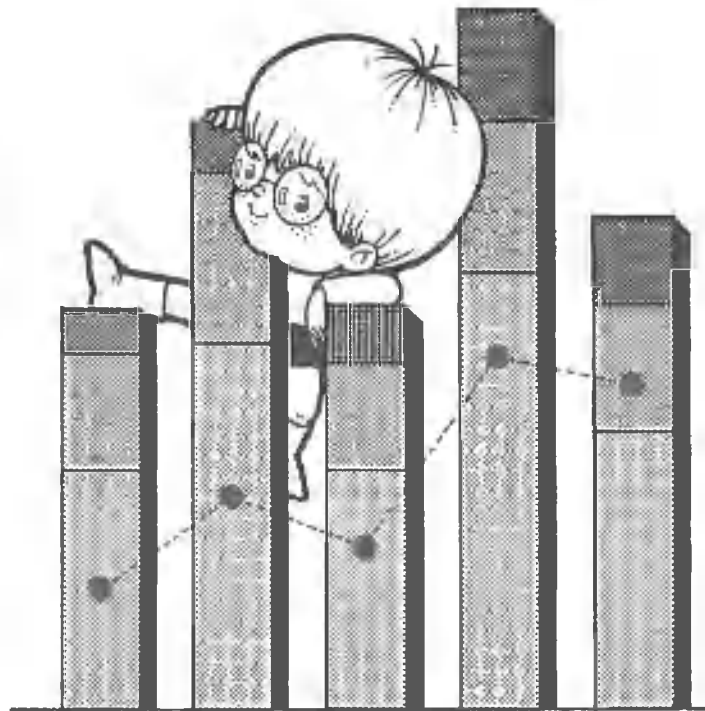
This data has been read from volume 1,1, and it is available. Note that row 0 of the roll cannot be read. Therefore, you must input the column titles on row 1 and the subsequent rows. Press the following key to return to row data operation:

▲ [] (to clear)

Chapter 2 - Introduction to Graph Creation

This chapter explains CANOBRAIN's graphic display functions. Procedures for using these functions are explained using the table created in Chapter 1.

- Procedures for creating graphs
- Procedures for editing graphs to make them more presentable
- Procedures for making hard copies (printouts) of graphs



2.1 Converting Table Data to Graphs

CANOBRAIN's graph display functions display selected table data on the screen in the form of a graph. A table must be created before a graph can be displayed.

The discussion in this chapter focuses primarily on the types of graphs which can be displayed and the procedures for specifying which table data will be used in graphs.

2.1.1 Creating pages to store graphic data

The first step in creating a graph is to create a new page for storing graphic data. The procedures for creating new pages were already described in Chapter 1. Our explanation begins with the screen shown below.

PAGE	INDEX	T I T L E	CREATE	UPDATE
0		P A G E C R E A T E		
1		TOTAL BY BRANCH	12.01.83	12.01.83
2		SALES BY BRANCH 1 WORLDWIDE	11.01.83	12.01.83

F1 DELETE F2 MODIFY F3 PRINTOUT F4 F5
F6 F7 F8 F9 F10 F11 F12 RETURN
SELECT PAGE (INPUT PAGE NO., T, I)
BOOK 2

Go to page 0 to create a page for graphic data storage.

▶ **0** ↵

F1 SAVE	F2 NO SAVE	F3	F4	F5	F6
F7	F8	F9	F10	F11	F12 RETURN
SELECT FUNCTION					BOOK 2

▶ **F1**

2.1.2 Types of graphs

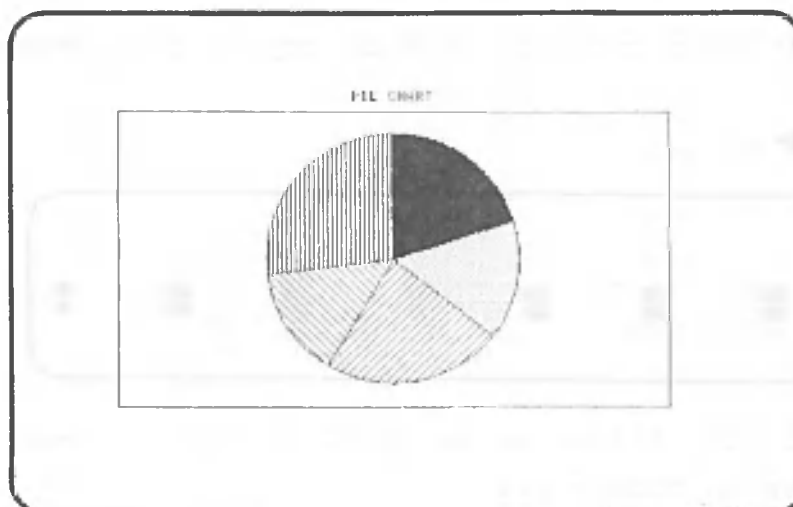
This section explains the types of graphs which can be displayed using CANOBRAIN's graphic display functions. Make sure that the screen looks like the one shown below.

```
GRAPH DEFINITION      INPUT TYPE OF GRAPH :
1. PIE CHART          SPECIFY TABLE PAGE NO. :
2. COMPOSITION RATIO CHART HORIZONTAL=0,VERTICAL=1 :
3. STACKED BAR CHART  INPUT START DATA :
4. COMPARATIVE BAR CHART INPUT END DATA :
5. LINE CHART
6. SCATTER DIAGRAM
7. LINE & STACKED CHART
8. LINE & COMPARATIVE CHART
```

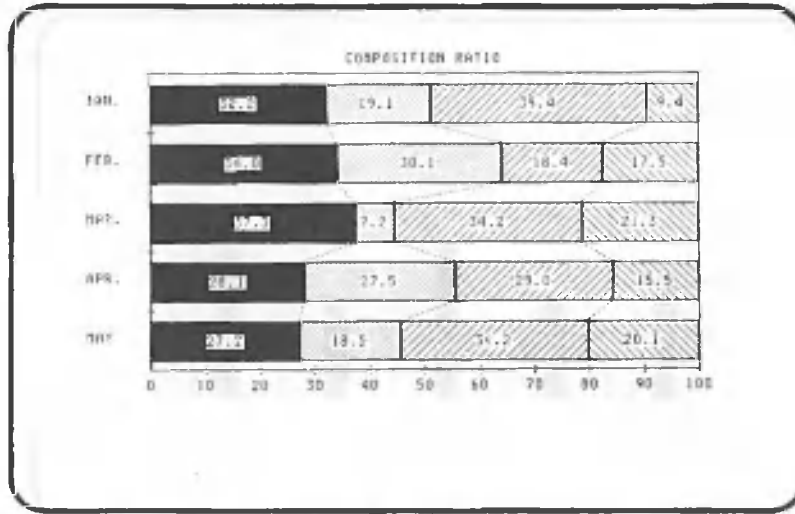
BOOK	2				
------	---	--	--	--	--

As indicated on the screen, CANOBRAIN can display eight types of graphs. Samples of the different types of graphs are shown below and on the following pages.

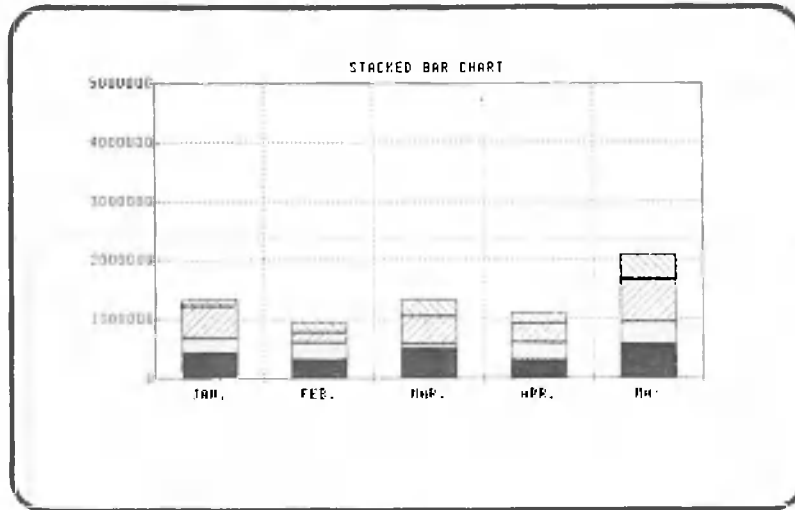
- Pie chart



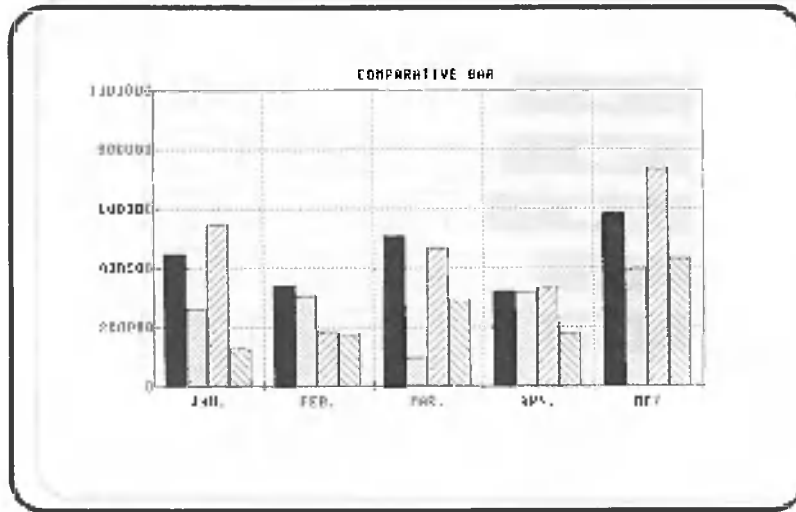
- Composition ratio chart



- Stacked bar chart

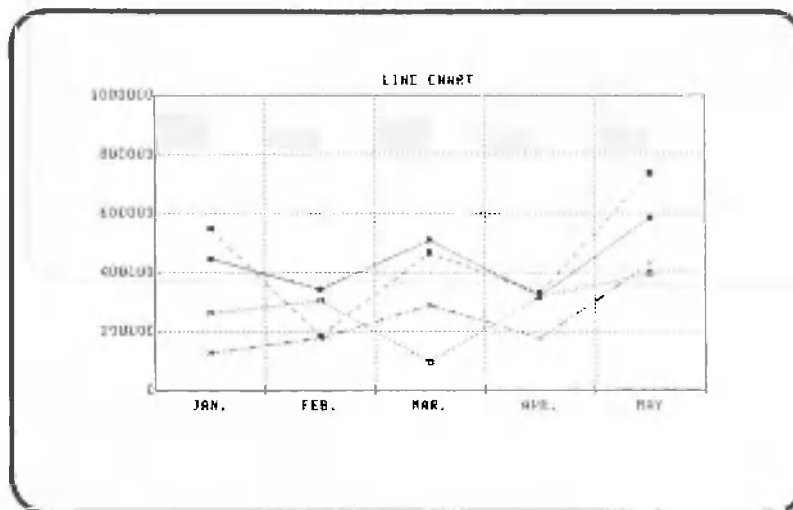


• Comparative bar chart

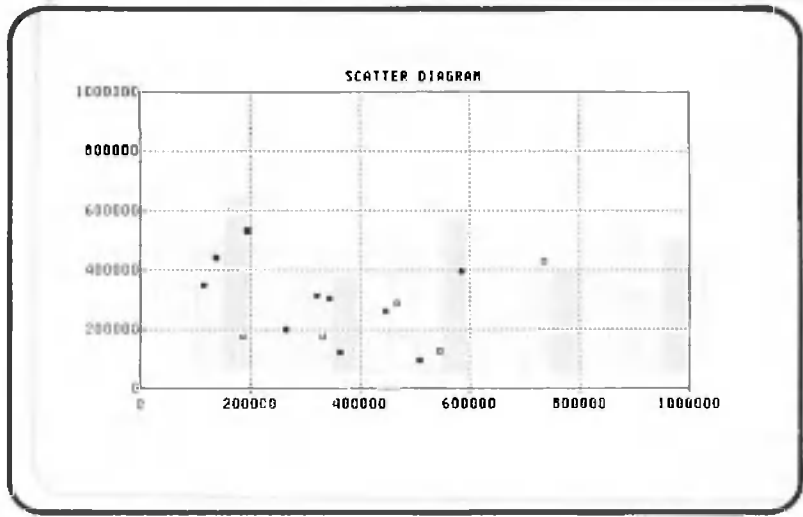


Note: Although this example shows a comparative bar chart consisting of four-bar groups, it is also possible to prepare comparative bar charts composed of only single bars.

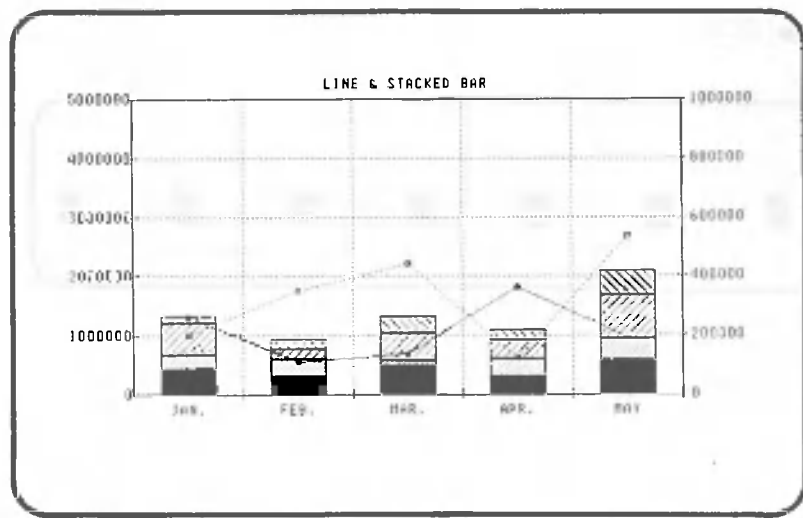
• Line chart



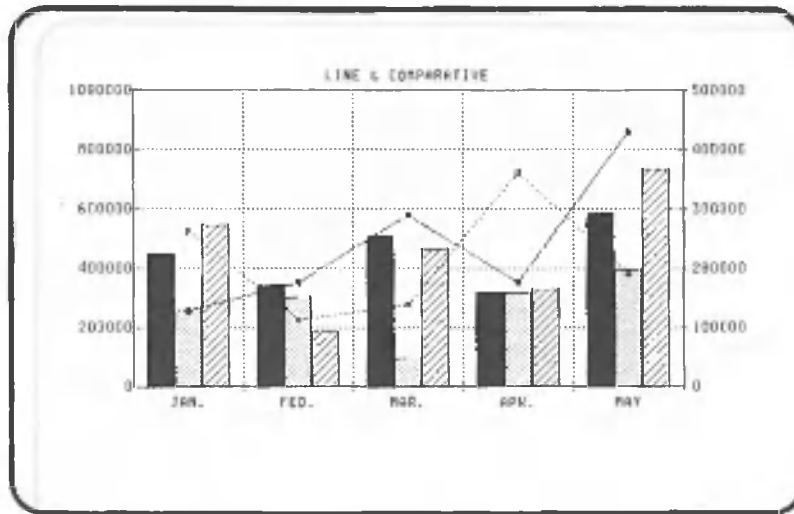
▪ Scatter diagram




• Line and stacked bar chart





• Line and comparative bar chart

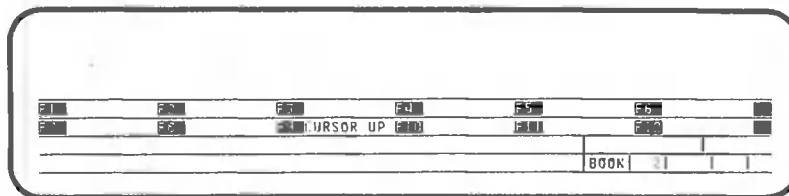


Next we will explain the procedures for displaying graphs, using the comparative bar chart as an example.

First, make sure  is off.

This means that the F9 key can be used to move the cursor up when correcting entered data.

▶  



2.1.3 Data specification

This section explains the procedures for specifying which data will be graphed. Our explanation begins with the screen displayed after the comparative bar graph is specified as the type of graph.

```

      GRAPH DEFINITION      INPUT TYPE OF GRAPH : 4
      1. PIE CHART          SPECIFY TABLE PAGE NO. :
      2. COMPOSITION RATIO CHART HORIZONTAL=0,VERTICAL=1 :
      3. STACKED BAR CHART  INPUT START DATA :
      4. COMPARATIVE BAR CHART INPUT END DATA :
      5. LINE CHART
      6. SCATTER DIAGRAM
      7. LINE & STACKED CHART
      8. LINE & COMPARATIVE CHART
  
```

BOOK 2

The previous screen asks which page contains the table on which the graph will be based. This page must be included in the same book as the page containing the graph. For this example, specify the "SALES BY BRANCH 1" table on page 2. After the page number is specified, the title of the table is displayed automatically.

▶ 2 ↵

```

      GRAPH DEFINITION      INPUT TYPE OF GRAPH : 4
      1. PIE CHART          SPECIFY TABLE PAGE NO. : 2 SALES BY BRANCH 1
      2. COMPOSITION RATIO CHART HORIZONTAL=0,VERTICAL=1 :
      3. STACKED BAR CHART  INPUT START DATA :
      INPUT END DATA :
  
```

CANOBRAIN can display graphs for table data either by row or column. When row data is to be graphed, specify "0" (Horizontal); when column data is to be graphed, specify "1" (Vertical).

Remember that the table on page 2 has the following format:

```

No. Code Branch name JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC Total
1
2
3

```

Now let's prepare a graph to compare the sales of three branches. Since the data that will be graphed is row data, specify the following:

▶ 0 ↵

GRAPH DEFINITION	INPUT TYPE OF GRAPH	: 4
	SPECIFY TABLE PAGE NO.	: 2 SALES BY BRANCH 1
1. PIE CHART	HORIZONTAL=0,VERTICAL=1	: 0
2. COMPOSITION RATIO CHART	INPUT START DATA	:
3. STACKED BAR CHART	INPUT END DATA	:
4. COMPARATIVE BAR CHART		
5. LINE CHART		
6. SCATTER DIAGRAM		
7. LINE & STACKED CHART		
8. LINE & COMPARATIVE CHART		

1-10	2.CODE	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.
6.	MAR	7.	APR	8.	MAY	9.	JUN	10.	JUL	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.

"NEXT DATA" will appear in the F10 field and "BEFORE DATA" in the F11 field. Data in the first row are displayed on the bottom two lines of the screen. A maximum of ten columns of data can be displayed at one time. If F10 is depressed you will be able to view the next ten columns. Conversely, depress F11 to view data in the preceding ten columns.

If you have designated that the horizontal axis should correspond to the columns of the table, data from the first column will appear.

Next, CANOBRAIN asks which column of row data will be graphed first. Since the graph will begin with January, specify 4 (for column 4, the column which contains the data for January).

▶ 4 ↵

When the column number is specified, the titles in the first row of that column are displayed automatically. However, nothing is displayed if the cell contains numbers.

			Start ↓							End ↓		
	1	2	3	4	5	6	7	8	...	15	16	
1				JAN	FEB	MAR	APR	MAY	...	DEC		
2				_____								
3				_____								
4				_____								
:												

GRAPH DEFINITION	INPUT TYPE OF GRAPH	: 4
1. PIE CHART	SPECIFY TABLE PAGE NO.	: 2 SALES BY BRANCH 1
2. COMPOSITION RATIO CHART	HORIZONTAL=0, VERTICAL=1	: 0
3. STACKED BAR CHART	INPUT START DATA	: 4 JAN.
	INPUT END DATA	:

▶ F10

11.	AUG 12.	SEP 13.	OCT 14.	NOV 15.	DEC		
16. T O T						BOOK	2

This screen asks for the last column that will be graphed. Since the graph will include data through December, specify the column number (15) for that month.

▶ 15 ↵

```

GRAPH DEFINITION      INPUT TYPE OF GRAPH : 4 SALES BY BRANCH I
SPECIFY TABLE PAGE NO. : 2
HORIZONTAL=0,VERTICAL=1 : 0
INPUT START DATA    : 3 JAN.
INPUT END DATA      : 15 DEC.

1. PIE CHART
2. COMPOSITION RATIO CHART
3. STACKED BAR CHART
4. COMPARATIVE BAR CHART
5. LINE CHART          SERISES :
6. SCATTER DIAGRAM    SERISES :
7. LINE & STACKED CHART SERISES :
8. LINE & COMPARATIVE CHART SERISES :
                       SERISES :
                       SERISES :
                       SERISES :
                       SERISES :
                       SERISES :
                       SERISES :

```

1. NO	2.	3.	4.	5.					
6.	7.	8.	9.	10.	BOOK	2			

The contents of the bottom two lines of the screen will change. The fields that correspond to numbers 2 through 10 are blank. This is because the first column of the table is filled with numeric data. "NO." appears in the first row of the first column. If you have designated that the horizontal axis should correspond to the columns of the table, data from the first row will appear. F10 and F11 assignments are still effective. This screen asks which branch data (rows) will be graphed. Here we will graph data for the "London", "New York", and "Calcutta" branches; so specify the row numbers of these branches (2, 3, and 4).

▶ 2 3 4

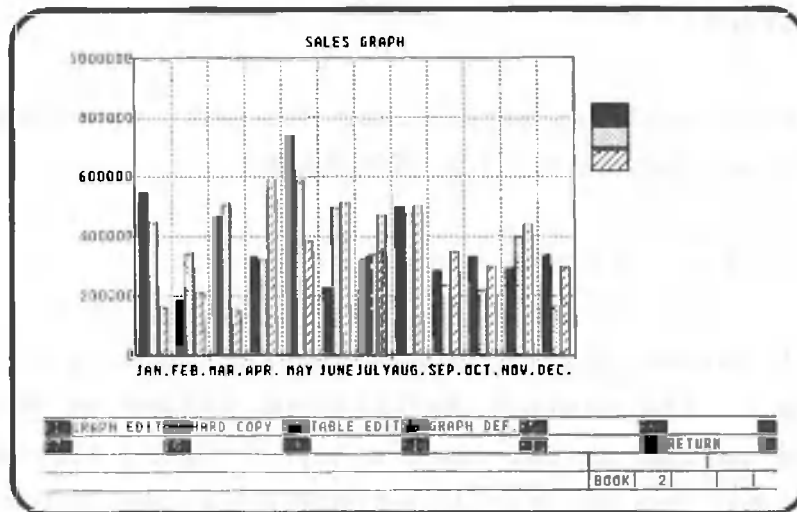
```

4. COMPARATIVE BAR CHART
5. LINE CHART          SERISES : 2
6. SCATTER DIAGRAM    SERISES : 1
7. LINE & STACKED CHART SERISES : 3
8. LINE & COMPARATIVE CHART SERISES :
                       SERISES :

```

Although up to 10 branches can be specified, indicate here that data for only three branches will be graphed as follows:

▶ F1



Does your result look like the one shown above? As you can see, a complete graph has been prepared by specifying only the graph type and the range of table data. CANOBRAIN automatically determines details like the size of the graph and the type of hatching that differentiates one bar from another. Although not shown in this example, it is also possible to automatically display a title for the horizontal axis and a legend at the right of the graph. This graph could be used as is, but it still leaves something to be desired. Next we will next explain how to edit graphs for a clearer presentation.

|||||One point lesson: When incorrect graph specifications are|||||
made

Use F9 to move the cursor to the cell whose contents are to be corrected, and then make the correct entry. Note that if any one of the designations has been corrected, from the type of graph to the end of data, everything up to the end of data must be re-entered. Use LINE FEED to move the cursor down.

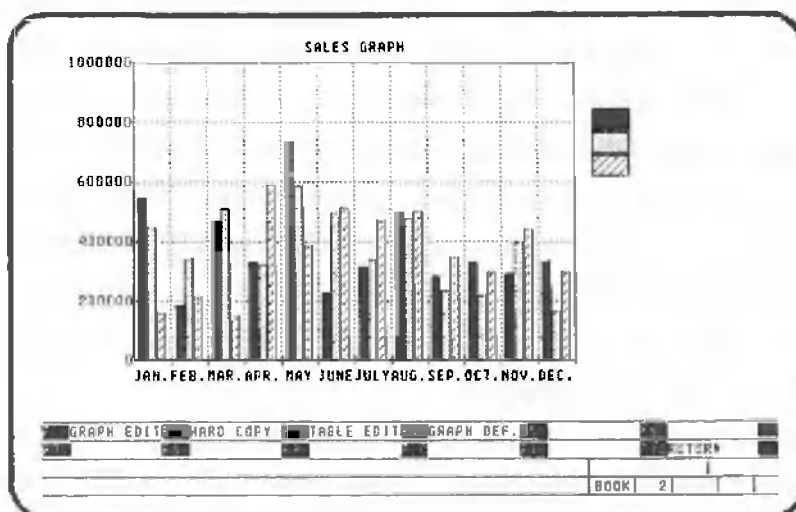
|||||

2.2 Editing Graphs

This section explains procedures for editing graphs displayed automatically by CANOBRAIN.

2.2.1 Changing the vertical axis

CANOBRAIN automatically determines the vertical axis according to the maximum and minimum values of data displayed in the graph. Let's try changing the maximum value to 800,000 to make the graph a little bigger.



▶ F1

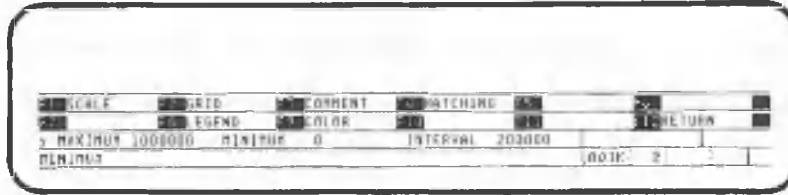
SCALE	GRAPH DEF	TABLE EDIT	GRAPH DEF	RETURN
MAXIMUM	MINIMUM	INTERVAL	BOOK 2	

▶ F1

SCALE	GRAPH DEF	TABLE EDIT	GRAPH DEF	RETURN
MAXIMUM 1000000	MINIMUM 0	INTERVAL 200000	BOOK 2	

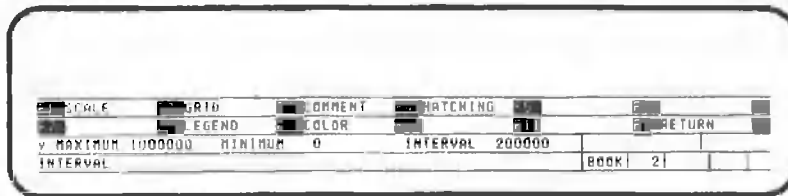
This screen asks for the maximum value. Specify the following to change the maximum value to 800,000.

▶ 8|0|0|0|0|0|0|↵



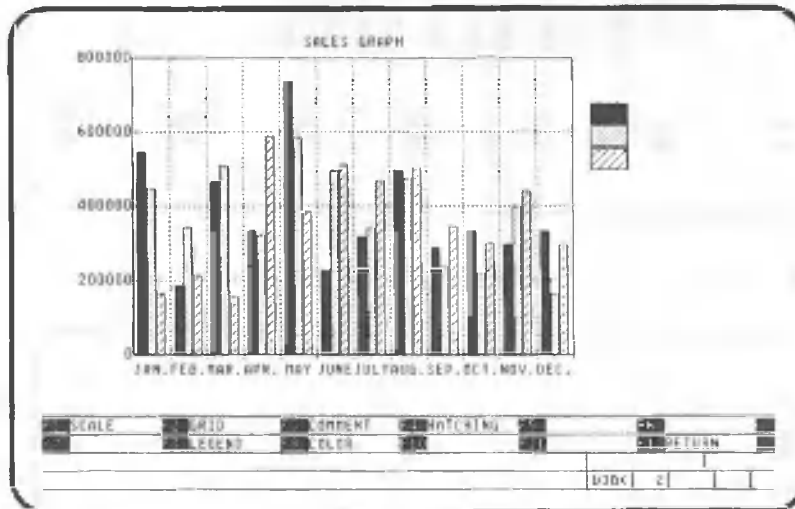
Now CANOBRAIN asks for the minimum value. Since this will not be changed, simply press .

▶



Here, CANOBRAIN asks for specification of the interval (horizontal axis). This will not be changed either, so press again.

▶



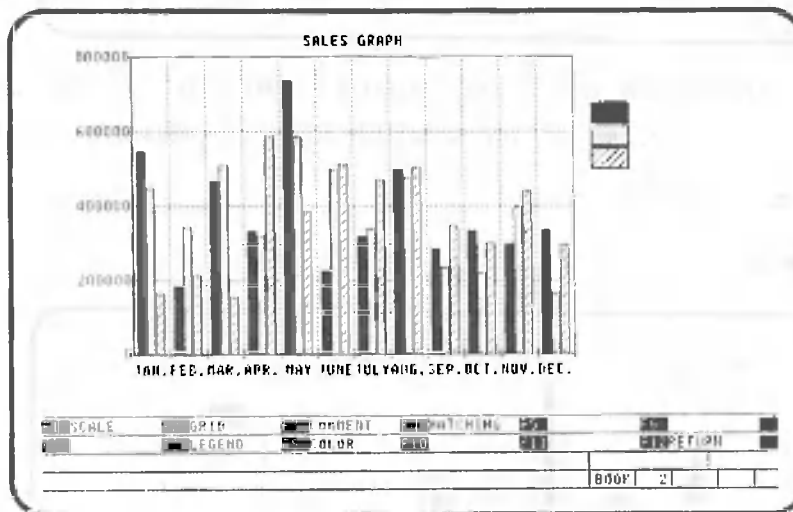
This ends the procedure for changing the vertical axis.

There are two vertical axes for line and comparative bar charts and line and stacked bar charts; one on the right and one on the left. For these graphs, the right axis is specified after left axis specification is completed.

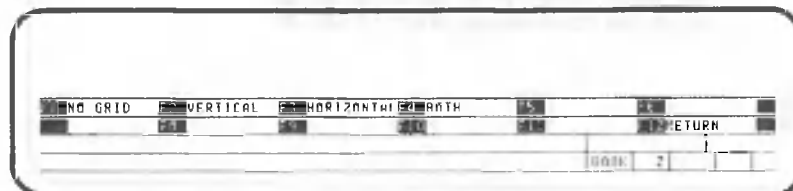
2.2.2 Deleting the vertical lines

The grids of a graph are composed of intersecting vertical and horizontal dotted lines. Although the purpose of grids is to make the graph easier to read, it can have the opposite effect if the graph is complicated. In this case, you can display only the horizontal or vertical lines, or eliminate the grids altogether.

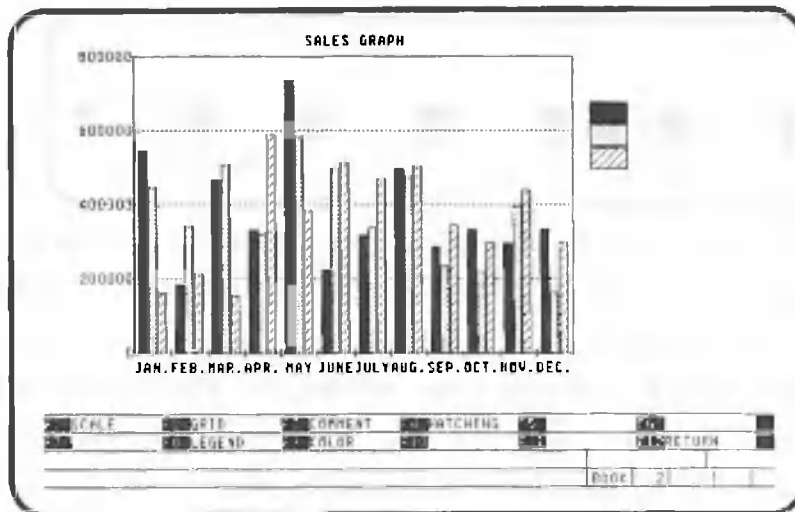
As an example, let's remove the vertical lines from our comparative bar graph. Procedures for doing this are explained starting with the screen shown below.



▶ F2



▶ F3

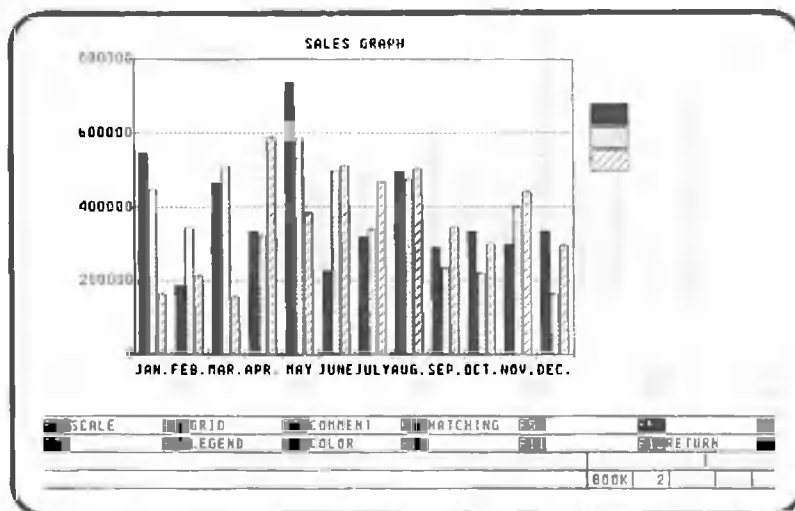


Now the graph has only horizontal lines.

2.2.3 Adding other information to graphs






It is possible to add other information to the screen when a graph is displayed. Any characters on the keyboard can be entered. However, characters written on the screen will be deleted when the screen is changed or when the graph is redisplayed. You cannot store such characters on a floppy disk with the graph.

As an example, let's add some comments for the branch names. Procedures for doing this are explained starting with the screen shown below.








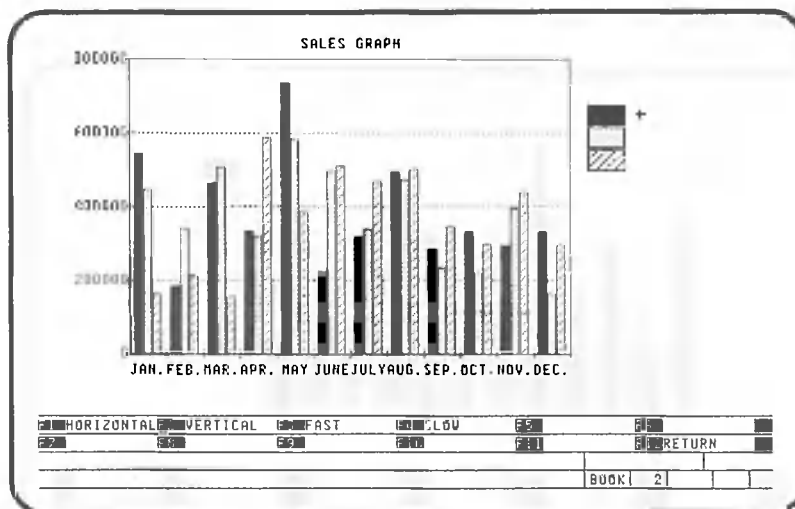
F3



You will notice that a plus (+) sign is displayed in the upper right-hand corner of the screen. This is called the graphic cursor and it is used to specify the position where information added to the graph will be displayed. When  is on, the graphic cursor can be moved in any direction using the arrow keys ( ,  ,  , and ). However, the cursor only moves about 1.6 mm (0.064 in.), or eight screen dots, each time one of these keys is pressed. Since this could be quite a lot of work, perform the following key operation to increase the unit movement distance.

►  ... (3 times)

Press one of the arrow keys; as you can see, the graphic cursor now moves farther each time the key is pressed. Pressing  once doubles the graphic cursor movement distance; pressing  again doubles that distance, etc. Pressing  produces the opposite result. Move the graphic cursor to the position shown in the figure below with  and  as just described.



After positioning the graphic cursor, specify whether the characters entered will be written horizontally or

vertically. Perform the following operation to write the branch names horizontally.

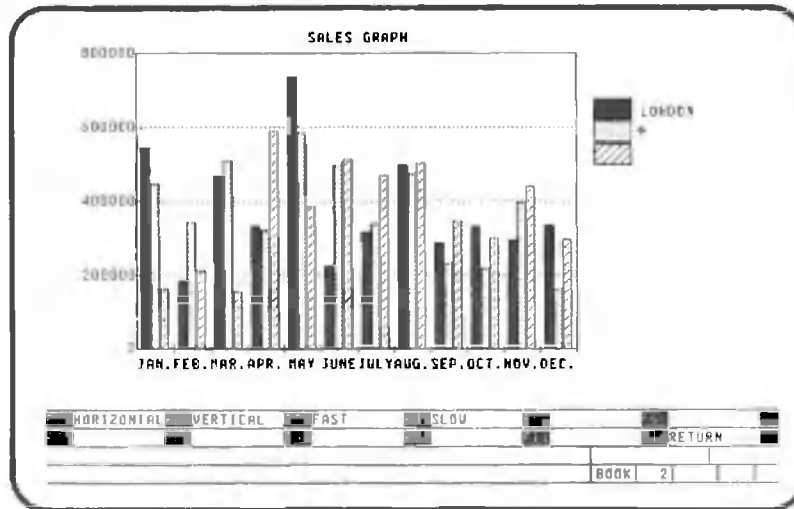
▶ **F1**

Enter the characters that will be added to the graph.

▶ **LONDON**

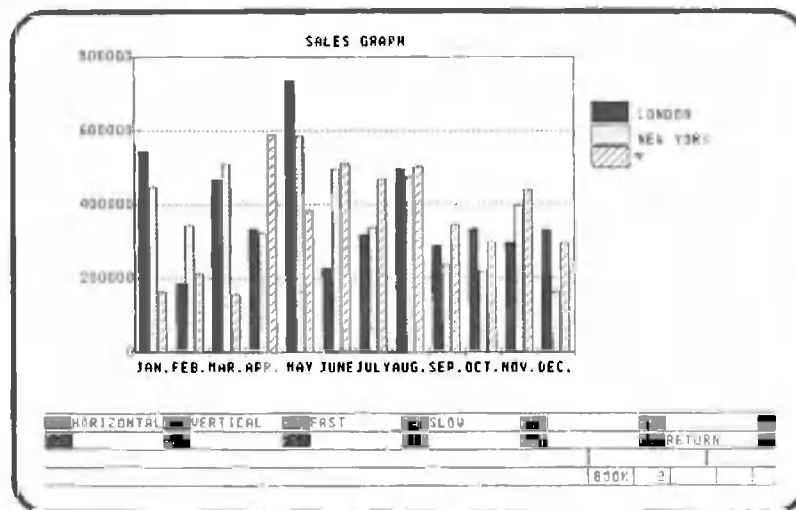
As you probably noticed, the graphic cursor did not move when the first branch name was entered. The center of the graphic cursor corresponds to the left side of the first character entered.

Move the graphic cursor to the correct positions and enter the branch names "New York" and "Calcutta".



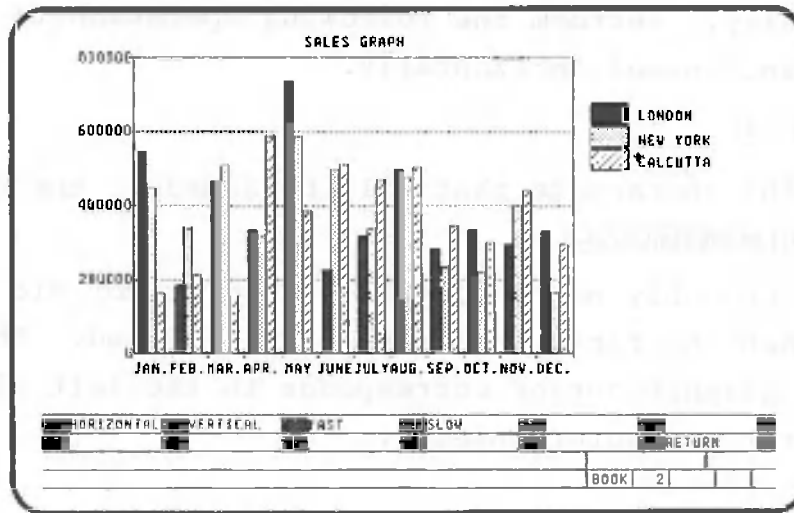
▶ **F1**

▶ **NEW YORK**



▶ **F1**

▶ **CALCUTTA**

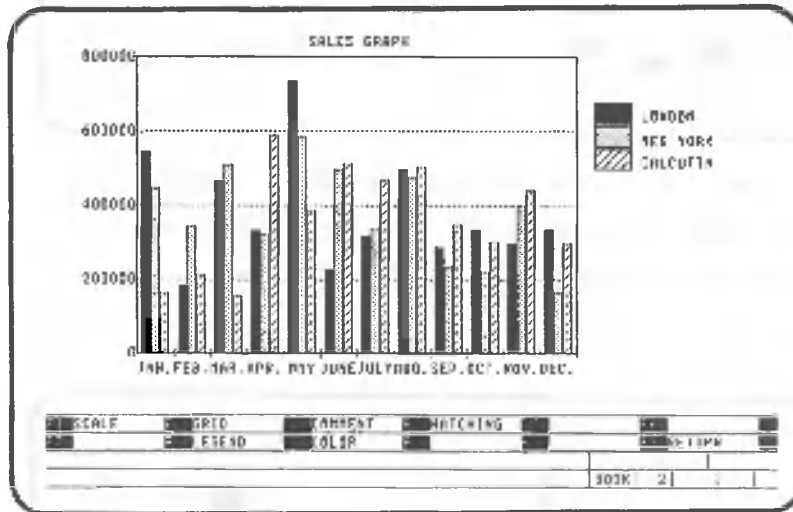


After you finish entering the information, press **F12** .

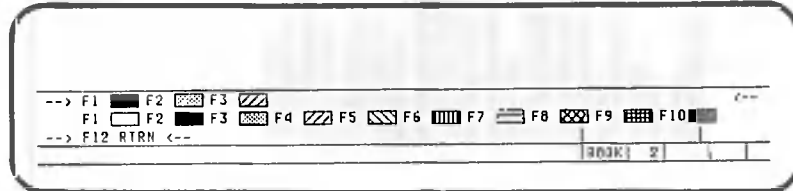


2.2.4 Modifying graph hatching



With pie charts and bar charts, CANOBRAIN automatically determines the type of hatching used for each of part of the graph. This section explains procedures for changing the type of hatching. Our explanation begins with the screen shown below.



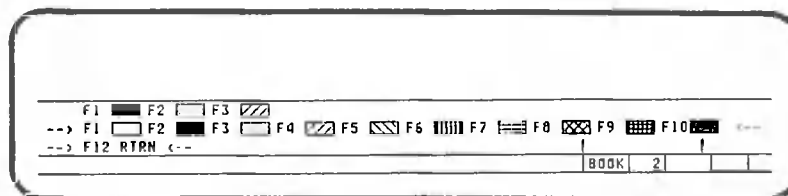
▶ F4



The types of hatching currently used in the graph are displayed on the fourth line from the bottom of the screen.

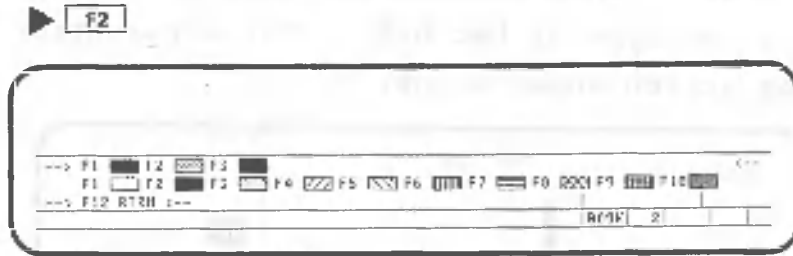
To specify which one will be changed, press the corresponding function key. Here, let's change the  hatching to .



▶ F3

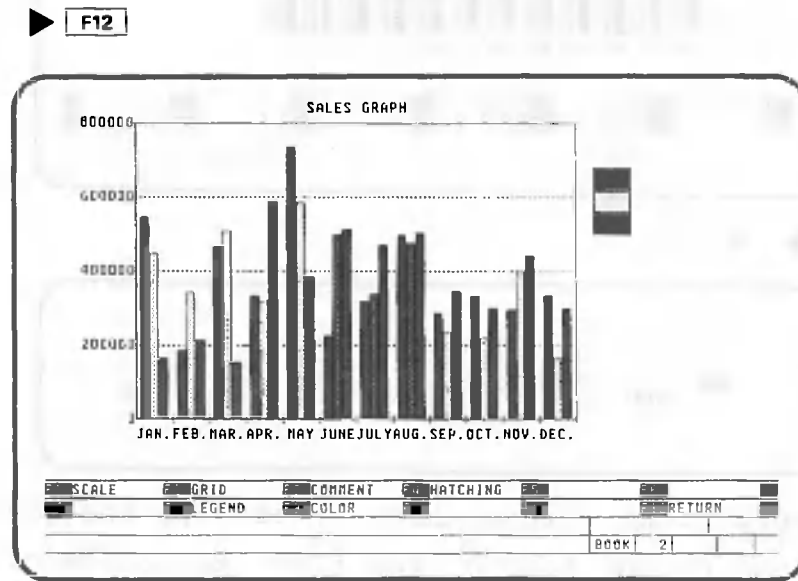


You will notice that the arrows positioned on either side of the fourth line from the bottom of the screen

have now moved down one line. This indicates that a new type of hatching can now be selected from those shown on this line. Press **F2** to select the corresponding type of hatching.



The arrows have now moved to their previous positions and the  hatching on the fourth line from the bottom has been replaced with  hatching.

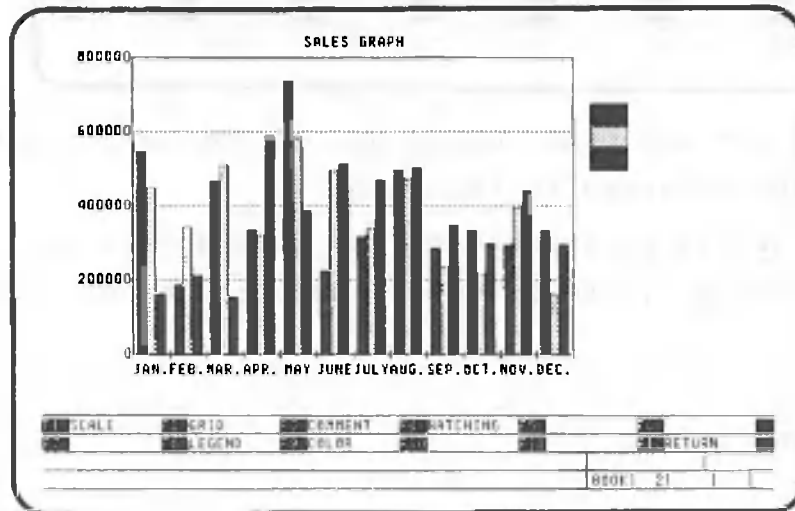


This completes the specified change. As you can see, the information that we added to the graph before was deleted when the graph was changed.

2.2.5 Deleting legends

The legend explains how a graph will be interpreted. If the legend is deleted, CANOBRAIN automatically increases the width of the graph.

Let's delete the legend. Procedures for doing this are explained beginning with the screen shown below.

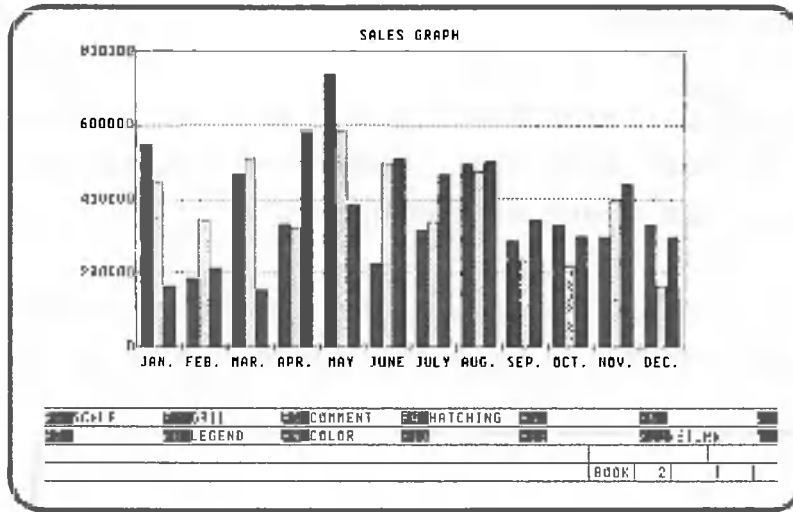


▶ FB



▶ F1





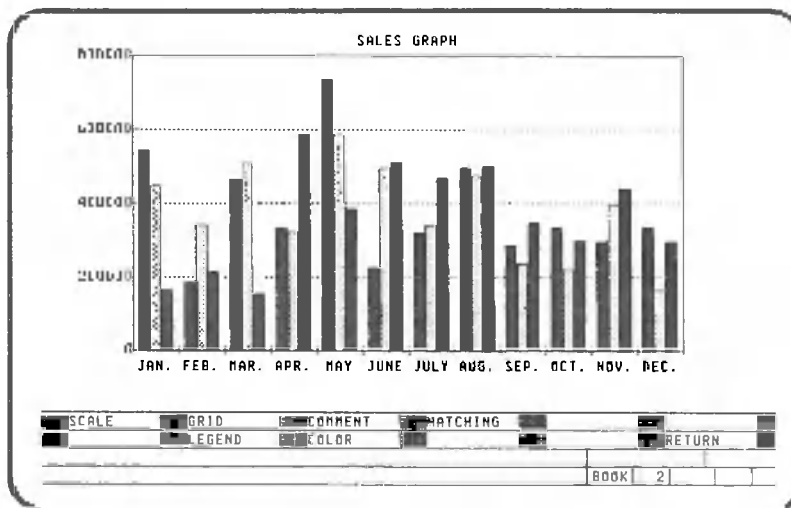
As you can see, the legend has disappeared and the graph has been enlarged to the right.

When **F8** is pressed again and "LEGEND" is selected by pressing **F2**, the screen returns to its original condition.

2.2.6 Changing colors

The color modification function can only be used with color systems. Although related operations can be performed on monochrome systems, the only result will be to increase or reduce the brightness of parts of the graph.

Assuming that you have a color system, let's change the graph's colors. Procedures for doing this are explained starting with the screen shown below.

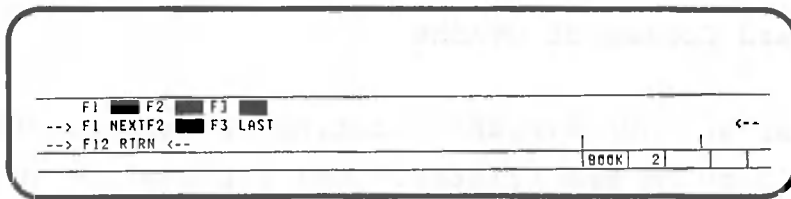


▶ **F9**



The colors currently used in the graph are displayed on the fourth line from the bottom of the screen. When you want to change a color, specify that color by pressing the corresponding function key. Here, let's change the color red.

▶ **F3**



When **F3** is pressed, the specified color is displayed on the third line from the bottom to the right of "F2". Now use **F1** and **F3** to change the color.

▶ **F1** ... (27 times)

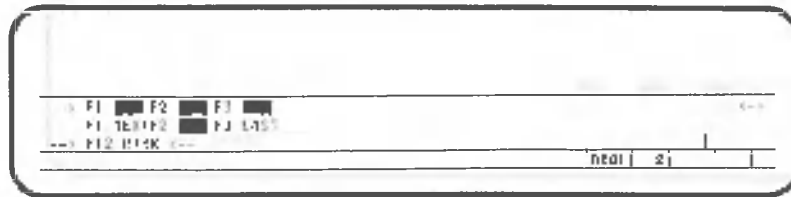
As you can see, pressing **F1** changes the red areas of the screen one after another. After the key has been pressed 27 times, these areas should return to their original color. CANOBRAIN can display 27 different colors (or no color, as preferred). However, only 8 different colors can be displayed at once, so it is not possible to use all 27 colors on the same screen.

▶ **F3** ... (7 times)

F3 changes colors in reverse order.

If you have pressed **F3** and **F1** the correct number of times, those areas of the screen which were originally red should now be blue. Let's use blue in the place of red.

▶ F2

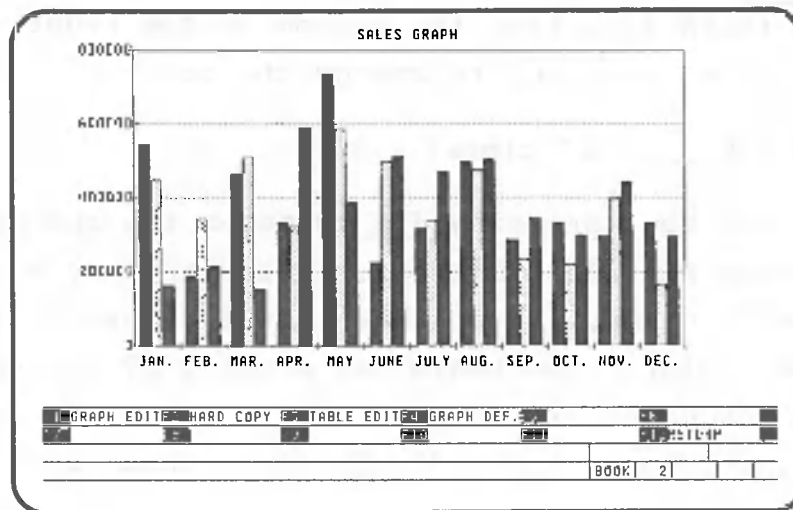


Now the color change is complete. To change other colors, repeat this operation sequence. When you are finished, press **F12** .

▶ F12 ... (2 times)

2.3 Making Hard Copies of Graphs

Now that we have finished editing the graph, let's make a hard copy on the printer. Our explanation of the procedure for doing this begins with the screen shown below.



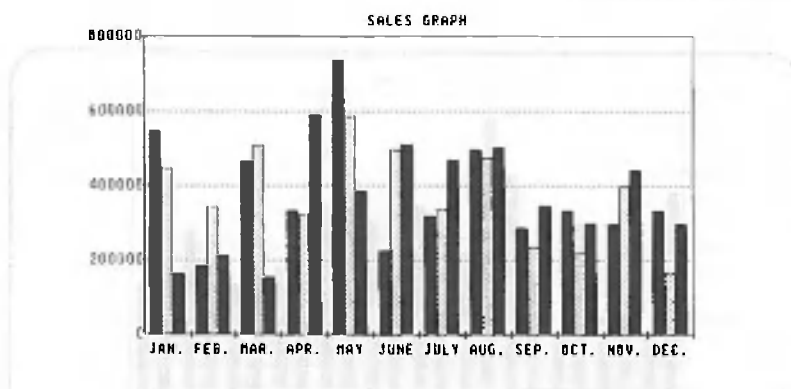
▶ F2

The words "HARD COPY" are displayed on the second line from the bottom of the screen after **F2** is pressed, and then printout begins. Only the graph itself is outputted to the printer; CANOBRAIN ignores the four lines at the bottom of the screen. A horizontal line is printed across the paper below the graph when graph printout is complete.

Any supplemental information that was added to the graph is printed out with the graph. After printout is completed, the words "HARD COPY" disappear from the bottom of the screen.

Depressing **CANCEL** will stop the printout.

An example of a graph hard copy is shown in the figure below.

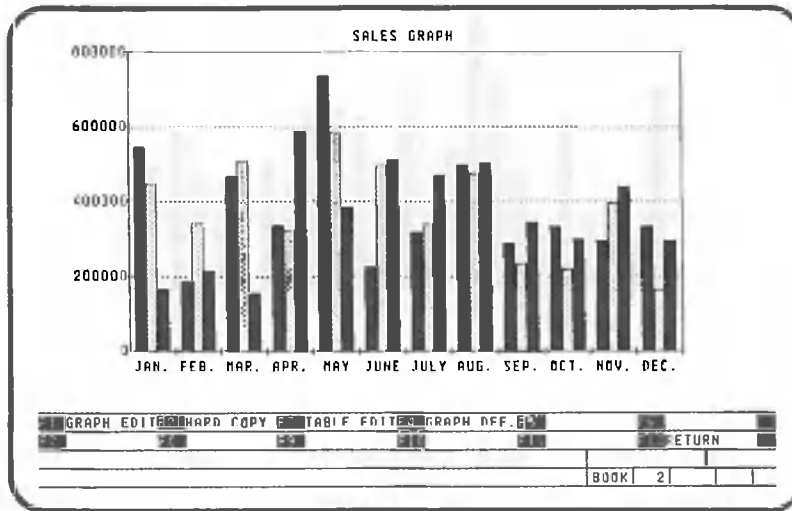


Note: This sample was produced on the A-1210 color printer. There will be variations between the colors displayed on the screen and those on the printout due to hardware characteristics.

2.4 Changing Data

Now our graph based on table data is complete. But how will the graph be affected if the contents of the table are changed? This is easy to check, so let's try it.

As an example, suppose that the May sales figure for the London branch is changed from "737200" to "600000". Procedures for doing this are explained starting with the screen shown below.



► **F3**

After **F3** is pressed, it takes approximately 20 seconds before the table is displayed on the screen.

	CODE	BRANCH	JAN.	FEB.	MAR.	APR.
1	0103	LONDON	547200	186400	467200	332900
2	0101	NEW YORK	446400	344500	509800	322800
3	0111	CALCUTTA	164700	213500	155600	589000
4	0112	MEXICO CITY	201600	354000	466200	245000
5	0109	LOS ANGELES	280800	426000	271500	234500
6	0102	TOKYO	264600	305000	98000	316200
7	0106	PARIS	201600	350900	445500	124300
8	0120	FRANKFURT	201600	396500	359000	202200
9	0116	PHILADELPHIA	345600	215800	342100	282200
10	0104	MOSCOW	130200	177900	291500	177200
11	0117	PEKING	264600	138900	190800	276800
12	0115	RIO DE JANEIRO	261600	228400	198000	147800
13	0121	LENINGRAD	351100	242200	335300	276100
14	0113	DETROIT	264600	284500	197800	468600
15	0107	OSAKA	164200	206500	439900	198700
16	0105	SHANGHAI	264600	115000	138500	362900
17	0108	BUENOS AIRES	236000	209400	372100	258300
18	0123	SAN FRANCISCO	209800	331800	305300	249700
19	0114	BOMBAY	334900	371000	242100	163400

INPUT INPUT PAT. DATA GEN. DUPLICATE FORMATING RETR./SORTS
 PRINTOUT 3 FILE PAGE SIZE PAGE DEF. 061110
 SELECT FUNCTION(F1-F12,COPY,MOVE,DELETE,INSERT) OFF P100. 11:1
 BOOK 21

From this point on, the table can be modified using exactly the same procedures as previously described.

First, move the cell cursor to row 2, column 8 (the May sales figure for the London branch).

► **E R2C8**

R C	3	4	5	6	7	8
	B R A N C H	JAN.	FEB.	MAR.	APR.	MAY
1	LONDON	547200	186400	467200	332900	586000
2	NEW YORK	446400	344500	509800	322800	586000

Change the data.

► **F1**

334900	371000	242100	163400	354100	
<input type="checkbox"/> CORRECT	<input type="checkbox"/> DELETE	<input type="checkbox"/> COL. EXP.	<input type="checkbox"/> RET. (SET)	<input type="checkbox"/> RET. (CNT)	<input type="checkbox"/>
<input type="checkbox"/> TOTAL	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> RETURN	<input type="checkbox"/>
INPUT DATA/EXPRESSION				100	0 R2C8
737200				BOOK	2

► **60000000**

R C	5	6	7	8	9	10	
	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY
1	547200	186400	467200	332900	600000	497300	318200
2	446400	344500	509800	322800	586000	497300	341200

► **F12**

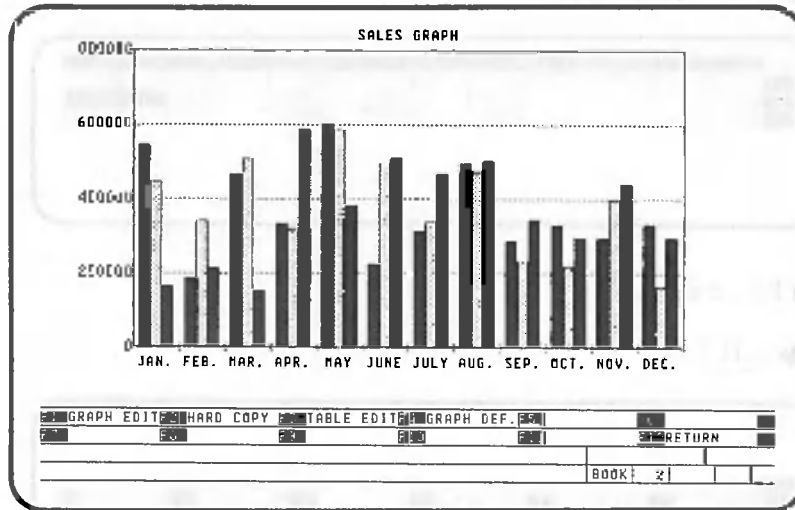
334900	371000	242100	163400	354100	253700	342900
<input type="checkbox"/> INPUT	<input type="checkbox"/> INPUT PAT.	<input type="checkbox"/> DATA GEN.	<input type="checkbox"/> DUPLICATE	<input type="checkbox"/> FORMATING	<input type="checkbox"/> RETR./SORT	<input type="checkbox"/>
<input type="checkbox"/> PROMPT	<input type="checkbox"/> CD FILE	<input type="checkbox"/>	<input type="checkbox"/> TABLE DEF.	<input type="checkbox"/>	<input type="checkbox"/> MONITOR	<input type="checkbox"/>
SELECT FUNCTION(F1-F12, COPY, MOVE, DELETE, INSERT)					DATA PROC.	R2C9
					BOOK	2

► **F12**

334900	371000	242100	163400	354100	253700	342900
<input type="checkbox"/> UPDATE	<input type="checkbox"/> NO UPDATE	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SELECT UPDATE DATA					DATA PROC.	R2C9
					BOOK	2

Here CANOBRAIN asks whether the updated table will be written to the floppy disk. For this example, we will leave the table on the disk unchanged.

▶ **F2**



As you can see, the graph is automatically updated to reflect the change made in the contents of the table. So it is possible to make temporary changes in graphs for review without changing the data stored on the disk. Of course, it is also possible to produce hard copies of such graphs by pressing **F2** .

Now the screen has changed so that you can specify the graph type. Depress F12 (CANCEL) if you specify F4 (GRAPH DEF.) by mistake. From this point on, procedures are almost the same as for comparative bar charts.

Data that will be used in the chart is specified just like that for comparative bar charts.

▶ 5 ↵

GRAPH DEFINITION	INPUT TYPE OF GRAPH	:	5
1. PIE CHART	SPECIFY TABLE PAGE NO.	:	
2. COMPOSITION RATIO CHART	HORIZONTAL=0,VERTICAL=1	:	
3. STACKED BAR CHART	INPUT START DATA	:	
	INPUT END DATA	:	

▶ 2 ↵

GRAPH DEFINITION	INPUT TYPE OF GRAPH	:	5
1. PIE CHART	SPECIFY TABLE PAGE NO.	:	2 SALES BY BRANCH 1
2. COMPOSITION RATIO CHART	HORIZONTAL=0,VERTICAL=1	:	
3. STACKED BAR CHART	INPUT START DATA	:	
	INPUT END DATA	:	

▶ 0 ↵

GRAPH DEFINITION	INPUT TYPE OF GRAPH	:	5
1. PIE CHART	SPECIFY TABLE PAGE NO.	:	7 SALES BY BRANCH 1
2. COMPOSITION RATIO CHART	HORIZONTAL=0,VERTICAL=1	:	1
3. STACKED BAR CHART	INPUT START DATA	:	
	INPUT END DATA	:	

▶ 4 ↵

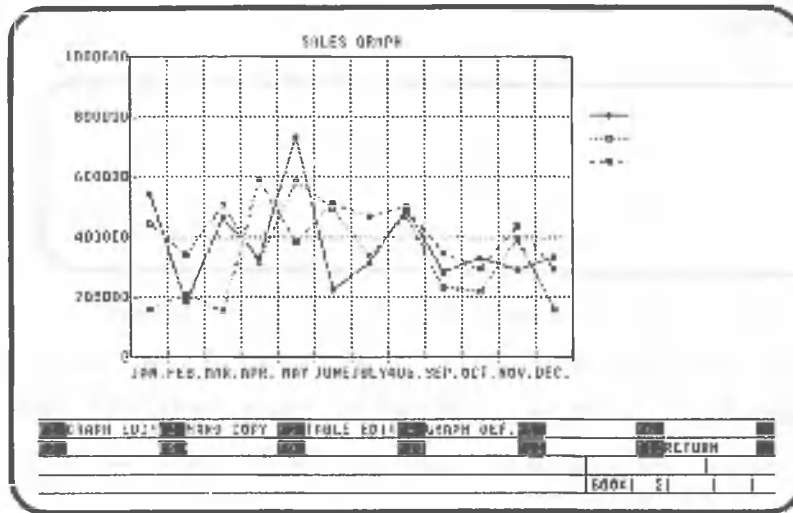
GRAPH DEFINITION	INPUT TYPE OF GRAPH	:	5
1. PIE CHART	SPECIFY TABLE PAGE NO.	:	7 SALES BY BRANCH 1
2. COMPOSITION RATIO CHART	HORIZONTAL=0,VERTICAL=1	:	0
3. STACKED BAR CHART	INPUT START DATA	:	4 JAN.
	INPUT END DATA	:	15 DEC.

▶ 15 ↵

GRAPH DEFINITION	INPUT TYPE OF GRAPH	:	5
1. PIE CHART	SPECIFY TABLE PAGE NO.	:	2 SALES BY BRANCH 1
2. COMPOSITION RATIO CHART	HORIZONTAL=0,VERTICAL=1	:	0
3. STACKED BAR CHART	INPUT START DATA	:	4 JAN.
4. COMPARATIVE BAR CHART	INPUT END DATA	:	15 DEC.

▶ 2 ↵ 3 ↵ 4 ↵ ↵

▶ F1

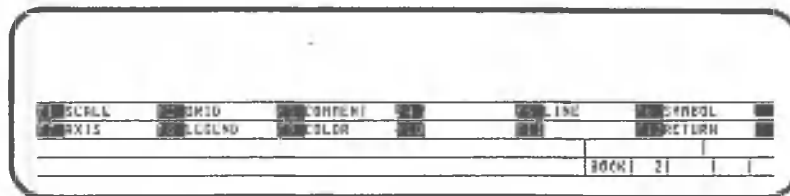


Now the line chart is displayed. Notice that the change which we made earlier in the table data is not reflected in this chart. The reason for this is that the displayed chart is based on the table data stored on the floppy disk.

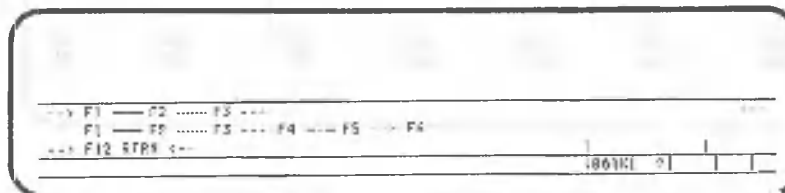
2.5.2 Changing line types

Once a line chart is displayed, the type of line used can be changed for a clearer presentation. Let's do this, assuming that the same line chart is displayed.

▶ **F1**

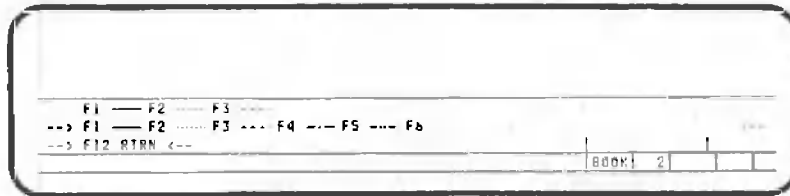


▶ **F5**



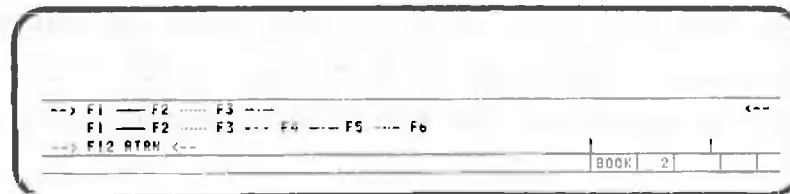
The line types currently used are displayed on the fourth line from the bottom of the screen. The line type that will be changed is selected by pressing the corresponding function key; here, let's change the line to a ---.--- line.

▶ F3



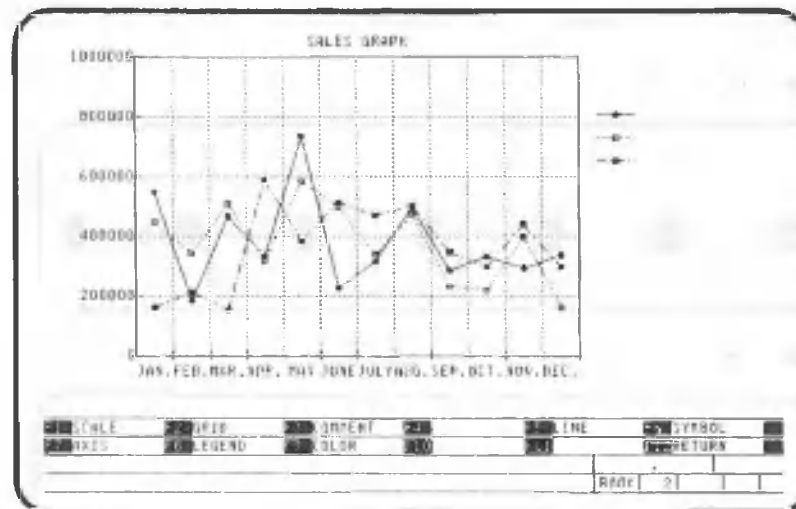
Notice that the arrows displayed on either side of the fourth line from the bottom of the screen have now moved down one line. This indicates that you can now select a line type to replace the one selected above.

▶ F4



Now the arrows have moved back to their previous position and the line has been replaced with a —. line.

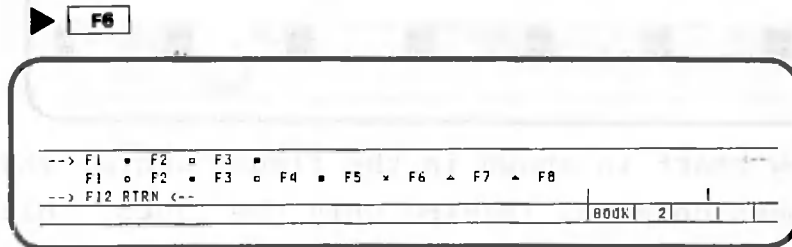
▶ F12



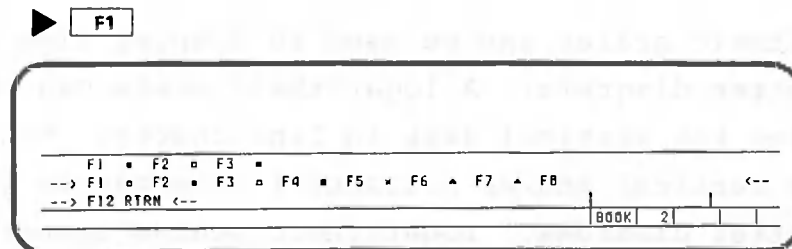
This completes our explanation of the procedures for changing line types.

2.5.3 Deleting and changing symbols

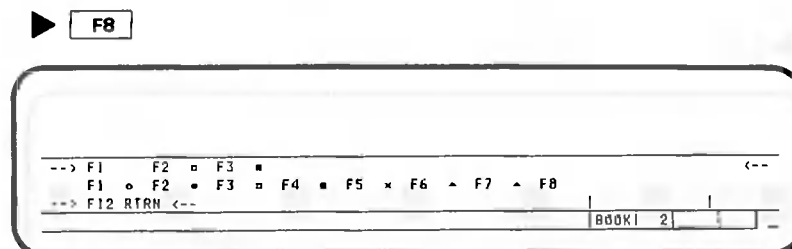
Once a line chart or scatter diagram is displayed, you can change or delete the symbols (points used to indicate positions) to make the graph easier to read. Let's delete one of the symbols. Our explanation resumes with the last screen shown in the previous explanation.



The symbols currently used in the graph are displayed on the fourth line from the bottom of the screen. The symbol that will be changed is selected by pressing the corresponding function key. Press **F1** to specify the ● symbol.

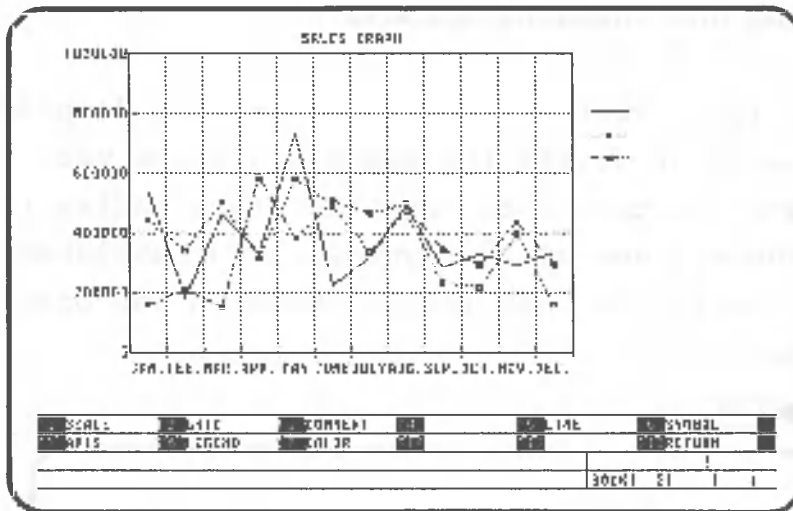


Now the arrows displayed on either side of the fourth line from the bottom of the screen have moved down one line indicating that you can now specify the symbol which will be used to replace the one just specified. Press **F8**.



Now the arrows have moved back to their previous positions and the ● symbol has been deleted from the chart and the line where the current symbols are displayed.



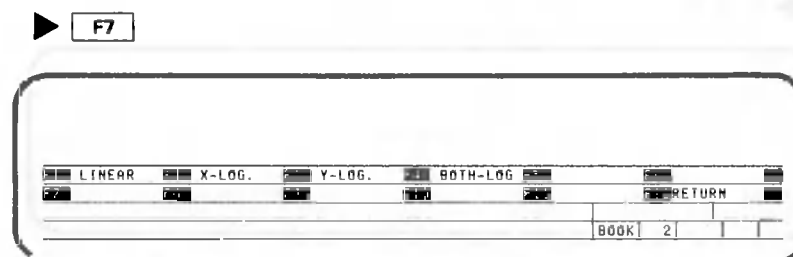


The new chart is shown in the figure above. The ● symbols have been deleted, leaving only the lines. Although the symbols were deleted in this example, it is also possible to change symbols from one type to another using the same procedure.

2.5.4 Using logarithmic scales

Logarithmic scales can be used to display line charts or scatter diagrams. A logarithmic scale can only be used for the vertical axis in line charts. The scale on the vertical and/or horizontal axis can be changed in scatter diagrams. Logarithmic scales cannot be used with line charts which are displayed together with comparative bar charts.

The following procedures are used to change a linear scale to a logarithmic scale. Our explanation begins from the last screen displayed in the previous explanation.



Since the graph in this example is a line chart, only the scale on the vertical (y) axis can be changed, so **F2** is not effective.

The graph is stored to the floppy disk when CANOBRAIN returns to this screen. Actually, this means that information like the graph type, line type, and table title are stored to the disk. The table data on which the graph is based is not. So when the table data is changed, the graph is also changed. Since the comparative bar chart we were working with was deleted, there is no record of it anywhere.

In this example, a new page for saving the graph was created before the graph was actually written to the disk, so prompts were not displayed at that time. But the next time a graph is stored to this page, CANOBRAIN will ask for confirmation that the page will be rewritten before anything is stored to the disk. When the page is to be rewritten, press F1 (SAVE). When it will not be rewritten, press F2 (NO SAVE).



VOLUME III

ROLL

CanoFile

Canon AS-100

The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that every entry, no matter how small, should be recorded to ensure the integrity of the financial statements. This includes not only sales and purchases but also expenses and income. The document further explains that proper record-keeping is essential for identifying trends, managing cash flow, and complying with tax regulations.

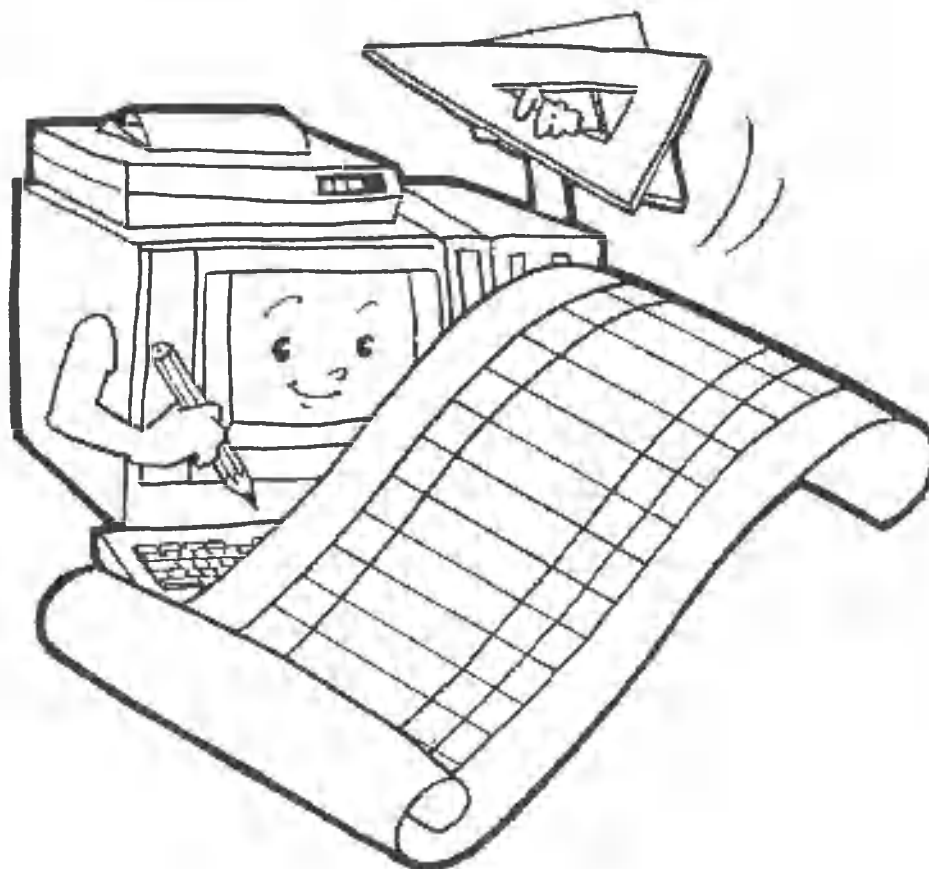
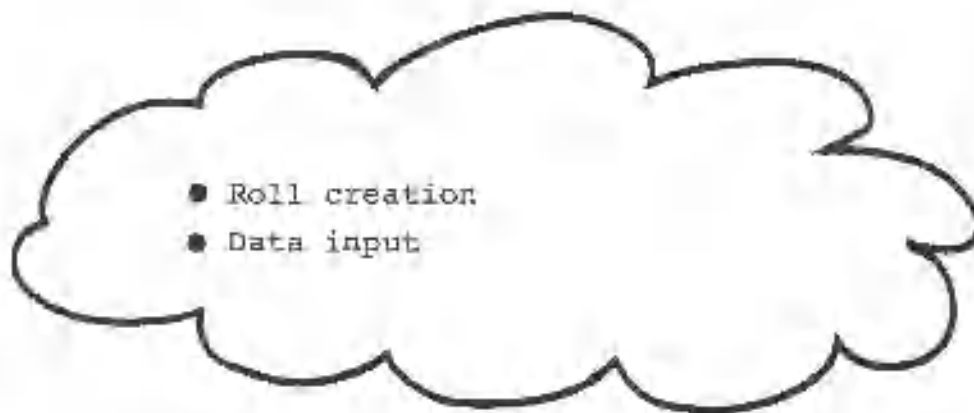
In the second section, the author provides a detailed overview of the accounting cycle. This cycle consists of eight steps: identifying the accounting entity, choosing the accounting method, analyzing transactions, recording transactions in the journal, posting to the ledger, preparing a trial balance, adjusting entries, and preparing financial statements. Each step is explained in detail, with examples provided to illustrate the process. The document stresses that following these steps in order is crucial for producing accurate and reliable financial information.

The third section focuses on the classification of assets and liabilities. It discusses how to distinguish between current and long-term assets, as well as current and long-term liabilities. The document provides guidelines for valuing these items and offers advice on how to present them in the balance sheet. It also touches upon the importance of disclosing related party transactions and contingencies.

Finally, the document concludes with a summary of the key points discussed. It reiterates the importance of accuracy, consistency, and transparency in financial reporting. The author encourages readers to seek professional advice when needed and to stay updated on changes in accounting standards and regulations.

Chapter 1 - CREATING A ROLL

This chapter describes the method of roll creation.

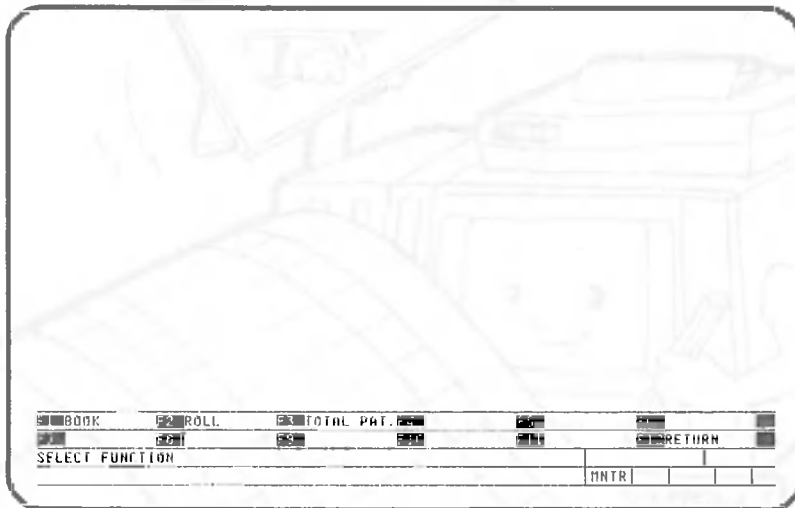


1.1 Defining Roll Formats

Before creating a roll, define its format. In this section, we will create a table with the following format:

BRANCH	PRODUCT	JAN.	FEB.	MAR.	.....	DEC.
NEW YORK	T.V. SET	200	400	300		630
TOKYO	REFRIGERATOR	450	380	230		390
LONDON	T.V. SET	120	230	220		350
MOSCOW	RADIO	720	650	480		950
SHANGHAI	RADIO					250
						310

This table lists the annual sales of all branches. Let's begin the roll creation process now.



Press the following key to select roll processing:



The following screen will appear:

ROLL LIST				
NO	ROLL NAME	CREATE	UPDATE	
1	EX2	12.01.83	12.01.83	
2	sample data	12.01.83	12.01.83	

CREATE	DELETE	MODIFY	PRINT	END	QUIT
SELECT ROLL INPUT ROLL NO. SCROLL					
			ROLL		

The list already contains two sample rolls. Press the following key to create a third roll:

▶ **F1**

ROLL LIST				
NO	ROLL NAME	CREATE	UPDATE	
1	EX2	12.01.83	12.01.83	
2	sample data	12.01.83	12.01.83	

INPUT ROLL NAME (MAX 20 CHAR.)					
			CREATE		
			ROLL		

Assign a name to the roll. In this example, the name is "SALES BY BRANCH". Press the following keys:

▶ SALES BY BRANCH ↵

The screen will change as follows:

ROLL NO.	ROLL NAME	CREATE	UPDATE	
1	EX2	12.01.83	12.01.83	
2	sample data	12.01.83	12.01.83	
3	SALES BY BRANCH	12.01.83	12.01.83	CREATE

COPY ROLL? (ENTER=NO COPY), (INPUT ROLL NO.)

CREATE ROLL

CANOBRAIN asks you whether the format of an existing roll is to be copied (number of lines, number of columns, column width, etc.)

Press because a format will not be copied for this example.

▶ ↵

INPUT NUMBER OF ROWS

CREATE ROLL

CANOBRAIN asks you to input the number of rows in the table. Assume that the table has 50 rows. The number of rows can be increased later if necessary.

▶ 50 ↵

INPUT COLUMN WIDTH (MAX 20 CHAR.)

CREATE ROLL

<input type="checkbox"/> REAL	<input type="checkbox"/> INTEGER	<input type="checkbox"/> DECIMAL	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SELECT MULTIPLE TYPE						CREATE
						ROLL

Press the following key because the number of units sold will be entered as an integer:

▶ **F2**

<input type="checkbox"/> COMMAS	<input type="checkbox"/> NO COMMAS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SELECT COMMA EVERY 3 DIGITS						CREATE
						ROLL

CANOBRAIN asks you whether or not commas are to be inserted between digits to increase readability. In this example, commas are inserted.

▶ **F1**

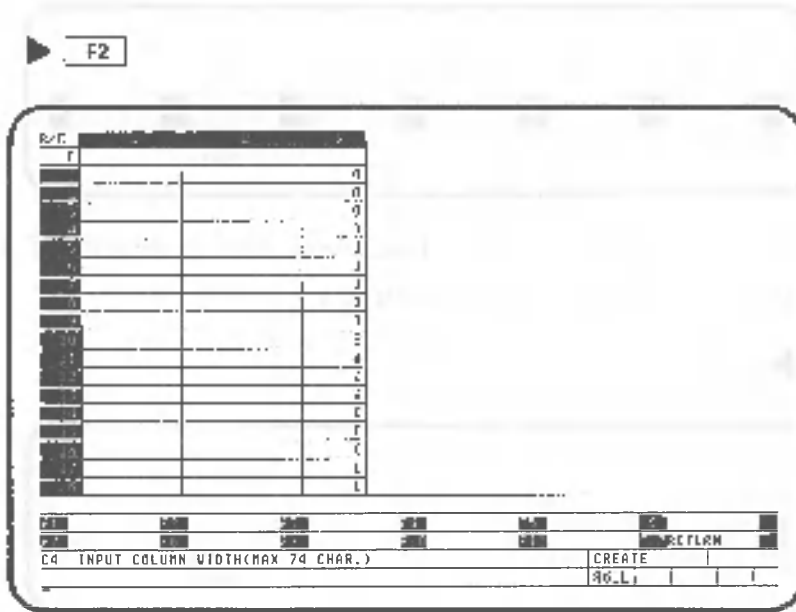
<input type="checkbox"/> PUNCT.	<input type="checkbox"/> NO PUNCT.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SELECT PUNCTUATION						CREATE
						ROLL

The character editing option is used to specify whether or not such characters as a dollar sign or a plus sign are to be automatically inserted before or after numeric values. Character editing will be described later. In this example, character editing is not selected.

▶ **F2**

<input type="checkbox"/> ROUND DOWN	<input type="checkbox"/> ROUND OFF	<input type="checkbox"/> ROUND UP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SELECT ROUNDING						CREATE
						ROLL

Next, CANOBRAIN asks you to specify a numeric rounding mode (round down, round off or round up). For this example, specify round off.

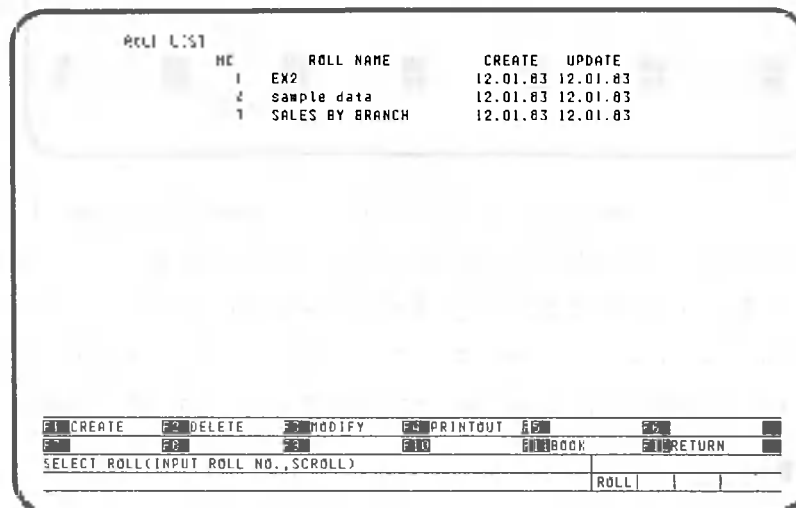


Define columns 4 to 15 similarly.

▶ **6** **↓** **F2** **F2** **F1** **F2** **F2** ... (11 times)

After defining columns 1 to 14, press the following key:

▶ **F12**









A new roll has been created. Each column can be re-defined later (column width and column attributes).

Furthermore, rows and columns that are being processed are displayed on the same line (START=1 END=50).






One Point Lesson: Displaying rows after row 200

The rows that can be processed are given on the fifth row from the bottom of the screen under the headings START and END. Up to 200 rows can be processed at one time, and generally the row parameters are set at 1 and 200, respectively (50 or 100 rows can also be set, depending on column widths).

To display rows after row 200, perform the following operation:


- . Press  and then input any given cell address after row 200.
- . Display row 200 and press . Make sure the  is on, and then press .
- . Press  and then .

After  is pressed, all rows in the roll on the floppy disk can be accessed.

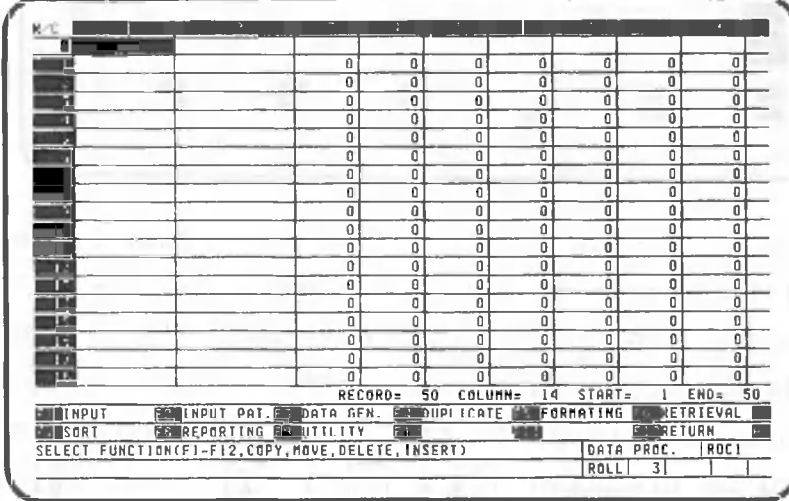
- . 
- . 
- . 
- . 
- . 

- . Input an address.

Input an item name in row 0.

Move the cell cursor to the cell starting column 1 on row 0 to input "BRANCH". Activate the  and then press the following key:

▶ 

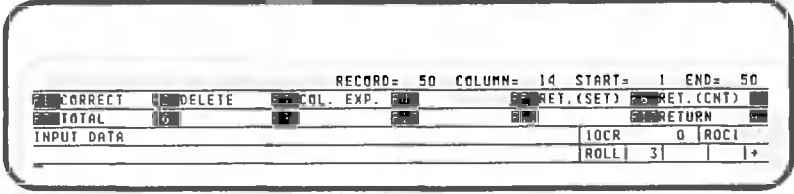


RECORD= 50 COLUMN= 14 START= 1 END= 50

INPUT	INPUT PAT.	DATA RFN.	DUPLICATE	FORMATING	RETRIEVAL
SORT	REPORTING	UTILITY			RETURN
SELECT FUNCTION(F1-F12,COPY,MOVE,DELETE,INSERT)				DATA PROC.	ROC1
				ROLL	3

Press the following key to input data:

▶ 



RECORD= 50 COLUMN= 14 START= 1 END= 50

CORRECT	DELETE	COL. EXP.	RET. (SET)	RET. (CNT)
TOTAL	REPORTING	UTILITY		RETURN
INPUT DATA				10CR 0 ROC1
				ROLL 3 | +

Input "BRANCH" as follows:

▶ **BRANCH**

Input the following data in row 1:

Branch	Product	January	February	March
New York	TV SET	200	400	300

Input data as follows:

▶ NEW YORK ↵

R/C	1	2	3	4	5	6	7	8	9
0	BRANCH	PRODUCT	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY
1	NEW YORK		0	0	0	0	0	0	0
2			0	0	0	0	0	0	0
3			0	0	0	0	0	0	0

▶ TV SET ↵

R/C	1	2	3	4	5	6	7	8	9
0	BRANCH	PRODUCT	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY
1	NEW YORK	TV SET		0	0	0	0	0	0
2			0	0	0	0	0	0	0
3			0	0	0	0	0	0	0

Input data for January, February, and March.

▶ 200 ↵

▶ 400 ↵

▶ 300 ↵

R/C	1	2	3	4	5	6	7	8	9
0	BRANCH	PRODUCT	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY
1	NEW YORK	TV SET	200	400	300	0	0	0	0
2			0	0	0	0	0	0	0
3			0	0	0	0	0	0	0
4			0	0	0	0	0	0	0
5			0	0	0	0	0	0	0
6			0	0	0	0	0	0	0
7			0	0	0	0	0	0	0
8			0	0	0	0	0	0	0
9			0	0	0	0	0	0	0
10			0	0	0	0	0	0	0
11			0	0	0	0	0	0	0
12			0	0	0	0	0	0	0
13			0	0	0	0	0	0	0
14			0	0	0	0	0	0	0
15			0	0	0	0	0	0	0
16			0	0	0	0	0	0	0
17			0	0	0	0	0	0	0
18			0	0	0	0	0	0	0
19			0	0	0	0	0	0	0
20			0	0	0	0	0	0	0
21			0	0	0	0	0	0	0
22			0	0	0	0	0	0	0
23			0	0	0	0	0	0	0
24			0	0	0	0	0	0	0
25			0	0	0	0	0	0	0
26			0	0	0	0	0	0	0
27			0	0	0	0	0	0	0
28			0	0	0	0	0	0	0
29			0	0	0	0	0	0	0
30			0	0	0	0	0	0	0
31			0	0	0	0	0	0	0
32			0	0	0	0	0	0	0
33			0	0	0	0	0	0	0
34			0	0	0	0	0	0	0
35			0	0	0	0	0	0	0
36			0	0	0	0	0	0	0
37			0	0	0	0	0	0	0
38			0	0	0	0	0	0	0
39			0	0	0	0	0	0	0
40			0	0	0	0	0	0	0
41			0	0	0	0	0	0	0
42			0	0	0	0	0	0	0
43			0	0	0	0	0	0	0
44			0	0	0	0	0	0	0
45			0	0	0	0	0	0	0
46			0	0	0	0	0	0	0
47			0	0	0	0	0	0	0
48			0	0	0	0	0	0	0
49			0	0	0	0	0	0	0
50			0	0	0	0	0	0	0
RECORD= 50 COLUMN= 14 START= 1 END= 50									
F1	CORRECT	F2	DELETE	F3	COL. EXP.	F4		F5	RET. (SET)
F6		F7	TOTAL	F8		F9		F10	
F11		F12		F13		F14		F15	RETURN
INPUT DATA									
0								0bN	C-00
								ROLL	3

A roll containing sample data is provided to save the time needed to input data. We will use this sample data.

Stop inputting data and press the following key:

▶ **F12**

```

RECORD= 50 COLUMN= 14 START= 1 END= 50
PRINT INPUT PAT. DATA GEN. DUPL. CTRL. FORMATTING RETRIEVAL
SORT RETORTING UTILITY DATA PROC. RICK
SELECT FUNCTION(F1-F12,COPY,MOVE,DELETE,INSERT)
ROLL 1
  
```

Display the roll list screen again by pressing this key:

▶ **F12**

```

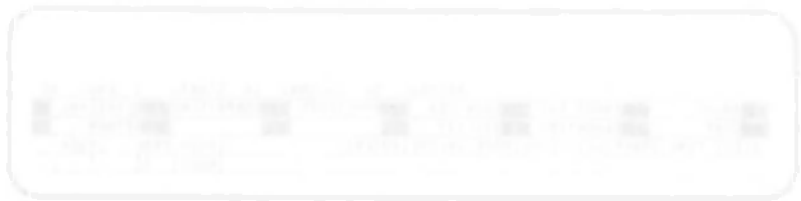
ROLL LIS
  IN  ROLL NAME      CREATE  UPDATE
  1   EX2            12.01.83 12.01.83
  2   sample data    12.01.83 12.01.83
  3   SALES BY BRANCH 12.01.83 12.01.83

CREATE  DELETE  MODIFY  PRINTOUT  BOOK  RETURN
SELECT ROLL(INPUT ROLL NO., SCROLL)
ROLL
  
```

A roll containing sample data is provided to save the time needed to input data. We will use this sample data.

Group inputting data and press the following key:

▶ [F10]



Display the roll list screen again by pressing this key:

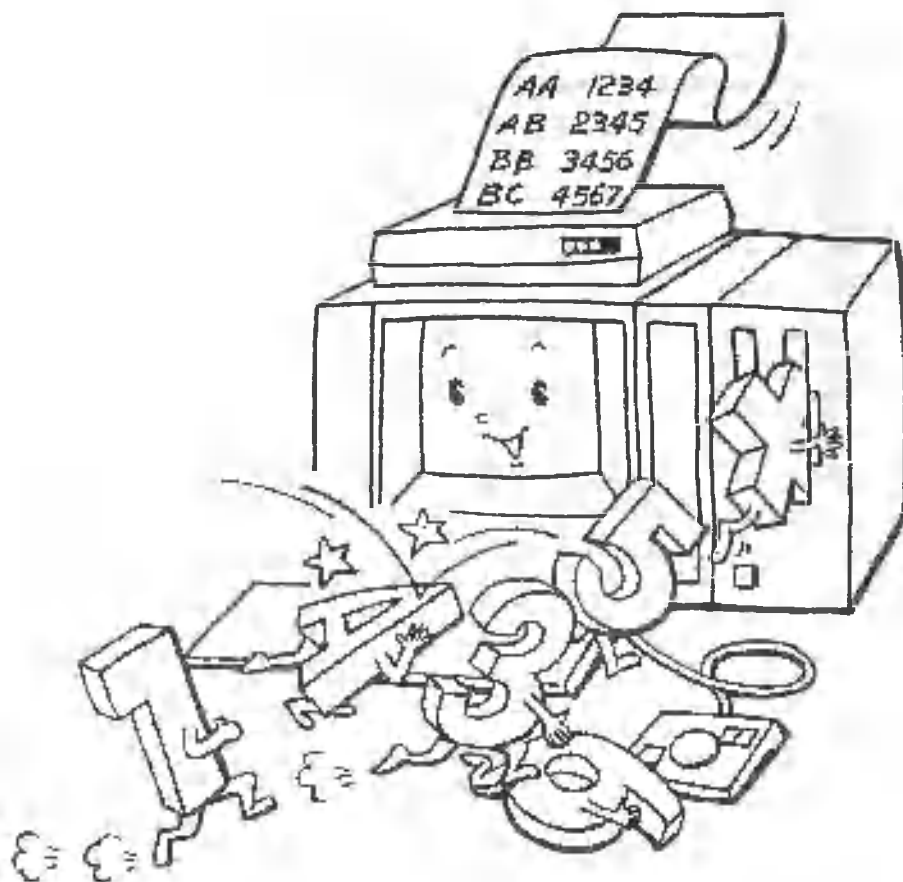
▶ [F12]



Chapter 2 - MANIPULATING DATA

This chapter uses sample data to explain CANOBRAIN's roll processing functions.

- Data calculation procedures
- Data sorting
- Data retrieval
- Data printout



This chapter explains how to manipulate data contained in a roll.

The description begins with the following screen:

ROLL LIST				
NO	ROLL NAME	CREATE	UPDATE	
1	EX2	12.01.83	12.01.83	
2	sample data	12.01.83	12.01.83	
3	SALES BY BRANCH	12.01.83	12.01.83	

<input type="checkbox"/>	CREATE	<input type="checkbox"/>	DELETE	<input type="checkbox"/>	MODIFY	<input type="checkbox"/>	PRINTOUT	<input type="checkbox"/>	<input type="checkbox"/>	RETURN
SELECT ROLL (INPUT ROLL NO., SCROLL)										
ROLL										

Select the roll, "sample data", which contains data.

▶

0	BRANCH	PRODUCT	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY
	TOKYO	T.V. SET	200	400	300	250	360	520	400
	TOKYO	REFRIGERATOR	450	380	230	450	300	430	350
	LONDON	T.V. SET	120	230	220	310	280	390	200
	MOSCOW	RADIO	720	650	480	590	600	880	710
	SHANGHAI	RADIO	200	150	180	160	170	220	250
	PARIS	REFRIGERATOR	310	180	120	270	250	200	180
	OSAKA	T.V. SET	160	230	180	320	120	150	170
	FRANKFURT	T.V. SET	340	220	270	280	230	290	240
	L.A.	RADIO	360	240	270	280	210	180	160
	CHICAGO	REFRIGERATOR	340	280	310	250	240	300	280
	CALCUTTA	RADIO	260	230	210	250	270	270	230
	MEXICO	T.V. SET	450	320	470	380	260	280	230
	DETROIT	RADIO	620	510	550	660	430	480	330
	BOMBAY	REFRIGERATOR	420	310	390	440	280	300	330
	PEKING	T.V. SET	370	320	350	440	420	360	380
	HONG KONG	REFRIGERATOR	270	310	330	280	260	240	330
	AMSTERDAM	T.V. SET	160	200	180	120	170	160	150
	PRIN	RADIO	240	150	130	210	250	140	180

RECORD= 50 COLUMN= 14 START= 1 END= 50

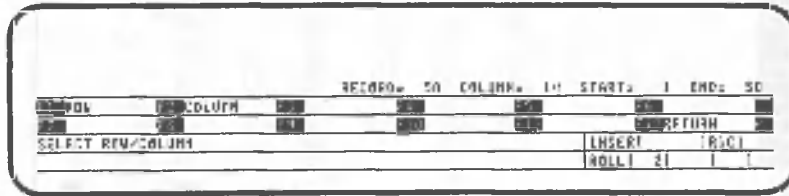
<input type="checkbox"/>	INPUT	<input type="checkbox"/>	INPUT PAT.	<input type="checkbox"/>	DATA GEN.	<input type="checkbox"/>	DUPLICATE	<input type="checkbox"/>	FORMATTING	<input type="checkbox"/>	RETRIEVAL
<input type="checkbox"/>	SORT	<input type="checkbox"/>	REPORTING	<input type="checkbox"/>	UTILITY	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	RETURN
SELECT FUNCTION (F1-F12, COPY, MOVE, DELETE, INSERT)											
DATA PROC. (RIC)											
ROLL 2											

2.1 Calculating Totals

Add the total column to the table, and calculate the total number of units sold from January to December for each row.

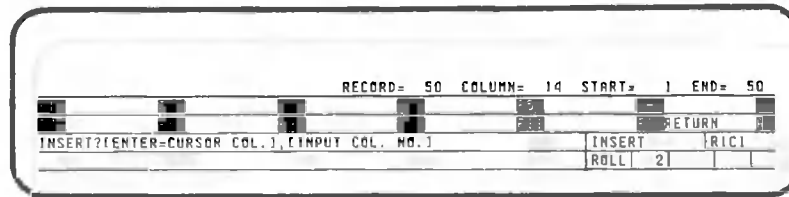
Insert a new column (column 15). Press the following key:

▶ **INSERT**



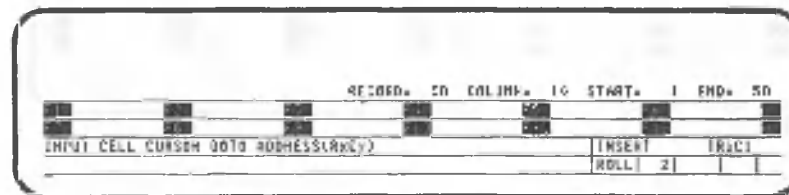
CANOBRAIN asks you which is to be inserted, a row or a column. Press the following key to insert a column:

▶ **F2**



CANOBRAIN asks you where the column should be inserted. The total column is to be added to the far right of the table. Display this part of the table. Then press the following key:

▶ **→**



Specify the cell address to which the cell cursor is to be moved. Press the following key to move the cell cursor to row 1, column 14.

► R1C14 ↵

R	C	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1		300	250	360	520	400	330	260	440	310					
2		230	450	300	430	350	400	230	350	410	390				
3		220	310	280	390	200	150	190	210	270	350				
4		590	600	880	710	560	680	720	420	950					
5		180	160	170	220	250	180	160	200	320	250				
6		120	270	250	200	180	230	310	280	240	310				
7		180	320	120	150	170	140	140	200	180	320				
8		270	280	230	290	240	260	230	300	320	350				
9		270	280	210	180	160	240	250	220	310	370				
10		310	250	240	300	280	270	330	180	210	380				
11		210	250	270	270	230	200	210	180	160	310				
12		470	380	260	280	230	330	310	360	480	440				
13		550	660	430	480	330	480	360	550	380	450				
14		390	440	280	300	330	420	230	380	350	320				
15		350	440	420	360	380	290	370	310	230	460				
16		280	260	240	330	410	380	360	250	510					
17		180	120	170	160	150	130	130	180	220	280				
18		130	210	250	140	180	260	220	230	170	300				

RECORD= 50 COLUMN= 14 START= 1 END= 50

INSERT?(ENTER=CURSOR COL.),(INPUT COL. NO.)

INSERT R1C14

ROLL 2

Insert a column to the right of column 14.

► 15 ↵

RECORD= 50 COLUMN= 14 START= 1 END= 50

INSERT?(ENTER=CURSOR COL.),(INPUT COL. NO.)

INSERT R1C14

ROLL 2

CANOBRAIN asks you to input the column width to be inserted. The column width is 10.

► 10 ↵

RECORD= 50 COLUMN= 14 START= 1 END= 50

CHARACTER NUMERIC

SELECT DATA TYPE

INSERT R1C14

ROLL 2

CANOBRAIN asks you to input the data type, character or numeric. The total number of units is of the numeric type.

▶ F2

RECORD= 50 COLUMN= 14 START= 1 END= 50			
<input type="checkbox"/> REAL	<input checked="" type="checkbox"/> INTEGER	<input type="checkbox"/> DECIMAL	<input type="checkbox"/>
SELECT NUMERIC TYPE			INSERT | R1C14
			ROLL | 2 |

The numeric value is an integer.

▶ F2

RECORD= 50 COLUMN= 14 START= 1 END= 50			
<input type="checkbox"/> COMMAS	<input checked="" type="checkbox"/> NO COMMAS	<input type="checkbox"/>	<input type="checkbox"/>
SELECT COMMA EVERY 3DIGITS			INSERT | R1C14
			ROLL | 2 |

CANOBRAIN asks you whether commas are to be inserted.
In this example, commas are inserted.

▶ F1

The following will then appear on the screen:

RECORD= 50 COLUMN= 14 START= 1 END= 50			
<input type="checkbox"/> PUNCT.	<input checked="" type="checkbox"/> NO PUNCT.	<input type="checkbox"/>	<input type="checkbox"/>
SELECT PUNCTUATION			INSERT | R1C14
			ROLL | 2 |

Characters are not edited.

▶ F2

RECORD= 50 COLUMN= 14 START= 1 END= 50			
<input checked="" type="checkbox"/> ROUND DOWN	<input type="checkbox"/> ROUND OFF	<input type="checkbox"/> ROUND UP	<input type="checkbox"/>
SELECT ROUNDING			INSERT | R1C14
			ROLL | 2 |

Specify round off.

▶ F2

01	MAR.	APR.	MAY	JUN	JULY	AUG.	SEP.	OCT.	NOV.	DEC.	
300	250	360	520	400	330	260	440	310			
230	450	300	430	350	400	230	350	410			
220	310	280	390	200	150	190	210	270			
480	590	600	880	710	560	680	720	420			
180	160	170	220	250	180	160	200	320			
120	270	250	200	180	230	310	280	240			
180	320	120	150	170	140	140	200	180			
270	280	230	290	240	260	230	300	320			
270	280	210	180	160	240	250	220	310			
310	250	240	300	280	270	330	180	210			
210	250	270	270	230	200	210	180	160			
470	380	260	280	230	330	310	360	480			
550	660	430	480	330	480	360	550	380			
390	440	280	300	330	420	230	380	350			
350	440	420	360	380	290	370	310	230			
330	280	260	240	330	410	380	360	250			
180	120	170	160	150	130	130	180	220			
130	210	250	140	180	260	220	230	170			

RECORD= 50 COLUMN= 15 START= 1 END= 50

SELECT ROW/COLUMN INSERT R1C14
ROLL 2

Column 15 has appeared on the screen.

Input "TOTAL" as the item name for the column that has been inserted. Press the following key to return to the data processing screen:

▶ F12

RECORD= 50 COLUMN= 15 START= 1 END= 50

INPUT	INPUT PR.	DATA GEN.	DUPLICATE	FORMATING	PETRIEVAL
SORT	REPORTING	UTILITY			RETURN

SELECT FUNCTION(F1-F12,COPY,MOVE,DELETE,INSERT) DATA PROC. R1C14
ROLL 2


Press the following key to input the item name:



▶ F1

RECORD= 50 COLUMN= 15 START= 1 END= 50

CORRECT	DELETE	CAL. EXP.	RET.(SET)	RET.(CNT)
TOTAL				RETURN

INPUT DATA OLN : C-00 R1C14
630 ROLL 2

Move the cell cursor to row 0, column 15. Check that the  is on before pressing the following keys:

▶  

R/C	4	5	6	7	8	9	10	11	12	13
0	APR.	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.	TOTAL
1	130	280	221	400	330	250	440	310	471	0
2	450	300	430	350	400	230	350	410	390	0
3	310	280	390	200	150	190	210	270	350	0
4	590	600	880	710	560	680	720	420	950	0
5	160	170	220	250	180	160	200	320	250	0
6	270	250	200	180	230	310	280	240	310	0
7	320	120	150	170	140	140	200	180	320	0
8	280	230	290	240	260	230	300	320	350	0
9	280	210	180	160	240	250	220	310	370	0
10	250	240	300	280	270	330	180	210	380	0
11	250	270	270	230	200	210	180	160	310	0
12	380	260	280	230	330	310	360	480	440	0
13	660	430	480	330	480	360	550	380	450	0
14	440	280	300	330	420	230	380	350	320	0
15	440	420	360	380	290	370	310	230	460	0
16	280	260	240	330	410	380	360	250	510	0
17	120	170	160	150	130	130	180	220	280	0
18	210	250	140	180	260	220	230	170	300	0

Input "TOTAL" as follows:

▶ **TOTAL**

Press the following key:

▶ **F2**

R/C	4	5	6	7	8	9	10	11	12	13
0	APR.	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.	TOTAL
1	250	360	520	400	330	260	440	310	630	
2	450	300	430	350	400	230	350	410	390	0
3	310	280	390	200	150	190	210	270	350	0
4	590	600	880	710	560	680	720	420	950	0
5	160	170	220	250	180	160	200	320	250	0
6	270	250	200	180	230	310	280	240	310	0
7	320	120	150	170	140	140	200	180	320	0
8	280	230	290	240	260	230	300	320	350	0
9	280	210	180	160	240	250	220	310	370	0
10	250	240	300	280	270	330	180	210	380	0
11	250	270	270	230	200	210	180	160	310	0
12	380	260	280	230	330	310	360	480	440	0
13	660	430	480	330	480	360	550	380	450	0
14	440	280	300	330	420	230	380	350	320	0
15	440	420	360	380	290	370	310	230	460	0
16	280	260	240	330	410	380	360	250	510	0
17	120	170	160	150	130	130	180	220	280	0
18	210	250	140	180	260	220	230	170	300	0

RECORD# 50 COLUMN# 15 START# 1 END# 50

CORRECT DELETE COL. EXP. RET. (SET) RET. (CNT)

TOTAL RETURN

INPUT DATA

0

ION = C-00 RIC15

ROLL 2

Now we have a totals column. Calculate the total number of units from January to December.

In addition to data, an expression can be entered in a cell which contains numeric data. An expression, which is used to calculate totals or averages, has the following type of format:

+C1+C2+C3-C4

(C1+C2)/100

(C1+C2)/C3*100

"+" and "-" are symbols used for addition and subtraction, and "*" and "/" are used for multiplication and division.

"C1", "C2", "C3" and "C4" in an expression represent column addresses. Calculation for each row of a roll is performed column by column. An expression to perform this calculation is called a column expression.

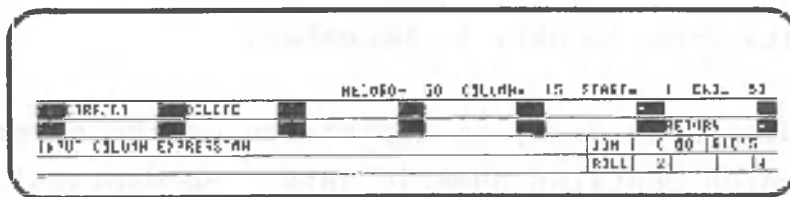
CANOBRAIN also provides you with functions that can automatically recall frequently-used column expressions such as those used for calculating totals and averages, making repeated entry of these expressions unnecessary. A function has the following kind of format:

```
@SUM(C1.3)
@AVE(C2.6)
@LOG(C1+C2)
```

The alphabetic characters following @ constitute a function name. For the types and uses of the functions available, refer to Volume II, BOOKS. In the following example, the function @SUM is used.

Specify "COL.EXP." by pressing F3.

▶ **F3**



Input the following characters to input the total of columns 3 through 14 into column 15:

▶ @SUM(C3.14)↵

Ref.	APR.	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.	TOTAL
0	250	360	520	400	330	260	440	310	630	4,400
	450	300	430	350	400	230	350	410	390	2,920
	310	280	390	200	150	190	210	270	350	2,920
	590	600	880	710	560	680	720	420	950	7,960
	160	170	220	250	180	160	200	320	250	2,440
	270	250	200	180	230	310	280	240	310	2,880
	320	120	150	170	140	140	200	180	320	2,310
	280	230	290	240	260	230	300	320	350	3,330
	280	210	180	160	240	250	220	310	370	3,090
	250	240	300	280	270	330	180	210	380	3,370
	250	270	270	230	200	210	180	160	310	2,780
	380	260	280	230	330	310	360	480	440	4,310
	660	430	480	330	480	360	550	300	450	5,800
	440	280	300	330	420	230	380	350	320	4,170
	440	420	360	380	290	370	310	230	460	4,300
	280	260	240	330	410	380	360	250	510	3,930
	120	170	160	150	130	130	180	220	280	2,080
	210	250	140	180	260	220	230	170	300	2,480

REF: 50 COLUMN= 15 START= 1 END= 50

CORRECT DELETE COL. EXP. RET. (SET) RET. (CNT) RETURN

INPUT COLUMN EXPRESSION 10N I C-00 R2C15

BSURCC3.14) ROLL 2 | | ↓

The function is entered for each cell in column 15, where the cell cursor was positioned, to calculate totals. Results are displayed in each cell. The function that was entered is displayed on the bottom row of the screen.

The item name of the column where an expression or a function is entered ("TOTAL" in this example) is indicated by a reverse display.

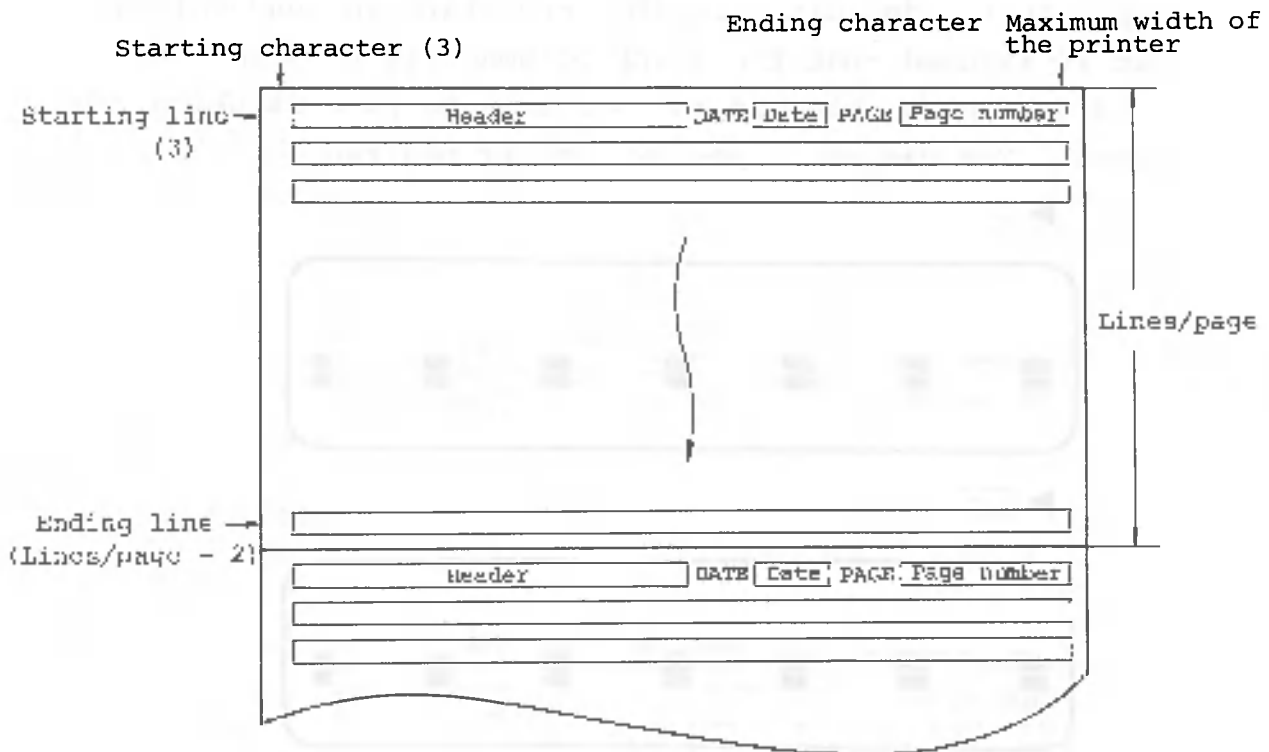
Press the following key to terminate input of the column expression:

▶ F12

REF: 50 COLUMN= 15 START= 1 END= 50										
CORRECT	DELETE	COL. EXP.	RET. (SET)	RET. (CNT)	RETURN					
TOTAL										
INPUT DATA						10N I C-00 R2C15				
4370						ROLL 2	|	|	↓	

The format of a printed form is described below. The user must specify the following to define the format:

- . Number of lines (per page) ... 1
- . Start line ... 2
- . End line ... 3
- . Start column ... 4
- . End column ... 5



Note: Parenthesized numbers represent default values.

Specify 70 lines per page for A4-sized paper.

▶ **F1**

RECORD= 50				COLUMN= 15				START= 1				END= 50			
LINE POSITION?	CENTER=3	L/P=2	(INPUT START,END LINE)	REPORT	R2C15										
				ROLL	2										

The start and end line specifications are omitted. Line 3 is assumed for the start line, and line 68 for the end line.



RECORD= 50				COLUMN= 15				START= 1				END= 50			
CHAR.	POSITION	ENTER=3,RIGHT	HOST	INPUT	START	END	CHAR.	REPORT	R2C15						
								ROLL	2						

Specify the default value for the start and end columns. It is assumed that the start column will be 3 and the end column 80, because an 80-column printer is being used. You can also specify 3,80 if desired.



RECORD= 50				COLUMN= 15				START= 1				END= 50			
NONSTOP	STOP														
SELECT PAPER SET STOP								REPORT	R2C15						
								ROLL	2						



RECORD= 50				COLUMN= 15				START= 1				END= 50			
NO RULED	RULING		CCIV												
SELECT FLAG"ISM								REPORT	R2C15						
								ROLL	2						

CANOBRAIN asks you whether or not ruled lines are to be printed. For this example, select the "Ruled" option. If the printer is not an A-1200 or A-1250, you can only select "Not ruled" or "Ruled".

Ruled lines are printed in this example.



RECORD= 50				COLUMN= 15				START= 1				END= 50			
INPUT	HEADER											RETURN			
INPUT HEADER								REPORT	R2C15						
								ROLL	2						

CANOBRAIN asks you to input the title to be printed on the start line. This cannot be omitted. In this example, the title is "SALES BY BRANCH".

▶ SALES BY BRANCH ↵

RECORD= 50 COLUMN= 15 START= 1 END= 50			
ALL			
REPORT COLUMN NO. ?(ENTER=END), (INPUT REPORT COLUMN NO.)	REPORT	R2C15	
	ROLL	2	

CANOBRAIN asks you to input the columns to be printed. Since the printer is an 80-column printer, not all the columns can be printed simultaneously. In this example, columns 1, 2, and 15 will be printed. Press the following key:

▶ 1 ↵

RECORD= 50 COLUMN= 15 START= 1 END= 50			
C1 SPACING?(ENT=NO SPACE), (INPUT NUMBER OF SPACES)	REPORT	R2C15	
	ROLL	2	

CANOBRAIN asks you to input the number of spaces to be indented before the column to be printed. Two spaces are placed before column 1.

▶ 2 ↵

RECORD= 50 COLUMN= 15 START= 1 END= 50			
REPORT COLUMN NO. ?(ENTER=END), (INPUT REPORT COLUMN NO.)	REPORT	R2C15	
	ROLL	2	

Next, enter column 2. Two spaces are placed before column 2, as with column 1.

▶ 2 ↵

▶ 2 ↵

Finally, enter column 15. Two spaces are also placed before column 15.

▶ 1 5 ↵

▶ 2 ↵

RECORD= 50 COLUMN= 15 START= 1 END= 50									
REPORT COLUMN NO.?(ENTER=END),(INPUT REPORT COLUMN NO.)									
REPORT								R2C15	
ROLL								2	

The columns to be printed have been specified. Press the following key:

▶ ↵

RECORD= 50 COLUMN= 15 START= 1 END= 50									
TOTAL									
INPUT KEY COLUMN FOR SUBTOTAL									
REPORT								R2C15	
ROLL								2	

This is specified to print a report while calculating subtotals. This option will be described later. Press the following key:

▶ F1

RECORD= 50 COLUMN= 15 START= 1 END= 50									
NO RETR. RETRIEVAL									
SELECT FUNCTION									
REPORT								R2C15	
ROLL								2	

This is specified when a report is printed while performing retrieval. This option will also be described later. Press the following key:

▶ F1

RECORD= 50 COLUMN= 15 START= 1 END= 50									
INPUT REPORT START,END ROW NO.									
REPORT								R2C15	
ROLL								2	

CANOBRAIN asks you to input the start and end rows to be printed. In this example, all rows will be printed.

▶ **F1**

RECORD= 50 COLUMN= 15 START= 1 END= 50										
ROLL										RETURN
INPUT REPORT START,END ROW NO.								REPORT	R2C15	
								ROLL	2	

The printed result is shown on the next page. To end the print function, press the following key:

▶ **F12** ... (three times)

D	APR.	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.	TOTAL
250	360	520	400	330	260	440	310	630		4,400
450	300	430	350	400	230	350	410	380		3,770
310	280	390	200	150	190	210	270	350		2,920
590	600	880	710	560	680	720	420	950		7,960
160	170	220	250	180	160	200	320	250		2,440
270	250	200	180	230	310	280	240	310		2,880
320	120	150	170	140	140	200	180	320		2,310
280	230	290	240	260	230	300	320	350		3,330
280	210	180	160	240	250	220	310	370		3,690
250	240	300	280	270	330	180	210	380		3,370
250	270	270	230	200	210	180	160	310		2,780
300	260	280	230	330	310	360	480	440		4,310
660	430	480	330	480	360	550	380	450		5,880
440	280	300	330	420	230	380	350	320		4,170
440	420	360	380	290	370	310	230	460		4,300
280	260	240	330	410	380	360	250	510		3,930
120	170	160	150	130	130	180	220	280		2,080
310	250	140	180	260	220	230	170	300		2,480

RECORD= 50 COLUMN= 15 START= 1 END= 50										
INPUT	INPUT PAT.	DATA GEN.	Duplicate	FORMATTING						RETURN
SORT								REPORTING UTILITY	RETURN	
SELECT FUNCTION(F1-F12,COPY,MOVE,DELETE,INSERT)								DATA PROC.	R2C15	
								ROLL	2	

SALES BY BRANCH:

DATE 12.01.83 PAGE 1

BRANCH	PRODUCT	TOTAL
NEW YORK	T.V. SET	4,400
TOKYO	REFRIGERATOR	4,370
LONDON	T.V. SET	2,920
MOSCOW	RADIO	7,960
SHANGHAI	RADIO	2,440
PARIS	REFRIGERATOR	2,880
OSAKA	T.V. SET	2,310
FRANKFURT	T.V. SET	3,330
L.A.	RADIO	3,090
CHICAGO	REFRIGERATOR	3,370
CALCUTTA	RADIO	2,780
MEXICO	T.V. SET	4,310
DETROIT	RADIO	5,800
BOMBAY	REFRIGERATOR	4,170
PEKING	T.V. SET	4,300
HONG KONG	REFRIGERATOR	3,930
AMSTERDAM	T.V. SET	2,080
CAIRO	RADIO	2,480
BOSTON	REFRIGERATOR	3,680
MOSCOW	T.V. SET	12,040
CALCUTTA	T.V. SET	5,380
MEXICO	REFRIGERATOR	3,760
PARIS	T.V. SET	2,630
LONDON	RADIO	5,660
AMSTERDAM	REFRIGERATOR	2,150
DETROIT	T.V. SET	9,140
CHICAGO	RADIO	4,960
TOKYO	RADIO	4,330
HONG KONG	T.V. SET	8,360
BOSTON	RADIO	3,150
FRANKFURT	REFRIGERATOR	2,340
BIRMINGHAM	T.V. SET	5,380
OAKLAND	T.V. SET	3,390
BOMBAY	RADIO	7,600
YOKOHAMA	REFRIGERATOR	2,040
SHANGHAI	T.V. SET	3,960
SYDNEY	T.V. SET	3,370
BIRMINGHAM	RADIO	2,810
SYDNEY	REFRIGERATOR	2,650
NEW YORK	RADIO	5,550
PEKING	RADIO	3,660
CAIRO	REFRIGERATOR	2,310
L.A.	T.V. SET	5,630
OAKLAND	REFRIGERATOR	3,390
YOKOHAMA	T.V. SET	3,440
OSAKA	REFRIGERATOR	3,000
CAIRO	T.V. SET	3,980
HONG KONG	RADIO	6,490
BOMBAY	T.V. SET	9,430
YOKOHAMA	RADIO	3,040

0	BRANCH	PRODUCT	QTY.	PRC.	AMT.	QTY.	PRC.	AMT.	QTY.	PRC.	AMT.
		T.V. SET	200	400	300	250	360	520	400		
1	TOKYO	REFRIGERATOR	450	360	230	450	300	430	350		
2	LONDON	T.V. SET	120	230	220	310	260	390	200		
3	MOSCOW	RADIO	720	650	480	590	600	680	710		
4	SHANGHAI	RADIO	200	150	180	160	170	220	250		
5	PARIS	REFRIGERATOR	310	180	120	270	250	200	180		
6	OSAKA	T.V. SET	160	230	180	320	120	150	170		
7	FRANKFURT	T.V. SET	340	220	270	280	230	290	240		
8	L.A.	RADIO	360	240	270	280	210	180	160		
9	CHICAGO	REFRIGERATOR	340	280	310	250	240	300	280		
10	CALCUTTA	RADIO	260	230	210	250	270	270	230		
11	MEXICO	T.V. SET	450	320	470	380	260	280	230		
12	DETROIT	RADIO	620	510	550	660	430	480	330		
13	BOMBAY	REFRIGERATOR	420	310	390	440	280	300	330		
14	PEKING	T.V. SET	370	320	350	440	420	360	380		
15	HONG KONG	REFRIGERATOR	270	310	330	280	260	240	330		
16	AMSTERDAM	T.V. SET	160	200	180	120	170	160	150		
17	CAIRO	RADIO	240	150	130	210	250	140	180		

RECORD= 50 COLUMN= 15 START= 1 END= 50

#1 SORT KEY COLUMN?(ENTER=END), (INPUT KEY COLUMN NO.)

SORT | RICI

ROLL | 2 |

Specify column 1 as follows. Be sure to deactivate the



▶ **1** ↵

RECORD= 50 COLUMN= 15 START= 1 END= 50

ASCENDING DESCENDING

SELECT ASCENDING, DESCENDING

SORT | RICI

ROLL | 2 |

CANOBRAIN will then ask whether the rows will be sorted in ascending or descending order.

▶ **F1**

RECORD= 50 COLUMN= 15 START= 1 END= 50

RETURN

#2 SORT KEY COLUMN?(ENTER=END), (INPUT KEY COLUMN NO.)

SORT | RICI

ROLL | 2 |

Now CANOBRAIN asks which column the sorting will be based on if two items are the same. Specify column 2 (the "PRODUCT" column) as follows:

▶ **2** ↵

RECORD= 50 COLUMN= 15 START= 1 END= 50	
ASCENDING	DESCENDING
SELECT ASCENDING, DESCENDING	ROLL 2

Specify ascending order sorting for this column, too.

▶ **F1**

RECORD= 50 COLUMN= 15 START= 1 END= 50	
ASCENDING	DESCENDING
SELECT ASCENDING, DESCENDING	ROLL 2

A total of five line sorting columns can be specified. Here we will specify only two.

▶ 

RECORD= 50 COLUMN= 15 START= 1 END= 50	
ASCENDING	DESCENDING
SELECT ASCENDING, DESCENDING	ROLL 2

If you want to output the sorted data to another roll, specify the other roll number or its name. In this case, you can also specify a sort range. If you omit this specification, the sorted data will be outputted to the same roll. In this case you cannot specify a sort range, since CANOBRAIN will sort all rows. For this example, omit this specification.

▶ 

R-C		1	2	3	4	5	6	7	8	9
BRANCH	PRODUCT	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY		
	REFRIGERATOR	140	125	200	160	140	150	130		
AMSTERDAM	T.V. SET	160	200	100	120	170	160	150		
BIRMINGHAM	RADIO	320	170	290	320	190	170	140		
BIRMINGHAM	T.V. SET	510	420	570	380	420	440	390		
BOMBAY	RADIO	470	580	760	780	600	520	560		
BOMBAY	REFRIGERATOR	490	710	390	440	300	300	330		
BOMBAY	T.V. SET	730	650	500	740	760	640	710		
BOSTON	RADIO	290	160	320	270	280	330	200		
BOSTON	REFRIGERATOR	320	360	410	290	260	330	220		
CHINA	RADIO	220	150	300	220	250	140	180		
CHINA	REFRIGERATOR	180	130	170	280	150	100	200		
CHINA	T.V. SET	360	390	370	350	310	380	290		
CALCUTTA	RADIO	260	270	210	270	270	270	230		
CALCUTTA	T.V. SET	520	470	520	630	420	380	460		
CHICAGO	RADIO	470	410	380	520	360	310	420		
CHICAGO	REFRIGERATOR	370	280	310	250	200	300	200		
DETROIT	RADIO	670	510	550	660	430	400	330		
DETROIT	T.V. SET	070	360	550	060	770	500	840		

RECORD= 50 COLUMN= 15 START= 1 END= 30

INPUT INPUT PAT. DATA GEN. DUPLICATE FORMATING RETRIEVAL
 SORT REPORTING UTILITY RETURN
SELECT FUNCTION(F1-F12, COPY, MOVE, DELETE, INSERT) DATA PRG= TR=1
ROLL 21 1 1

The data has been sorted according to "BRANCH" and "PRODUCT".

2.4 Retrieving Data

This section explains how to retrieve data that satisfies specified conditions. For example, find rows whose item columns contain "TV SET".

Press the following key to retrieve data from the table:

▶ **F6**

0	BRANCH	PRODUCT	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY
AMSTERDAM	REFRIGERATOR	140	120	280	160	140	150	130	
AMSTERDAM	T.V. SET	160	200	180	120	170	160	150	
BOMBAY	RADIO	320	170	250	320	190	170	140	
BOMBAY	T.V. SET	510	420	570	380	420	440	390	
BOMBAY	RADIO	620	580	760	700	640	520	560	
BOMBAY	REFRIGERATOR	420	310	390	440	280	300	330	
BOMBAY	T.V. SET	780	650	680	740	760	640	710	
BOSTON	RADIO	260	180	320	270	280	330	280	
BOSTON	REFRIGERATOR	320	360	410	280	260	330	220	
CAIRO	RADIO	240	150	130	210	250	140	180	
CAIRO	REFRIGERATOR	190	130	170	280	150	180	200	
CAIRO	T.V. SET	380	390	270	340	310	380	290	
CALCUTTA	RADIO	260	230	210	250	270	270	230	
CALCUTTA	T.V. SET	520	470	420	630	420	380	460	
CHICAGO	RADIO	470	410	380	500	360	310	420	
CHICAGO	REFRIGERATOR	340	280	310	250	240	300	280	
DETROIT	RADIO	620	510	550	660	430	480	330	
DETROIT	T.V. SET	870	660	950	860	770	600	840	

RECORD= 50 COLUMN= 15 START= 1 END= 50

INPUT REPORTING UTILITY DATA PROC. RICI
 SORT REPORTING UTILITY RETURN ROLL 2 | |

▶ **F1**

RECORD= 50 COLUMN= 15 START= 1 END= 50

INPUT RETRIEVAL EXPRESSION(COLUMN NO. **AND,**OR,(,)) RETRIEVAL RICI
 SORT REPORTING UTILITY RETURN ROLL 2 | |

CANOBRAIN asks you to select the column for which a condition is specified. In this example, a condition is specified only for column 2. To specify conditions for two or more columns, combine column numbers with the operators and symbols "+", "*", "(", and ")". "+" means "OR". That is, if one of the conditions is satisfied, the corresponding item is retrieved. "*" means "AND". That is, if and only if all the conditions are satisfied, the corresponding item will be retrieved. Parentheses, "("and")" are used to combine "+" and "*".

▶ 2 ↵

RECORD= 50 COLUMN= 15 START= 1 END= 50					
ALL	ANY	NO	YES	NO	YES
INPUT KEY DATA START POSITION				RETRIEVAL	ROLL
				ROLL 2	

Press the following key to specify "TV SET" as "PRODUCT NAME".

▶ F2

RECORD= 50 COLUMN= 15 START= 1 END= 50					
INPUT LIMIT VALUE				RETRIEVAL	ROLL
				ROLL 2	

Press the following key to input "TV SET":

▶ T.V.SET ↵

RECORD= 50 COLUMN= 15 START= 1 END= 50					
ALL	ANY	NO	YES	NO	YES
RETRIEVAL RANGE (ENTER=NEXT, LAST), (INPUT START, END ROW NO)				RETRIEVAL	ROLL
				ROLL 2	

CANOBRAIN asks you to select the start and end rows to be retrieved. In this example, retrieval is performed for all rows.

▶ F1

RECORD= 50 COLUMN= 15 START= 1 END= 50					
SCREEN	ROLL	NO	YES	NO	YES
SELECT OUTPUT METHOD				RETRIEVAL	ROLL
				ROLL 2	

CANOBRAIN asks you whether retrieved data is to be displayed on the screen (CRT) or entered into another roll. In this example, specify CRT. The method of outputting retrieved data in another roll will be described later.

F1

01	BRANCH	PRODUCT	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY
1	BIRMINGHAM	T.V. SET	150	200	180	120	170	160	150
2	BOMBAY	T.V. SET	510	420	570	380	420	440	390
3	CHICAGO	T.V. SET	780	650	680	740	760	640	710
4	L.A.	T.V. SET	380	390	270	340	310	380	290
5	CALCUTTA	T.V. SET	520	470	420	630	420	380	460
6	DETROIT	T.V. SET	870	660	950	860	770	600	840
7	FRANKFURT	T.V. SET	340	220	270	280	230	290	240
8	HONG KONG	T.V. SET	740	660	640	810	710	640	690
9	L.A.	T.V. SET	620	450	470	580	420	390	460
10	LONDON	T.V. SET	120	230	220	310	280	390	200
11	MEXICO	T.V. SET	450	320	470	380	260	280	230
12	MOSCOW	T.V. SET	1,400	1,200	950	1,250	870	750	920
13	NEW YORK	T.V. SET	200	400	300	250	360	520	400
14	OAKLAND	T.V. SET	260	280	240	300	270	210	300
15	OSAKA	T.V. SET	160	230	180	320	120	150	170
16	PARIS	T.V. SET	280	150	160	230	240	310	290
17	PEKING	T.V. SET	370	320	350	440	420	360	380
18	SHANGHAI	T.V. SET	350	320	430	390	290	330	350

RECORD= 50 COLUMN= 15 START= 1 END= 18

CONTINUE RETURN
SELECT FUNCTION RETRIEVAL R19C1
ROLL 21

Only the entries whose PRODUCT columns contain TV SET will be displayed. Press the following key to display the retrieved data that has not yet been displayed:

F1

01	BRANCH	PRODUCT	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY
1	BIRMINGHAM	T.V. SET	280	340	210	400	250	230	280
2	YOKOHAMA	T.V. SET	300	180	260	470	320	280	310

RECORD= 50 COLUMN= 15 START= 19 END= 20

CONTINUE RETURN
SELECT FUNCTION RETRIEVAL R19C1
ROLL 21

All the retrieved data has been displayed.

Now use the following operation to output the retrieved data to another roll. Press the following key:

F12

0	1	2	3	4	5	6	7	8	9
BRANCH	REFRIGERATOR	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.
AMSTERDAM	T.V. SET	140	120	280	160	140	150	130	
AMSTERDAM	RADIO	160	200	180	120	170	160	150	
BIRMINGHAM	T.V. SET	320	170	250	320	190	170	140	
BIRMINGHAM	RADIO	510	420	570	380	420	440	390	
BOMBAY	T.V. SET	620	580	760	700	640	520	560	
BOMBAY	RADIO	420	310	390	440	280	300	330	
BOMBAY	T.V. SET	780	650	680	740	760	640	710	
BOSTON	RADIO	260	180	320	270	280	330	200	
BOSTON	REFRIGERATOR	320	360	410	280	260	330	220	
CAIRO	T.V. SET	240	150	130	210	250	140	180	
CAIRO	RADIO	190	150	170	280	150	180	200	
CAIRO	T.V. SET	380	390	270	340	310	380	290	
CALCUTTA	RADIO	260	230	210	250	270	270	230	
CALCUTTA	T.V. SET	520	470	420	630	420	380	460	
CHICAGO	RADIO	470	410	380	500	360	310	420	
CHICAGO	REFRIGERATOR	340	280	310	250	240	300	280	
CHICAGO	T.V. SET	620	510	550	660	430	480	330	
DETROIT	RADIO	870	660	950	860	770	600	840	
DETROIT	T.V. SET								

RECORD= 50 COLUMN= 15 START= 1 END= 50

RETRIEVAL REGISTER DELETE EXECUTE RETURN

SELECT FUNCTION RETRIEVAL RICI

ROLL 2

Press the following key to retrieve data:

F1

RECORD= 50 COLUMN= 15 START= 1 END= 50

RETRIEVAL REGISTER DELETE EXECUTE RETURN

INPUT RETRIEVAL EXPRESSION(COLUMN NO., +=AND, +=OR, I, J) RETRIEVAL RICI

ROLL 2

Perform the same key operation as in the previous example until you specify an output device. The description of the subsequent operation begins with the following screen.

RECORD= 50 COLUMN= 15 START= 1 END= 50

SCREEN ROLL REGISTER DELETE EXECUTE RETURN

SELECT OUTPUT METHOD RETRIEVAL RICI

ROLL 2

Press the following key to output the retrieved data to another roll:

F2

RECORD= 50 COLUMN= 15 START= 1 END= 50

SCREEN ROLL REGISTER DELETE EXECUTE RETURN

INPUT ROLL NAME OR NO. (MAX 20 CHAR.) RETRIEVAL RICI

ROLL 2

In this example, retrieved data will be entered in a new roll titled "TV SETS". Press the following keys:

► **T V S E T S** ↵

The retrieved result has been entered in the new roll titled "TV SETS". To see the retrieved data, do the following:

► **F12**

R/C	1	2	3	4	5	6	7	8	9
0	BRANCH	PRODUCT	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY
1	AMSTERDAM	REFRIGERATOR	140	120	200	160	140	150	130
2	AMSTERDAM	T.V. SET	160	200	180	120	170	160	150
3	BIRMINGHAM	RADIO	320	170	250	320	190	170	140
4	BIRMINGHAM	T.V. SET	510	420	570	380	420	440	390
5	BOMBAY	RADIO	620	580	760	700	640	520	560
6	BOMBAY	REFRIGERATOR	420	310	390	440	280	300	330
7	BOMBAY	T.V. SET	780	650	680	740	760	640	710
8	BOSTON	RADIO	260	180	320	270	280	330	200
9	BOSTON	REFRIGERATOR	320	360	410	280	260	330	220
10	CAIRO	RADIO	240	150	130	210	250	140	180
11	CAIRO	REFRIGERATOR	190	130	170	280	150	180	200
12	CAIRO	T.V. SET	380	390	270	340	310	380	290
13	CALCUTTA	RADIO	260	230	210	250	270	270	230
14	CALCUTTA	T.V. SET	520	470	420	630	420	380	460
15	CHICAGO	RADIO	470	410	380	500	360	310	420
16	CHICAGO	REFRIGERATOR	340	280	310	250	240	300	280
17	DETROIT	RADIO	620	510	550	660	430	480	330
18	DETROIT	T.V. SET	870	660	950	860	770	600	840

RECORD= 50 COLUMN= 15 START= 1 END= 57

INPUT PRG. REPORTING

SELECT FUNCTION (F1-F12, COPY, MOVE, DELETE, INSERT) DATA PROC. (R/C)

ROLL 2

► **F12**

NO	ROLL NAME	CREATE	UPDATE
1	EX2	12.01.83	12.01.83
2	sample data	12.01.83	12.01.83
3	SALES BY BRANCH	12.01.83	12.01.83
4	TV SETS	12.01.83	12.01.83

CREATE DELETE MODIFY PRINTOUT BOOK RETURN

SELECT ROLL (INPUT ROLL NO., SCROLL)

ROLL

The new roll has been defined. Press the following key to view its contents.

► **4** ↵

0	1	2	3	4	5	6	7	8	9
BRANCH	PRODUCT	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	JAN.
BIRMINGHAM	T.V. SET	160	200	180	120	170	160	150	
BOMBAY	T.V. SET	510	420	570	380	420	440	390	
CAIRO	T.V. SET	780	650	680	740	760	640	710	
CALCUTTA	T.V. SET	360	390	270	340	310	380	290	
DETROIT	T.V. SET	520	470	420	630	420	380	460	
FRANKFURT	T.V. SET	870	660	950	860	770	600	840	
HONG KONG	T.V. SET	340	220	270	200	230	290	240	
L.A.	T.V. SET	740	680	640	810	710	640	690	
LONDON	T.V. SET	620	450	470	580	420	390	460	
MEXICO	T.V. SET	120	230	220	310	280	390	200	
MOSCOW	T.V. SET	450	320	470	380	260	280	230	
NEW YORK	T.V. SET	1,400	1,200	950	1,250	870	750	920	
OAKLAND	T.V. SET	200	400	300	250	360	520	400	
OSAKA	T.V. SET	260	280	240	300	270	210	300	
PARIS	T.V. SET	160	230	180	320	120	150	170	
PEKING	T.V. SET	280	150	160	230	240	310	290	
SHANGHAI	T.V. SET	370	320	350	480	420	360	380	
		350	320	430	390	290	330	350	

RECORD= 20 COLUMN= 15 START= 1 END= 20

INPUT REPORTING UTILITY DATA PROC. ROLL 4

All the rows whose PRODUCT columns contains "TV SET" have been outputted.

In this example the retrieved result was written into a new roll. It can also be written into a roll already defined. When retrieved data is output to a previously-defined roll, it is possible to specify whether the data is written from row 1 or from the row following the last row of the defined roll.

Return the screen to the roll list screen.

► F12

ROLL LIST			
NO	ROLL NAME	CREATE	UPDATE
1	END	12.01.83	12.01.83
2	SAMPLE DATA	12.01.83	12.01.83
3	SALES BY BRANCH	12.01.83	12.01.83
4	IN CITS	12.01.83	12.01.83

SELECT ROLL COMPUT ROLL NO., SCREEN

ROLL 4

Chapter 3 - PRINT OPTIONS

In this chapter, you will learn calculation and retrieval print options.

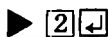
- Calculation and printing
- Retrieval and printing



3.1 Calculation and Printout

This section explains how to print data while performing calculations on sorted data.

For this operation, select roll 2, "sample data", from the roll list screen.



R/C	0	1	2	3	4	5	6	7	8	9
	BRANCH	PRODUCT	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	
	AMSTERDAM	REFRIGERATOR	140	120	280	160	140	150	130	
	AMSTERDAM	T.V. SET	160	200	180	120	170	160	150	
	BIRMINGHAM	RADIO	320	170	250	320	190	170	140	
	BOMBAY	T.V. SET	510	420	570	380	420	440	390	
	BOMBAY	RADIO	620	580	760	700	640	520	560	
	BOMBAY	REFRIGERATOR	420	310	390	440	280	300	330	
	BOMBAY	T.V. SET	780	650	680	740	760	640	710	
	BOSTON	RADIO	260	180	320	270	280	330	200	
	BOSTON	REFRIGERATOR	320	360	410	280	260	330	220	
	CAIRO	RADIO	240	150	130	210	250	140	180	
	CAIRO	REFRIGERATOR	190	130	170	280	150	160	200	
	CAIRO	T.V. SET	380	390	270	340	310	380	290	
	CALCUTTA	RADIO	260	230	210	250	270	270	230	
	CALCUTTA	T.V. SET	520	470	420	630	420	380	460	
	CHICAGO	RADIO	470	410	380	500	360	310	420	
	CHICAGO	REFRIGERATOR	340	280	310	250	240	300	280	
	DETROIT	RADIO	620	510	550	660	430	480	330	
	DETROIT	T.V. SET	870	860	950	860	770	600	840	

RECORD= 50 COLUMN= 15 START= 1 END= 51

INPUT INPUT PAT. DATA GEN. INITIALIZE REPORTING COPY PRINT RETURN

SELECT FUNCTION(F1-F12,COPY,MOVE,DELETE,INSERT) PAGE PAGE. PAGE

ROLL 2

Press the following key to print data:



RECORD= 50 COLUMN= 15 START= 1 END= 50

REPORT	REGISTER	DELETE	EXECUTE	PRINT	RETURN
SELECT FUNCTION	REPORT	PRINT	ROLL	2	

► F1

0	BRANCH	PRODUCT	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY
1	AMSTERDAM	REFRIGERATOR	140	120	280	160	140	150	130
2	AMSTERDAM	T.V. SET	160	200	180	120	170	160	150
3	BIRMINGHAM	RADIO	320	170	250	320	190	170	140
4	BIRMINGHAM	T.V. SET	510	420	570	380	420	440	390
5	BOMBAY	RADIO	620	580	760	700	640	520	560
6	BOMBAY	REFRIGERATOR	420	310	390	440	280	300	330
7	BOMBAY	T.V. SET	780	650	680	740	760	640	710
8	BOSTON	RADIO	260	180	320	270	280	330	200
9	BOSTON	REFRIGERATOR	320	360	410	280	260	330	220
10	CAIRO	RADIO	240	150	130	210	250	140	180
11	CAIRO	REFRIGERATOR	190	130	170	280	150	180	200
12	CAIRO	T.V. SET	380	390	270	340	310	380	290
13	CALCUTTA	RADIO	260	230	210	250	270	270	230
14	CALCUTTA	T.V. SET	520	470	420	630	420	380	460
15	CHICAGO	RADIO	470	410	380	500	360	310	420
16	CHICAGO	REFRIGERATOR	340	280	310	250	240	300	280
17	DETROIT	RADIO	620	510	550	660	430	480	330
18	DETROIT	T.V. SET	870	660	950	860	770	600	840

RECORD= 50 COLUMN= 15 START= 1 END= 50

70 66 6.0

LINES/PAGE?(SELECT F1-F3),[INPUT NUMBER OF LINES] REPORT ROLL 2

Specify 70 as the number of lines per page. (This is assuming that A4-sized forms will be used.)

► F1

RECORD= 50 COLUMN= 15 START= 1 END= 50

LINE POSITION?(CENTER=3,L/P-2),[INPUT START,END LINE] REPORT ROLL 2

Specify the default value for the start and end lines.

► ↵

RECORD= 50 COLUMN= 15 START= 1 END= 50

CHAR. POSITION?(CENTER=3,RIGHT MOST),[INPUT START,END CHAR.] REPORT ROLL 2

Specify the default value for the starting and ending character specifications.

► ↵

RECORD= 50 COLUMN= 15 START= 1 END= 50

NONSTOP STOP [F1] [F2] [F3] [F4] [F5] [F6] [F7] [F8] [F9] [F10] [F11] [F12] [F13] [F14] [F15] [F16] [F17] [F18] [F19] [F20]

SELECT PAPER SET STOP REPORT ROLL 2

► F1

RECORD= 50 COLUMN= 15 START= 1 END= 50			
NO RULED	RULED(V)		
SELECT FUNCTION		REPORT	RIC1
		ROLL	2

In this example, the lines will not be ruled.

► F1

RECORD= 50 COLUMN= 15 START= 1 END= 50			
			RETURN
INPUT HEADER		REPORT	RIC1
		ROLL	2

The title is "TOTAL BY BRANCH". Press the following keys:

► TOTAL BY BRANCH ↵

RECORD= 50 COLUMN= 15 START= 1 END= 50			
F1 ALL	F2	F3	
REPORT COLUMN NO. (CENTER=END), (INPUT REPORT COLUMN NO.)		REPORT	RIC1
		ROLL	2

CANOBRAIN asks you to input the columns to be printed. In this example, "Branch Name" and the totals from January to June will be printed. Input the column numbers one at a time.

► 1 ↵

RECORD= 50 COLUMN= 15 START= 1 END= 50			
C1 SPACING? (CENT=NO SPACE), (INPUT NUMBER OF SPACES)		REPORT	RIC1
		ROLL	2

CANOBRAIN asks you to input the number of spaces to be placed before column 1. In this example, no spaces are required.

▶

RECORD= 50 COLUMN= 15 START= 1 END= 50			
ALL			
REPORT COLUMN NO. ?(CENTER=END), (INPUT REPORT COLUMN NO.)	REPORT	ROLL	2

The data for January is printed to the right of a branch name. Specify the column number for January.

▶ 3

RECORD= 50 COLUMN= 15 START= 1 END= 50			
ALL			
03 SPACING?(ENT=NO SPACE), (INPUT NUMBER OF SPACES)	REPORT	ROLL	2

Insert two spaces before the data for January.

▶ 2

RECORD= 50 COLUMN= 15 START= 1 END= 50			
ALL			
REPORT COLUMN NO. ?(ENTER=END), (INPUT REPORT COLUMN NO.)	REPORT	ROLL	2

Specify the column numbers and number of spaces for February to June in a similar manner.

▶ 4 2

▶ 5 2

▶ 6 2

▶ 7 2

▶ 8 2

▶

The key is pressed last to indicate that the specification of print column has been entered.

RECORD= 50 COLUMN= 15 START= 1 END= 50										
TOTAL									RETURN	
INPUT KEY COLUMN FOR SUBTOTAL								REPORT	RIC1	
								ROLL	2	

CANOBRAIN asks you to input the key column for which a total is to be calculated. Specify column 1 as the key column.

▶ **I** ↵

RECORD= 50 COLUMN= 15 START= 1 END= 50										
TOTAL									RETURN	
INPUT KEY DATA START POSITION								REPORT	RIC1	
								ROLL	2	

CANOBRAIN asks you to input the character position within the BRANCH column which is used to start printing the total if the character in that position on the current row differs from that on the previous row. In this example, a character position need not be specified. That is, all the characters in column 1 are examined. If a column containing numeric data is specified, this message is not displayed.

▶ **F1**

RECORD= 50 COLUMN= 15 START= 1 END= 50										
NO RETR.	RETRIEVAL								RETURN	
SELECT FUNCTION								REPORT	RIC1	
								ROLL	2	

CANOBRAIN asks you whether data is to be printed while it performs retrieval. In this example, no retrieval is performed.

▶ **F1**

RECORD= 50 COLUMN= 15 START= 1 END= 50										
TOTAL									RETURN	
INPUT REPORT START,END ROW NO.								REPORT	RIC1	
								ROLL	2	

CANOBRAIN asks you to input the start and end rows for printing. In this example, all rows are printed.

▶ **F1**

The following is an example of printed results:

TOTAL BY BRANCH		DATE 12.01.83					PAGE 1
BRANCH	JAN.	FEB.	MAR.	APR.	MAY	JUNE	
AMSTERDAM	140	120	280	160	140	150	
AMSTERDAM	160	200	180	120	170	160	
	300	320	460	280	310	310	
BIRMINGHAM	320	170	250	320	190	170	
BIRMINGHAM	510	420	570	380	420	440	
	830	590	820	700	610	610	
BOMBAY	620	580	760	700	640	520	
BOMBAY	420	310	390	440	280	300	
BOMBAY	780	650	680	740	760	640	
	1,820	1,540	1,830	1,880	1,680	1,460	
BOSTON	260	180	320	270	280	330	
BOSTON	320	360	410	280	260	330	
	580	540	730	550	540	660	
CAIRO	240	150	130	210	250	140	
CAIRO	190	130	170	280	150	180	
CAIRO	380	390	270	340	310	320	
	810	670	570	830	710	640	
PEKING	320	270	410	250	230	280	
PEKING	370	320	350	440	420	360	
	690	590	760	690	650	640	
SHANGHAI	200	150	180	160	170	220	
SHANGHAI	350	320	430	390	290	330	
	550	470	610	550	460	550	
SYDNEY	180	150	320	240	190	250	
SYDNEY	280	340	210	400	250	230	
	460	490	530	640	440	480	
TOKYO	370	250	380	420	330	310	
TOKYO	450	380	230	450	300	430	
	820	630	610	870	630	740	
YOKOHAMA	270	180	230	240	220	250	
YOKOHAMA	170	210	130	170	180	120	
YOKOHAMA	300	180	260	470	320	280	
	740	570	620	880	720	650	
	19,320	16,760	18,230	19,630	16,740	16,910	

Next, we will learn how to print data while performing retrieval. Press the following key:

▶ **F12**

RECORD= 50				COLUMN= 15				START= 1				END= 50			
INPUT HEADER				REPORT				RETURN				R1C1			
				ROLL				2							

3.2 Retrieval and Printing

In the following example, we will print branch names and their totals while retrieving data.

The title is "ANNUAL SALES OF TV SETS BY BRANCH".

Press the following keys:

▶ **A****N****N****U****A****L****S****A****L****E****S****O****F****T****V****S****E****T****S**
B**Y****B****R****A****N****C****H**

RECORD= 50 COLUMN= 15 START= 1 END= 50			
ALL	SP	PU	PR
REPORT COLUMN NO.?(ENTER=END),(INPUT REPORT COLUMN NO.)	REPORT	R1C1	
	ROLL	2	

Print only the columns BRANCH and TOTAL.

▶ **I** **↓**

RECORD= 50 COLUMN= 15 START= 1 END= 50			
I	SP	PU	PR
CI SPACING?(ENT=NO SPACE),(INPUT NUMBER OF SPACES)	REPORT	R1C1	
	ROLL	2	

Omit the spaces at the beginning of column 1.

▶ **↓**

RECORD= 50 COLUMN= 15 START= 1 END= 50			
I	SP	PU	PR
REPORT COLUMN NO.?(ENTER=END),(INPUT REPORT COLUMN NO.)	REPORT	R1C1	
	ROLL	2	

▶ **1****5** **↓**

RECORD= 50 COLUMN= 15 START= 1 END= 50			
I	SP	PU	PR
15 SPACING?(ENT=NO SPACE),(INPUT NUMBER OF SPACES)	REPORT	R1C1	
	ROLL	2	

Omit the spaces at the beginning of column 15.



RECORD= 50 COLUMN= 15 START= 1 END= 50										
AL	6									
REPORT COLUMN NO.?(CENTER=END),[INPUT REPORT COLUMN NO.]							REPORT	R1C1		
							ROLL	2		

Press the following key to end the print column specification:



RECORD= 50 COLUMN= 15 START= 1 END= 50										
END TOTAL										
INPUT KEY COLUMN FOR SUBTOTAL							REPORT	R1C1		
							ROLL	2		

In this example, the total will not be calculated.



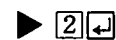
RECORD= 50 COLUMN= 15 START= 1 END= 50										
END RETR.	RETRIEVAL									
SELECT FUNCTION							REPORT	R1C1		
							ROLL	2		

Specify that retrieval is to be performed.



RECORD= 50 COLUMN= 15 START= 1 END= 50										
INPUT RETRIVAL EXPRESSION(COLUMN NO.,+=AND,+=OR,(,))							REPORT	R1C1		
							ROLL	2		

Data is retrieved from the PRODUCT column (column 2).



```

RECORD= 50 COLUMN= 15 START= 1 END= 50
ALL ANY
INPUT KEY DATA START POSITION REPORT RICI
ROLL 2

```

The key data string is "TV SET", to be recovered from all locations in column 2.

▶ F2

```

RECORD= 50 COLUMN= 15 START= 1 END= 50
LIMIT VALUE REPORT RICI
ROLL 2

```

Input "T.V. SET" as follows:

▶ T.V. SET ↵

```

RECORD= 50 COLUMN= 15 START= 1 END= 50
ALL RETURN
INPUT REPORT START,END ROW NO. REPORT RICI
ROLL 2

```

Retrieval is performed for all rows with the condition ITEM = T.V. SET.

▶ F1

```

ANNUAL SALES OF TV SETS BY BRANCH          DATE 12.01.83   PAGE 1

BRANCH      TOTAL
AMSTERDAM   2,080
BIRMINGHAM  5,380
BOMBAY      8,430
CAIRO       3,980
CALCUTTA    5,380
DETROIT     9,140
FRANKFURT   3,330
HONG KONG   8,360
L.A.        5,630
LONDON      2,920
MEXICO      4,310
MOSCOW      12,040
NEW YORK    4,400
OAKLAND     3,390
OSAKA       2,310
PARIS       2,630
PEKING      4,300
SHANGHAI    3,960
SYDNEY      3,370
YOKOHAMA    3,440

```

Data printing and concurrent retrieval have been completed. Press the following key to return the display to the data processing screen:

► **F12** ... (Three times)

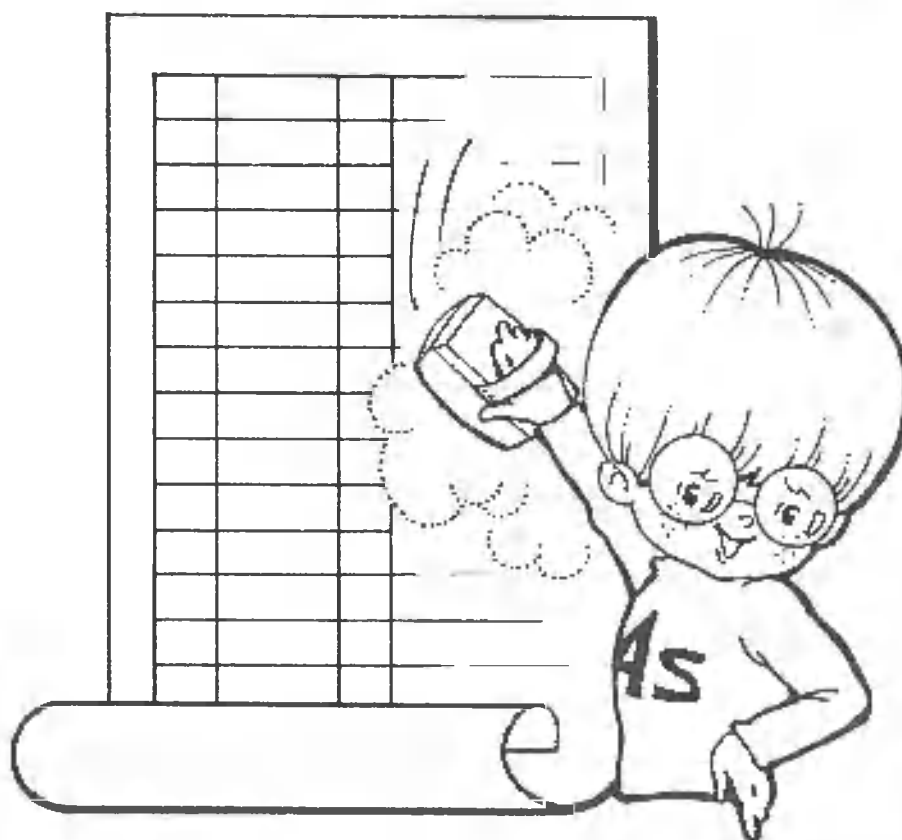
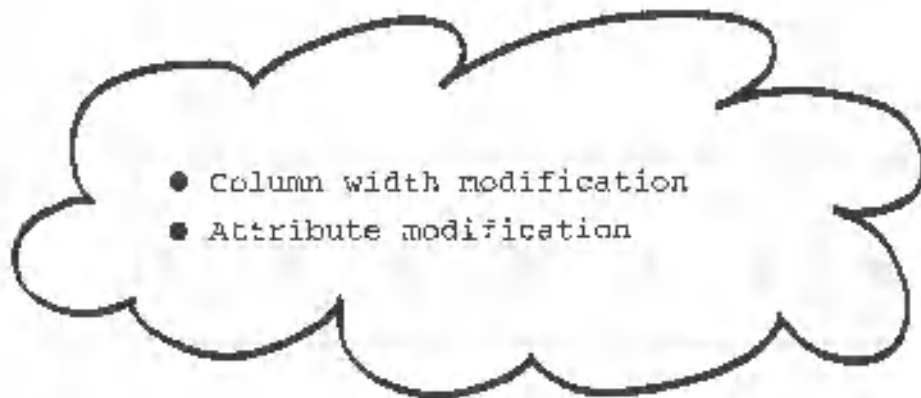
0	BRANCH	PRODUCT	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY
AMSTERDAM	REFRIGERATOR	140	120	280	160	140	150	130	
AMSTERDAM	T.V. SET	160	200	180	120	170	160	150	
BIRMINGHAM	RADIO	320	170	250	320	190	170	140	
BIRMINGHAM	T.V. SET	510	420	570	380	420	440	390	
BOMBAY	RADIO	620	580	760	700	640	520	560	
BOMBAY	REFRIGERATOR	420	310	390	440	280	300	330	
BOMBAY	T.V. SET	780	650	680	740	760	640	710	
BOSTON	RADIO	260	180	320	270	280	330	200	
BOSTON	REFRIGERATOR	320	360	410	280	260	330	220	
CAIRO	RADIO	240	150	130	210	250	140	180	
CAIRO	REFRIGERATOR	190	130	170	280	150	180	200	
CAIRO	T.V. SET	380	390	270	340	310	380	290	
CALCUTTA	RADIO	260	230	210	250	270	270	230	
CALCUTTA	T.V. SET	520	470	420	630	420	380	460	
CHICAGO	RADIO	470	410	380	500	360	310	420	
CHICAGO	REFRIGERATOR	340	280	310	250	240	300	280	
DETROIT	RADIO	620	510	550	660	430	480	330	
DETROIT	T.V. SET	870	660	950	860	770	600	840	

RECORD= 50 COLUMN= 15 START= 1 END= 50

INPUT INPUT PRT. DATA GEN. DUPLICATE DATA INFO RETRIEVAL
 SORT PROTECTING UTILITY
 SELECT FUNCTION(F1-F12, COPY, MOVE, DELETE, INSERT) DATA PROC. RICI
 ROLL 2

Chapter 4 - REDEFINING A ROLL

In this chapter, you will learn how to modify attributes and column widths.



4.1 Modifying Column Attributes and Widths

This section explains how to modify the attribute (numeric or character, etc.) and the width of a column that has been previously defined.

To modify the column width, press the following key:

► **F5**

RECORD= 50 COLUMN= 15 START= 1 END= 50									
DATA TYPE	SHIFT	NUM. FORMAT	NUM. PUNCT.	MODF WIDTH	CALC. A/M				
PROTECT					RETURN				
SELECT FUNCTION						IOCL	0	PRCL	
						ROLL	2		

► **F5**

RECORD= 50 COLUMN= 15 START= 1 END= 50									
COLUMN NO. ? (ENTER=CURSOR COLUMN, INPUT COLUMN NO.)									
						IOCL	0	PRCL	
						ROLL	2		

CANOBRAIN asks you to input the number of the column whose width is to be modified. In this example, the width of column 1 will be modified from 10 characters to 15 characters.

► **1** **↓**

RECORD= 50 COLUMN= 15 START= 1 END= 50									
COLUMN NO. ? (ENTER=CURSOR COLUMN, INPUT COLUMN NO.)									
						IOCL	0	PRCL	
						ROLL	2		

► **1** **5** **↓**

0	BRANCH	PRODUCT	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JU
1	AMSTERDAM	REFRIGERATOR	140	120	200	160	140	150	1
2	AMSTERDAM	T.V. SET	160	200	180	120	170	160	1
3	BIRMINGHAM	RADIO	320	170	250	320	190	170	1
4	BIRMINGHAM	T.V. SET	510	420	570	380	420	440	3
5	BOMBAY	RADIO	620	580	760	700	640	520	5
6	BOMBAY	REFRIGERATOR	420	310	390	440	280	300	3
7	BOMBAY	T.V. SET	780	650	680	740	760	640	7
8	BOSTON	RADIO	260	180	320	270	280	330	2
9	BOSTON	REFRIGERATOR	320	360	410	280	260	330	2
10	CAIRO	RADIO	240	150	130	210	250	140	1
11	CAIRO	REFRIGERATOR	190	130	170	280	150	180	2
12	CAIRO	T.V. SET	380	390	270	340	310	380	2
13	CALCUTTA	RADIO	260	230	210	250	270	270	2
14	CALCUTTA	T.V. SET	520	470	420	630	420	380	4
15	CHICAGO	RADIO	470	410	380	500	360	310	4
16	CHICAGO	REFRIGERATOR	340	280	310	250	240	300	2
17	DETROIT	RADIO	620	510	550	660	430	480	3
18	DETROIT	T.V. SET	870	660	950	860	770	600	8

RECORD= 50 COLUMN= 15 START= 1 END= 50

15CL 0 R1CL
ROLL 2

The width of column 1 has been modified to 15 characters. The column width indicator on the second line from the bottom has changed from "10CL" to "15CL", indicating that the column width has changed from 10 characters to 15. This indicator will be explained in Volume V in detail. Remember that the first two characters indicate the width of the column. This indicator is displayed when FORMAT, INPUT, or INPUT PAT. are selected.

Press the following key:

F12

RECORD= 50 COLUMN= 15 START= 1 END= 50										
DATA TYPE	SHIFT	NUM. FORMAT	NUM. PUNCT.	MODF WIDTH	CALC. A/R					
PROTECT					RETURN					
SELECT FUNCTION					15CL	0	R1CL			
					ROLL	2				

Next, modify the attributes of a column. A column can have the following attributes:

- . Data type: Data type of string; i.e., character type or numeric type
- . Character shift: Left-justified or right-justified
- . Numeric type: General (real number including exponent), integer, or decimal format
- . Numeric editing: Numeric editing options such as comma, dollar(\$), or plus(+) sign insertion
- . Data protection: To protect entered data from being changed by input or recalculation.

These are specified the same way a roll is defined. In this example, the dollar sign is placed before numeric values. Press the following key:

▶ **F4**

RECORD= 50				COLUMN= 15				START= 1				END= 50			
COLUMN NO.7 (CENTER=CURSOR COLUMN)				(INPUT COLUMN NO.1)				15CL 0 (PIC)				RETURN			
ROLL 2															

CANOBRAIN asks you to input the number of the column. Input "3".

▶ **3**

RECORD= 50				COLUMN= 15				START= 1				END= 50			
NO COMMAS				NO PUNCT.				ROUND DOWN				ROUND OFF			
ROUND UP				SELECT				15CL 0 (PIC)							
ROLL 2															

▶ **F3**

RECORD= 50 COLUMN= 15 START= 1 END= 50

SELECT PUCTUATOR	15CL	0	RICI
	ROLL	2	

A detailed explanation of editing characters will be given in Volume V. In this example, press the following key to place the dollar sign before numeric values:

▶ **F7**

BRANCH	PRODUCT	FA	CFR	HP3.	3PN.	PKF	IUM1	JU
AMSTERDAM	REFRIGERATOR	\$140	20	210	160	101	153	L
BIRMINGHAM	WASTE	\$120	170	250	120	171	162	:
BIRMINGHAM	T.V. SET	\$513	920	570	261	122	241	7
BOMBAY	WASTE	\$620	520	700	701	540	221	5
BOMBAY	REFRIGERATOR	\$220	20	251	100	200	200	2
BOMBAY	T.V. SET	\$780	670	601	240	261	640	3
BOSTON	WASTE	\$260	160	321	270	200	230	8
BOSTON	REFRIGERATOR	\$121	261	413	280	260	330	2
CHICAGO	WASTE	\$300	151	120	210	250	130	1
CHICAGO	REFRIGERATOR	\$140	153	170	200	190	190	2
CHICAGO	T.V. SET	\$700	191	271	240	310	580	2
CALCUTTA	WASTE	\$250	221	210	220	270	270	2
CALCUTTA	T.V. SET	\$520	470	220	630	420	360	4
CHICAGO	WASTE	\$470	410	280	530	260	310	4
CHICAGO	REFRIGERATOR	\$360	200	210	230	240	240	2
NEW YORK	WASTE	\$620	210	550	660	170	463	3
DETROIT	T.V. SET	\$870	660	250	060	773	203	3

RECORD= 50 COLUMN= 15 START= 1 END= 50

RETURN	15CL	0	RICI
	ROLL	2	

The dollar sign has been placed before the values in column 3 to demonstrate the use of editing characters. Therefore, the next step is to remove the dollar signs because they have no meaning in relation to the data in column 3. To do this, press the following key:

▶ **3** ↵

RECORD= 50 COLUMN= 15 START= 1 END= 50

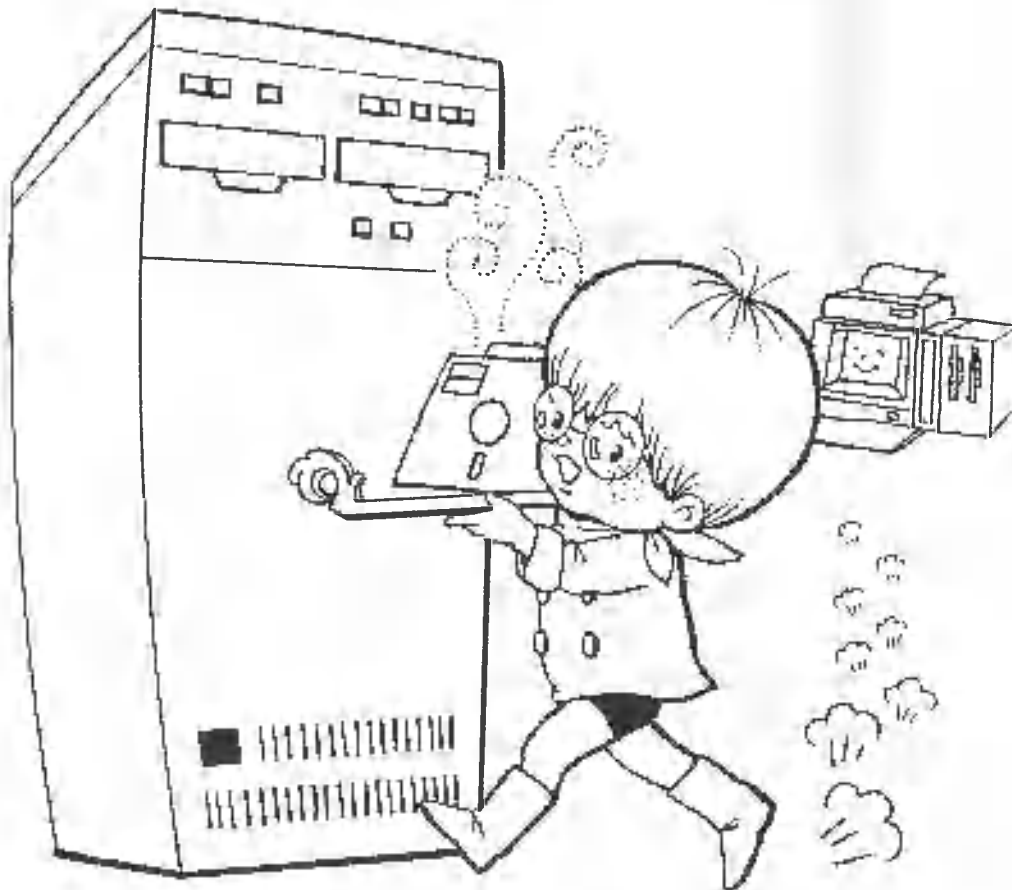
SELECT	15CL	0	RICI
	ROLL	2	

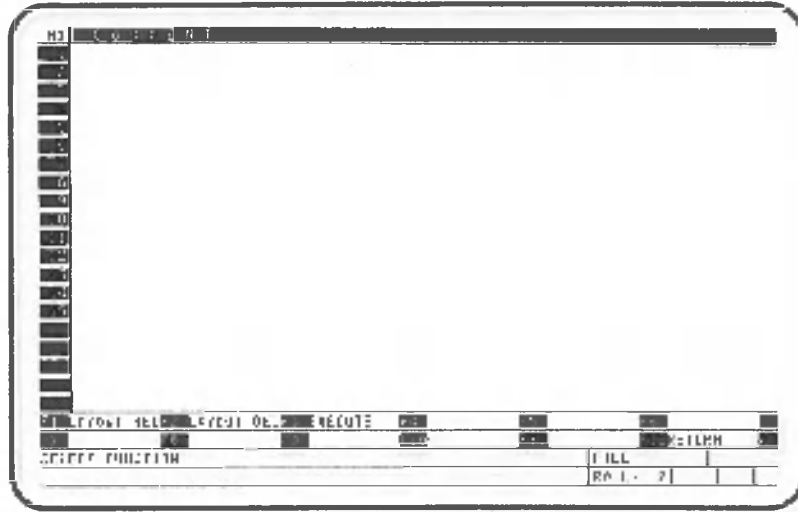
▶ **F4**

Chapter 5 - DATA EXCHANGE WITH OTHER SYSTEMS

In this chapter, we will explain about the process of data exchange with files that can be read from or written to the AS-100's online software, (RJE-86), or with files on IBM-format floppy disks.

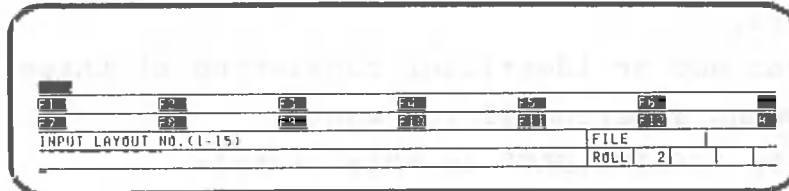
- How to read from or write to online files.
- How to read to or write from IBM-format floppy disks.





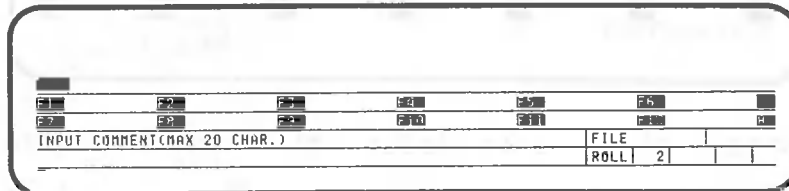
Select layout registration.

▶ F1



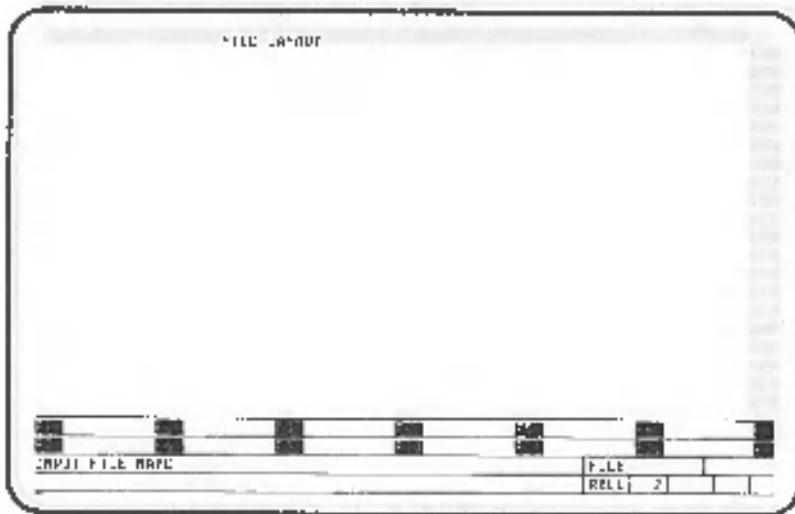
You can assign a number from 1 through 15 for the layout number. In this example, specify 1.

▶ 1 ↵



CANOBRAIN asks you to input comments on the layout. Specify "ONLINE FILE".

▶ ONLINE FILE ↵

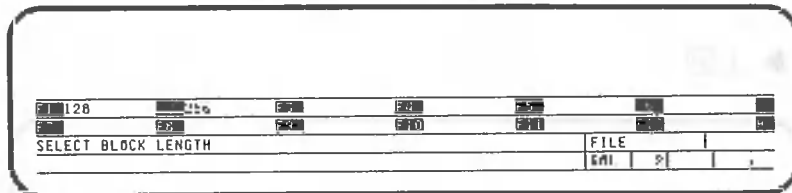


CANOBRAIN asks you to input a name for the online file. The file name must be composed of eight letters or less. These letters will automatically be changed to capital letters.

You can add an identifier consisting of three letters following a period if you want.

Specify "ONLINE.DAT" in this example.

▶ ONLINE.DAT ↵



CANOBRAIN asks you to define the block length (collection of data) used in the file. One row of roll data corresponds to one block.

You can select 128 bytes or 256 bytes as the block length.

Select 128 bytes in this example.

▶ F1

ASCII	ASCII						
SELECT CODE					FILE		
					ROLL	2	

CANOBRAIN asks you to define the internal code for the online files.

Select ASCII code in this example.

▶ F2

FILE LAYOUT			
FIELD NO.	FILE NAME	BLOCK LENGTH	CODE
	ONLINE.DAT	128	ASCII
FIELD NO.	LENGTH	TYPE	
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			

FIELD NO.= 1	: INPUT FIELD LENGTH(ENTER=END)	FILE	
		ROLL	2

A field is a place where data is entered within a block. One column of a roll corresponds to a field. You are now requested to input the width of the first column. Input the width, 15, as follows:

▶ 15 ↵

FILE LAYOUT			
FIELD NO.	FILE NAME	BLOCK LENGTH	CODE
	ONLINE.DAT	128	ASCII
FIELD NO.	LENGTH	TYPE	
1	15		
2			
3			
4			

The width, 15, is displayed on the screen. CANOBRAIN asks you to input the data contents. Since column 1 contains characters, press the following key:

▶

17									
F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
FIELD NO. = 2 : INPUT FIELD LENGTH(CENTER=END)							FILE		
							ROLL	2	

CANOBRAIN asks you to input the width of the second field. Since the second column of the roll is 12 characters long and contains characters, input the following:

▶ ↵

▶

17									
F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
FIELD NO. = 3 : INPUT FIELD LENGTH(CENTER=END)							FILE		
							ROLL	2	

Next, specify the length of the third field. Column 3 of the roll is 6 characters long and contains a numeric value. The field length is 6. Therefore, input:

▶ ↵

17									
F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
CHARACTER	PACK	ZONE							
SELECT FIELD TYPE							FILE		
							ROLL	2	

Two numeric types, packed and zoned, are displayed because the field contains a numeric value. In packed format, a numeric value is packed in a field half as long as the number of the numeric characters. Note that up to 15 digits can be handled. In zoned format, a numeric value is written in a field whose length equals the number of numeric characters. Up to 256 digits can be handled.

In this example, all the numeric values are in packed format.

▶ **F2**

FILE LAYOUT			
FILE NAME			
ONLINE.DAT			
FIELD NO.	LENGTH	TYPE	BLOCK LENGTH CODE
			128 ASCII
1	15	CHAR	
2	12	CHAR	
3	6	PACK	

Specify the lengths similarly for fields 4 to 15 as follows:

▶ **6** **F2** ... (11 times)

▶ **10** **F2**

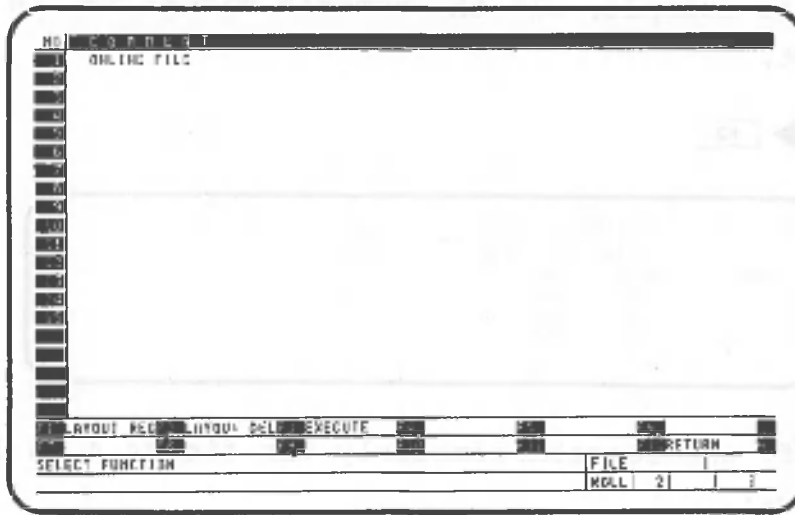
FILE LAYOUT			
FILE NAME			
ONLINE.DAT			
FIELD NO.	LENGTH	TYPE	BLOCK LENGTH CODE
			128 ASCII
1	15	CHAR	
2	12	CHAR	
3	6	PACK	
4	6	PACK	
5	6	PACK	
6	6	PACK	
7	6	PACK	
8	6	PACK	
9	6	PACK	
10	6	PACK	
11	6	PACK	
12	6	PACK	
13	6	PACK	
14	6	PACK	
15	10	PACK	
16			
17			

FIELD NO. = 16 : [INPUT FIELD LENGTH] [ENTER=END] FILE

ROLL 2

To end the field specification, press the following key:

▶ **↵**



CANOBRAIN has memorized the layout of the online file.



5.1.2 Writing Data to an Online File

To write CANOBRAIN roll data to an online file, press the following key:

▶ **F3**

A screenshot of a terminal window showing a data entry screen. At the top, it says 'INPUT LAYOUT NO. (1-15)'. Below this, there are several columns of data. The 'FILE' field is set to 'FILE' and the 'ROLL' field is set to '2'. There are also some small icons and a cursor visible.

CANOBRAIN asks you to input the number of the layout used to write data. Input the number for "ONLINE FILE", "1", that was registered in the previous section.

▶ **1** ↵

A screenshot of a terminal window showing a data entry screen. At the top, it says 'FILE->ROLL' and 'ROLL->FILE'. Below this, there are several columns of data. The 'FILE' field is set to 'FILE' and the 'ROLL' field is set to '2'. There are also some small icons and a cursor visible.

CANOBRAIN asks you the origin and destination of the data to be transferred. In this example, select "Roll->File" because data will be written from the roll to online files.

▶ **F2**

A screenshot of a terminal window showing a data entry screen. At the top, it says 'PROCEDURE - CANOBRAIN ROLL -> FILE'. Below this, there is a table with columns for 'FILE NAME', 'BLOCK LENGTH', and 'CODE'. The table contains data for 'ONLINE.DAT' with a block length of 128 and code ASCII. Below the table, there is a summary table with columns for 'COL NO.', 'COMMENT', 'WIDTH', 'FIELD NO.', 'LENGTH', 'TYPE', and 'ROLL'. The summary table contains data for columns 1 through 15, including 'BRANCH', 'PRODUCTS', 'JAN.', 'FEB.', 'MAR.', 'APR.', 'MAY', 'JUNE', 'JULY', 'AUG.', 'SEP.', 'OCT.', 'NOV.', 'DEC.', and 'TOTAL'. At the bottom, there is a prompt 'FIELD NO.= 1 COPY COL.(1,1)?[ENT=SPACE/0],[INPUT COL.NO.]' and a 'FILE' field set to 'FILE' and a 'ROLL' field set to '2'.

FILE NAME	BLOCK LENGTH	CODE
ONLINE.DAT	128	ASCII

COL NO.	COMMENT	WIDTH	FIELD NO.	LENGTH	TYPE	ROLL
1	BRANCH	15	1	15	CHAR	
2	PRODUCTS	12	2	12	CHAR	
3	JAN.	6	3	6	PACK	
4	FEB.	6	4	6	PACK	
5	MAR.	6	5	6	PACK	
6	APR.	6	6	6	PACK	
7	MAY	6	7	6	PACK	
8	JUNE	6	8	6	PACK	
9	JULY	6	9	6	PACK	
10	AUG.	6	10	6	PACK	
11	SEP.	6	11	6	PACK	
12	OCT.	6	12	6	PACK	
13	NOV.	6	13	6	PACK	
14	DEC.	6	14	6	PACK	
15	TOTAL	10	15	10	PACK	

5.1.3 Reading Data from an Online File to a Roll

This section explains how to read data from an online file to a roll.

In this example, the layout "ONLINE FILE" and the file "ONLINE.DAT", which data had been written to in the previous section, will be used.

First, delete the roll data so that we can understand how data will be written.

► **F12** (Twice)

0	BRANCH	PRODUCT	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JU
1	AMSTERDAM	REFRIGERATOR	140	120	200	160	140	150	1
1	AMSTERDAM	T.V. SET	160	200	180	120	170	160	1
1	BIRMINGHAM	RADIO	320	170	250	320	190	170	1
3	BIRMINGHAM	T.V. SET	510	420	570	380	420	440	3
5	BOMBAY	RADIO	620	580	760	700	640	520	5
3	BOMBAY	REFRIGERATOR	420	310	390	440	280	300	3
7	BOMBAY	T.V. SET	780	650	680	740	760	640	7
2	BOSTON	RADIO	260	180	320	270	280	330	2
2	BOSTON	REFRIGERATOR	320	360	410	280	260	330	2
1	CAIRO	RADIO	240	150	130	210	250	140	1
2	CAIRO	REFRIGERATOR	190	130	170	280	150	180	2
2	CAIRO	T.V. SET	380	390	270	340	310	380	2
2	CALCUTTA	RADIO	260	230	210	250	270	270	2
4	CALCUTTA	T.V. SET	520	470	420	630	420	380	4
4	CHICAGO	RADIO	470	410	380	500	360	310	4
2	CHICAGO	REFRIGERATOR	340	280	310	250	240	300	2
3	DETROIT	RADIO	620	510	550	660	430	480	3
8	DETROIT	T.V. SET	870	660	950	860	770	600	8

RECORD= 50 COLUMN= 15 START= 1 END= 50

INPUT INPUT PAT. DATA GEN. DUPLICATE CHARITIME RELIABLE
 SORT REPORTING UTILITY RETURN
 ELECT FUNCTON(F1-F12, LOPY, MOVE, DELETE, INSERT) DATA PROC. RICI
 ROLL 2

► **F1**

RECORD= 50 COLUMN= 15 START= 1 END= 50

CORRECT DELETE COL. EXP. RET.(SET) RET.(CNT)
 TOTAL
 INPUT DATA 15CL 0 RICI
 AMSTERDAM ROLL 2

► **F2**

RECORD= 50 COLUMN= 15 START= 1 END= 50

F2 F3 F4 F5 F6 RETURN
 ADDRESS? (ENTER=CURSOR ADDRESS), (INPUT ADDRESS(RxCy)) 15CL 0 RICI
 ROLL 2

F1

ONLINE FILE

LAYOUT REG LAYOUT DEL EXECUTE

SELECT FUNCTION

FILE

ROLL 2 1

F3

INPUT LAYOUT NO. (1-15)

FILE

ROLL 2

1

FILE->ROLL->ROLL->FILE

SELECT FUNCTION

FILE

ROLL 2

F1

PROCEDURE : CANOBRAIN ROLL <- FILE

CANOBRAIN ROLL FILE NAME BLOCK LENGTH CODE

:sample data :ONLINE.DAT :128 :ASCII

COL NO.	COMMENT	WIDTH	FILE	FIELD NO.	LENGTH	TYPE
1	BRANCH	15		1	15	CHAR
2	PRODUCTS	12		2	12	CHAR
3	JAN.	6		3	6	PACK
4	FEB.	6		4	6	PACK
5	MAR.	6		5	6	PACK
6	APR.	6		6	6	PACK
7	MAY	6		7	6	PACK
8	JUNE	6		8	6	PACK
9	JULY	6		9	6	PACK
10	AUG.	6		10	6	PACK
11	SEP.	6		11	6	PACK
12	OCT.	6		12	6	PACK
13	NOV.	6		13	6	PACK
14	DEC.	6		14	6	PACK
15	TOTAL	10		15	10	PACK

COL NO. = 1 COPY FIELD(1,1)?(LENT=NO COPY), (INPUT FIELD NO)

FILE

ROLL 2

5.2 IBM-Format Floppy Disks

CANOBRAIN can read data from or write data to IBM-format floppy disks to allow you to use data generated by large-scale computers or to produce data for use with large-scale computers.

This function is not available when using mini-floppy disk systems (5 ¼-inch).

CANOBRAIN can use the following types of IBM-format floppy disks:

- . Single-sided, single-density 128 bytes/sector
- . Double-sided, double-density 256 bytes/sector

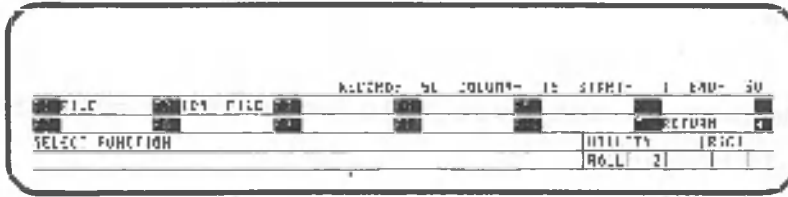
Whether data can be read from or written to these two types of floppy disks depends upon the indicators used internally. For details, refer to Appendix 2.

Assuming that an IBM-format floppy disk with the format given below is used, the subsequent explanation of the data exchange procedure will apply.

- . Floppy disk type: Single-sided, single-density
 128 bytes/sector
 (The exchange type indicator is
 blank)
- . Volume name : YOKO
- . File name : FILE 1
- . Block length : 128 bytes
- . Record length: : 128 bytes
- . Internal code: : EBCDIC
- . File capacity: : 7K bytes or more

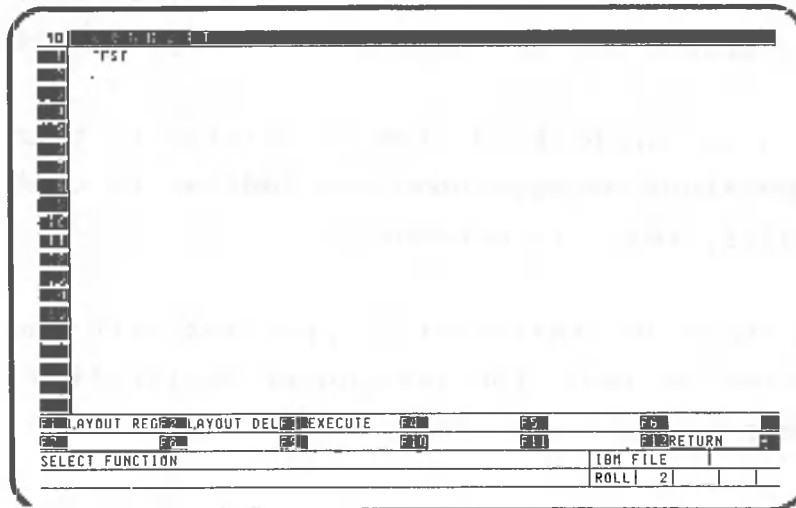
5.2.1 Defining IBM-Format Floppy Disks

Press **F9** when the data processing screen for "sample data" is displayed:



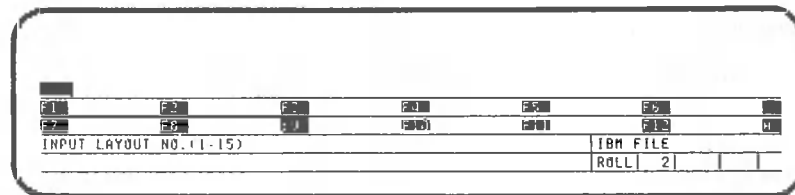
Select F2 to enable use of IBM-format disks.

▶ **F2**



When the above screen is displayed, let's have CANOBRAIN memorize how data is stored on an IBM-format floppy disk.

▶ **F1**



In this example, 1 is assigned to the layout.

▶ **1** ↵

The volume name has been displayed on the screen. CANOBRAIN then asks you to input the file name. The file name is "FILE1".

► FILE1

VOLUME NAME		IBM LAYOUT	
:YOKO		FILE NAME	
		:FILE 1	
FIELD NO.	LENGTH	TYPE	
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			

FIELD NO. = 1 : INPUT FIELD LENGTH (ENTER=END) LEN FILE 1
ROLL 2

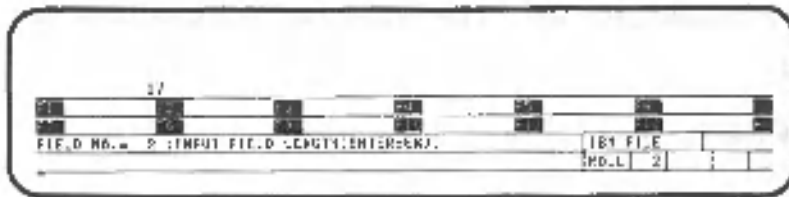
CANOBRAIN asks you to define the format of a record (collection of data) in the file. One row of the roll corresponds to a record. A field is a place where data is entered within a record. A column of the roll corresponds to a field. You are now requested to input the length of the first field. Since the width of the first column is 15, input the length as follows:

► 15

VOLUME NAME		IBM LAYOUT	
:YOKO		FILE NAME	
		:FILE 1	
FIELD NO.	LENGTH	TYPE	
1	15		
2			
3			

The length, 15, is displayed on the screen. CANOBRAIN asks you to input the contents of the data. Since column 1 contains characters, press the following key:

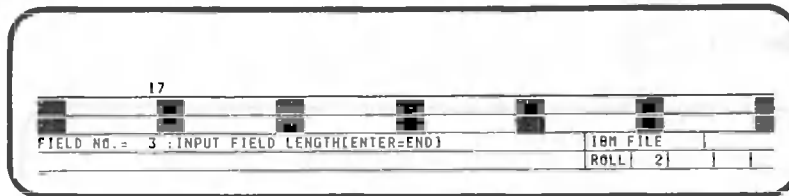
► F1



CANOBRAIN asks you to input the length of the second field. Since the second column of the roll is 12 characters long and contains characters, input the following:

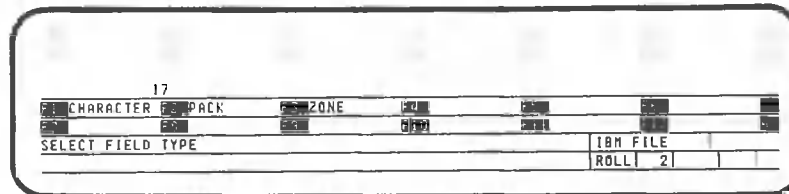
▶ 12 ↵

▶ F1



Next, specify the length of the third field. Column 3 of the roll is 6 characters long and contains a numeric value. The field length is 6.

▶ 6 ↵



Two numeric types, packed and zoned, are displayed because the field contains a numeric value. In packed format, a numeric value is packed in a field half as long as the number of the numeric characters. Note that up to 15 digits can be handled. In zoned format, a numeric value is written in a field whose length equals the number of numeric characters. Up to 256 digits can be handled.

In this example, all the numeric values are in packed format.

▶ **F2**

VOLUME NAME		IBM LAYOUT	
:YOKO		FILE NAME	
FIELD NO.	LENGTH	:FILE 1	
1	15	CHAR	
2	12	CHAR	
3	6	PACK	
:			

Specify the lengths similarly for fields 4 through 15 as follows:

▶ **6** **F2** ... (11 times)

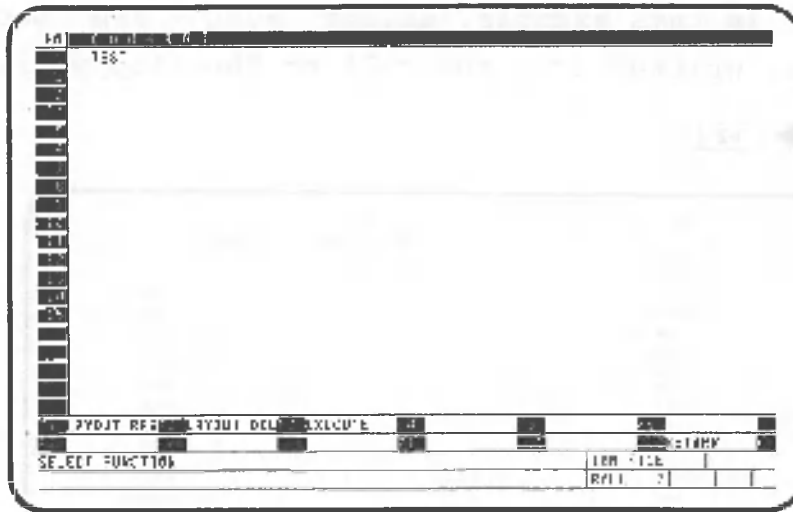
▶ **10** **F2**

VOLUME NAME		IBM LAYOUT	
:YOKO		FILE NAME	
FIELD NO.	LENGTH	:FILE 1	
1	15	CHAR	
2	12	CHAR	
3	6	PACK	
4	6	PACK	
5	6	PACK	
6	6	PACK	
7	6	PACK	
8	6	PACK	
9	6	PACK	
10	6	PACK	
11	6	PACK	
12	6	PACK	
13	6	PACK	
14	6	PACK	
15	10	PACK	
16			
17			

FIELD NO.= 16	:INPUT FIELD LENGTH(CENTER=END)	IBM FILE	
		POLL	2

To end the specification of the fields, press the following key:

▶ **↵**

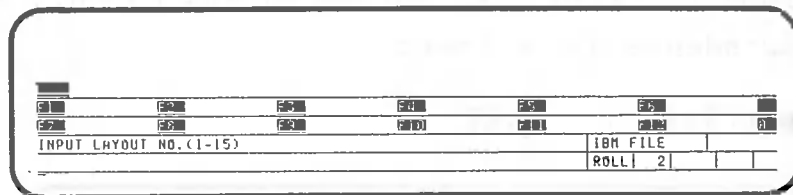


CANOBRAIN has memorized the layout of the IBM-format floppy disk.

5.2.2 Writing Data on IBM-Format Floppy Disks

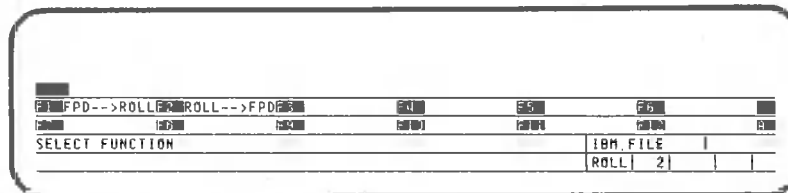
To write CANOBRAIN's roll data on an IBM-format floppy disk, press the following key:

▶ **F3**



CANOBRAIN asks you to input the number of the layout that will be used to write data. Input the layout number of "test", "1", that was created previously.

▶ **1** **↓**



CANOBRAIN asks you if data is to be written from the floppy disk to the roll or from the roll to the floppy

disk. In this example, select "ROLL → FPD" because data is written from the roll to the floppy disk.

▶ **F2**

PROCEDURE : ROLL				-> IBM FPD		
ROLL				VOLUME NAME	FILE NAME	
:sample data				:YOKO	:FILE1	
COL NO.	COMMENT	WIDTH	FIELD NO.	LENGTH	TYPE	ROLL
1	BRANCH	15	1	15	CHAR	
2	PRODUCTS	12	2	12	CHAR	
3	JAN.	6	3	6	PACK	
4	FEB.	6	4	6	PACK	
5	MAR.	6	5	6	PACK	
6	APR.	6	6	6	PACK	
7	MAY	6	7	6	PACK	
8	JUNE	6	8	6	PACK	
9	JULY	6	9	6	PACK	
10	AUG.	6	10	6	PACK	
11	SEP.	6	11	6	PACK	
12	OCT.	6	12	6	PACK	
13	NOV.	6	13	6	PACK	
14	DEC.	6	14	6	PACK	
15	TOTAL	10	15	10	PACK	

FIELD NO. = 1	COPY COL.(1) ? (ENT=SPACE/0), (INPUT COL.NO.)	IBM FILE	
		ROLL	2

The roll name, the item names, and the column widths are displayed on the left half of the screen, and the contents of the layout fields on the right half. Let's make the columns of the roll correspond to the fields on the floppy disk. In this example, field 1 corresponds to column 1, field 2 to column 2, and so on. Input the correspondence as follows:

▶ **1** **2** ... **15**

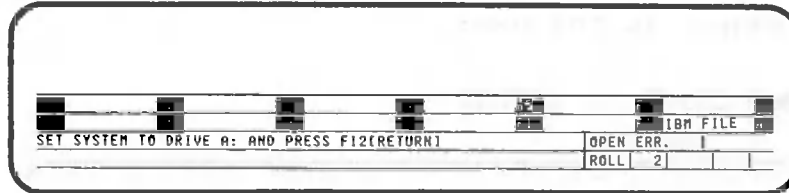
PROCEDURE : ROLL				-> IBM FPD		
ROLL				VOLUME NAME	FILE NAME	
:sample data				:YOKO	:FILE1	
COL NO.	COMMENT	WIDTH	FIELD NO.	LENGTH	TYPE	ROLL
1	BRANCH	15	1	15	CHAR	1
2	PRODUCTS	12	2	12	CHAR	2
3	JAN.	6	3	6	PACK	3
4	FEB.	6	4	6	PACK	4
5	MAR.	6	5	6	PACK	5
6	APR.	6	6	6	PACK	6
7	MAY	6	7	6	PACK	7
8	JUNE	6	8	6	PACK	8
9	JULY	6	9	6	PACK	9
10	AUG.	6	10	6	PACK	10
11	SEP.	6	11	6	PACK	11
12	OCT.	6	12	6	PACK	12
13	NOV.	6	13	6	PACK	13
14	DEC.	6	14	6	PACK	14
15	TOTAL	10	15	10	PACK	15

SET IBM FPD TO DRIVE A: AND PRESS F1(SET OK)	IBM FILE	
	ROLL	2

The roll column numbers to be written in the fields are displayed at the far right of the screen.

CANOBRAIN now asks you to remove the system floppy disk from drive A and to insert an IBM-format floppy disk. After inserting the floppy disk, press the following key:

▶ **F1**

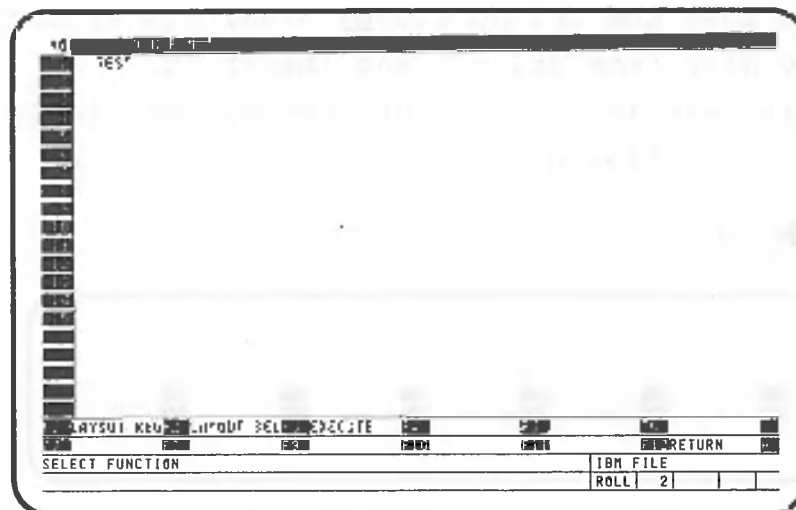


After processing, the four lines at the bottom have changed as shown above. The message asks you to remove the IBM-format floppy disk and to re-insert the system floppy disk.

Even if the data have been written correctly, be sure to re-insert the system floppy disk in drive A before pressing any keys. CANOBRAIN will not perform operations correctly unless the system floppy disk is in drive A.

After inserting the system floppy disk, press the following key:

▶ **F12**



The roll data has been written on the IBM-format floppy disk.

The roll name, the item names, and the column widths are displayed on the left half of the screen, and the contents of the layout fields on the right half. Let's make the columns of the roll correspond to the fields on the online file. In this example, field 1 corresponds to column 1, field 2 to column 2, and so on. Input the correspondence as follows:

▶ 1↵2↵ ... 15↵

PROCEDURE : CANOBRAIN ROLL			-> FILE			
CANOBRAIN ROLL			FILE NAME	BLOCK LENGTH	CODE	
sample data			:ONLINE.DAT	:128	:ASCII	
COL NO.	COMMENT	WIDTH	FIELD NO.	LENGTH	TYPE	ROLL
1	BRANCH	15	1	15	CHAR	1
2	PRODUCT	12	2	12	CHAR	2
3	JAN.	6	3	6	PACK	3
4	FEB.	6	4	6	PACK	4
5	MAR.	6	5	6	PACK	5
6	APR.	6	6	6	PACK	6
7	MAY	6	7	6	PACK	7
8	JUNE	6	8	6	PACK	8
9	JULY	6	9	6	PACK	9
10	AUG.	6	10	6	PACK	10
11	SEP.	6	11	6	PACK	11
12	OCT.	6	12	6	PACK	12
13	NOV.	6	13	6	PACK	13
14	DEC.	6	14	6	PACK	14
15	TOTAL	10	15	10	PACK	15

F1	SET OK	F2		F4	F5	F6	
F7		F8	F10	F11		RETURN	H
SET FPD TO DRIVE A: AND PRESS F1(SET OK)					FILE		
					ROLL	2	

The roll column numbers to be written in the fields are displayed at the far right of the screen.

CANOBRAIN now asks you to set the floppy disk in drive A. If you have the online floppy disk, remove the system floppy disk from drive A and insert it. In this example, we will use the system floppy disk. Press the following key:

▶ F1

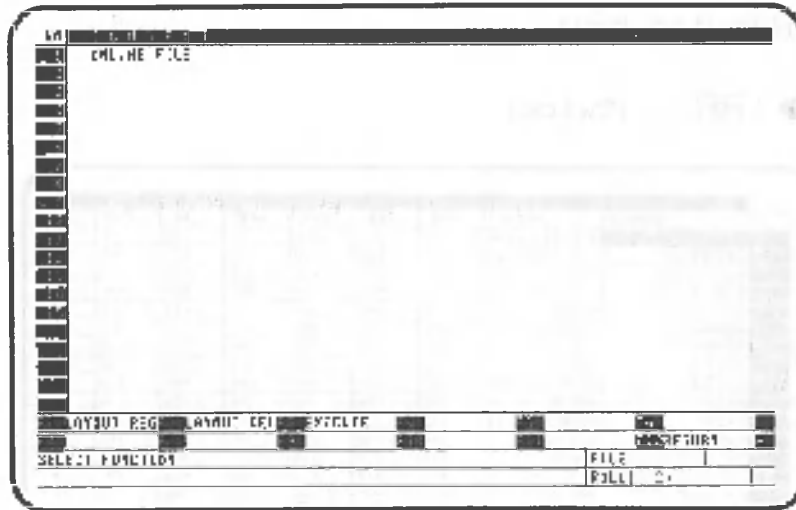
F1		F2		F4	F5	F6	
F7		F8	F10	F11		RETURN	H
SET SYSTEM TO DRIVE A: AND PRESS F12(RETURN)					FILE		
					ROLL	2	

After processing, the four lines at the bottom have changed as shown above. The message asks you to remove the floppy disk and to insert the system floppy disk.

Even if data has been written correctly, be sure to insert the system floppy disk in drive A before pressing any keys. CANOBRAIN will not perform operations correctly will not perform operations correctly

Since we used the system floppy disk in this example, no operation is required here.

▶ **F12**



The roll data has been written on the online file.

► R1.C1.

RECORD= 50 COLUMN= 15 START= 1 END= 50

YES NO

XXXXXXXXX DELETE OK ? ISCL 0 RICI

ROLL 2

► F1

R/C	REF ID	PROJECT	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JUL
0									
1									
2									
3									
4									
5									
6									
7									
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47									
48									
49									
50									

RECORD= 50 COLUMN= 15 START= 1 END= 50

XXXXXXXXX DELETE OK ? ISCL 0 RICI

ROLL 2

The data on all rows, except row 0, has been deleted. Return the screen to the data processing screen.

► F12 ... (Twice)

RECORD= 50 COLUMN= 15 START= 1 END= 50

INPUT INPUT PAT. DATA GEN. DUPLICATE FORMATTING RETRIEVAL

SORT REPORTING UTILITY END RETURN

SELECT FUNCTION(F1-F12, COPY, MOVE, DELETE, INSERT) DATA PROC. RICI

ROLL 2

Press the following key to read data from the IBM-format floppy disk to the roll.

▶ **F9**

RECORD= 50 COLUMN= 15 START= 1 END= 50			
FILE	IBM FILE		
			RETURN
SELECT FUNCTION		UTILITY	RICL
		ROLL	2

▶ **F2**

10	test
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12	
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▶ F1

```
PROCEDURE : ROLL          <- IBM FPD
ROLL                      VOLUME NAME  FILE NAME
:sample data              :YOKO         :FILE1
COL NO. COMMENT          WIDTH IBM  FIELD NO.  LENGTH TYPE
1 BRANCH                 15      1          15 CHAR
2 PRODUCT                12      2          12 CHAR
3 JAN.                   6       3           6 PACK
4 FEB.                   6       4           6 PACK
5 MAR.                   6       5           6 PACK
6 APR.                   6       6           6 PACK
7 MAY                    6       7           6 PACK
8 JUNE                   6       8           6 PACK
9 JULY                   6       9           6 PACK
10 AUG.                  6      10          6 PACK
11 SEP.                  6      11          6 PACK
12 OCT.                  6      12          6 PACK
13 NOV.                  6      13          6 PACK
14 DEC.                  6      14          6 PACK
15 TOTAL                 10     15          10 PACK
```

COL NO. = 1 COPY FIELD(1,1)?(ENT=NO COPY),(INPUT FIELD NO) IBM FILE

ROLL 21

CANOBRAIN asks you to input the roll column into which the field data of the IBM-format floppy disk is to be read. The correspondence between the fields and the columns is the same as that in the previous example. Input the correspondence as follows:

▶ 1↵ 2↵ ... 15↵

```
PROCEDURE : ROLL          <- IBM FPD
ROLL                      VOLUME NAME  FILE NAME
:sample data              :YOKO         :FILE1
COL NO. COMMENT          WIDTH IBM  FIELD NO.  LENGTH TYPE
1 BRANCH                 15      1          15 CHAR
2 PRODUCT                12      2          12 CHAR
3 JAN.                   6       3           6 PACK
4 FEB.                   6       4           6 PACK
5 MAR.                   6       5           6 PACK
6 APR.                   6       6           6 PACK
7 MAY                    6       7           6 PACK
8 JUNE                   6       8           6 PACK
9 JULY                   6       9           6 PACK
10 AUG.                  6      10          6 PACK
11 SEP.                  6      11          6 PACK
12 OCT.                  6      12          6 PACK
13 NOV.                  6      13          6 PACK
14 DEC.                  6      14          6 PACK
15 TOTAL                 10     15          10 PACK
```

SET OK

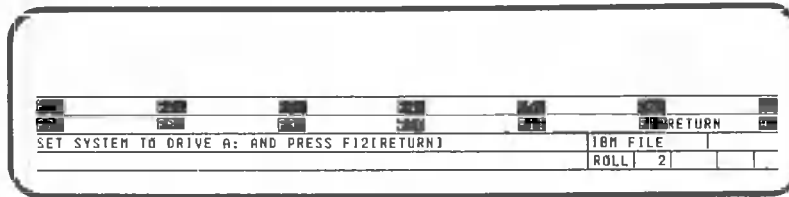
SET IBM FPD TO DRIVE A: AND PRESS F1[SET OK] IBM FILE

ROLL 21

The field numbers that have been entered are displayed in the center of the screen. Insert the IBM-format floppy disk into drive A and press the following key.

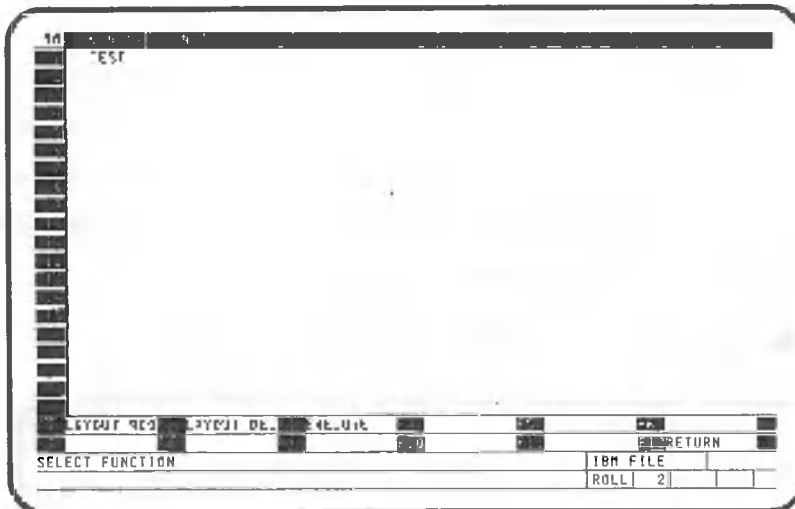
▶ F1

After processing, the four lines at the bottom of the screen have changed as shown below.



Insert the system floppy disk into drive A and press the following key:

▶ **F12**



Check whether or not the data has been read.

▶ **F12** ... (Twice)

R/C	FILE NO	PRODUCT	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JUL
0	1	REFRIGERATOR	140	120	280	160	140	150	1
	AMSTERDAM	T.V. SET	160	200	180	120	170	160	1
	BIRMINGHAM	RADIO	320	170	250	320	190	170	1
	BIRMINGHAM	T.V. SET	510	420	570	380	420	440	3
	BOMBAY	RADIO	620	580	760	700	640	520	5
	BOMBAY	REFRIGERATOR	420	310	390	440	280	300	3
	BOMBAY	T.V. SET	780	650	680	740	760	640	7
	BOSTON	RADIO	260	180	320	270	280	330	2
	BOSTON	REFRIGERATOR	320	360	410	280	260	330	2
	CAIRO	RADIO	240	150	130	210	250	140	1
	CAIRO	REFRIGERATOR	190	130	170	280	150	180	2
	CAIRO	T.V. SET	380	390	270	340	310	380	2
	CALCUTTA	RADIO	260	230	210	250	270	270	2
	CALCUTTA	T.V. SET	520	470	420	630	420	380	4
	CHICAGO	RADIO	470	410	380	500	360	310	4
	CHICAGO	REFRIGERATOR	340	280	310	250	240	300	2
	DETROIT	RADIO	620	510	550	660	430	480	3
	DETROIT	T.V. SET	870	660	950	860	770	600	8

SELECT FUNCTION(F1-F12,COPY,MOVE,DELETE,INSERT) | DATA PROC. | RICI |
 ROLL | 2 |

In this example, data was deleted from all rows except row 0. Now, the data has been restored. That is, the data has been read from the online file floppy disk to the roll.

CANOBRAIN asks you to input the roll column into which the field data of the online file is to be read. The correspondence between the fields and the columns is the same as that in the previous example.

Input the correspondence as follows:

▶ **1** **2** ... **15**

PROCEDURE : CANOBRAIN ROLL		← FILE		BLOCK LENGTH	CODE	
CANOBRAIN ROLL		FILE NAME	FILE NAME	: 128	: ASCII	
: sample data		: ONLINE.DAT				
COL NO.	COMMENT	WIDTH	FILE	FIELD NO.	LENGTH	TYPE
1	BRANCH	15	1	1	15	CHAR
2	PRODUCT	12	2	2	12	CHAR
3	JAN.	6	3	3	6	PACK
4	FEB.	6	4	4	6	PACK
5	MAR.	6	5	5	6	PACK
6	APR.	6	6	6	6	PACK
7	MAY	6	7	7	6	PACK
8	JUNE	6	8	8	6	PACK
9	JULY	6	9	9	6	PACK
10	AUG.	6	10	10	6	PACK
11	SEP.	6	11	11	6	PACK
12	OCT.	6	12	12	6	PACK
13	NOV.	6	13	13	6	PACK
14	DEC.	6	14	14	6	PACK
15	TOTAL	10	15	15	10	PACK

SET DR	ESC	ESC	ESC	ESC	ESC	ESC	RETURN
SET FPD TO DRIVE A: AND PRESS F1(SET DR)	FILE						
	ROLL	2					

The field numbers that have been input are displayed in the center of the screen. Insert the floppy disk which contains ONLINE.DAT into drive A and press the following key.

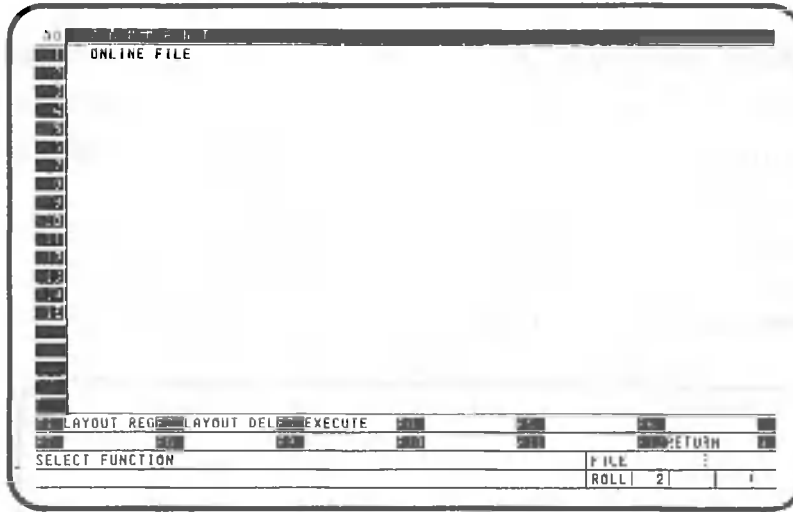
▶ **F1**

After processing, the four lines at the bottom of the screen have changed as shown below.

SET SYSTEM TO DRIVE A: AND PRESS F1(RETURN)	FILE						
	ROLL	2					

Insert the system floppy disk into drive A and press the following key:

► **F12**



Check whether or not the data has been read.

► **F12** ... (Twice)

0	BRANCH	PRODUCT	FRG.	PRG.	MAN.	OPR.	REV.	JUNE	JUL
	PHSTFD041	REFRIGERATOR	140	120	280	160	140	150	1
		T.V. SET	160	200	180	120	170	160	1
	BIRMINGHAM	RADIO	320	170	250	320	190	170	1
	BIRMINGHAM	T.V. SET	510	420	570	380	420	440	3
	BOMBAY	RADIO	620	580	760	700	640	520	5
	BOMBAY	REFRIGERATOR	420	310	390	440	280	300	3
	BOMBAY	T.V. SET	780	650	680	740	760	640	7
	BOSTON	RADIO	260	180	320	270	280	330	2
	BOSTON	REFRIGERATOR	320	360	410	280	260	330	2
	CAIRO	RADIO	240	150	130	210	250	140	1
	CAIRO	REFRIGERATOR	190	130	170	280	150	180	2
	CAIRO	T.V. SET	380	390	270	340	310	380	2
	CALCUTTA	RADIO	260	230	210	250	270	270	2
	CALCUTTA	T.V. SET	520	470	420	630	420	380	4
	CHICAGO	RADIO	470	410	380	500	360	310	4
	CHICAGO	REFRIGERATOR	340	280	310	250	240	300	2
	DETROIT	RADIO	620	510	550	660	430	480	3
	DETROIT	T.V. SET	870	660	950	860	770	600	8

RECORDS= 50 COLUMN= 15 START= 1 END= 50

INPUT INPUT PAT. DATA SEP. DUPLICATE CHITTING RELEVEL

DATE OF DATE ACTIVITY

SELECT FUNCTION(F1-F12,COPY,MOVE,DELETE,INSERT) DATA PROC. RICI

ROLL 2

In this example, data was deleted from all rows except row 0. Now, the data has been restored. That is, the data has been read from the online file to the roll.

VOLUME IV

ROUTINE PROCESSING

Canon AS-100

The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that every entry, no matter how small, should be recorded to ensure the integrity of the financial statements. This includes not only sales and purchases but also expenses and income. The document provides a detailed list of items that should be tracked, such as inventory levels, accounts receivable, and accounts payable. It also outlines the procedures for reconciling these accounts and identifying any discrepancies.

The second part of the document focuses on the classification of expenses. It explains how to distinguish between capital expenditures and operating expenses, and how to allocate costs to different departments or projects. This section includes a table that categorizes various types of expenses, such as salaries, rent, utilities, and depreciation. The document also discusses the importance of proper documentation for each expense, including receipts and invoices, to support the entries in the financial records.

The third part of the document addresses the issue of asset management. It describes how to track the acquisition, use, and disposal of physical assets, such as equipment and vehicles. This section includes a table that records the date of purchase, the cost, and the useful life of each asset. It also discusses the methods for calculating depreciation and the impact of asset disposal on the financial statements. The document emphasizes the need for regular physical counts and reconciliements to ensure that the recorded values of assets are accurate.

The final part of the document provides a summary of the key points discussed and offers some practical advice for implementing the recommended procedures. It stresses the importance of consistency and accuracy in record-keeping and encourages the use of standardized formats and codes to facilitate the process. The document concludes by noting that a well-maintained record-keeping system is essential for the success of any business and for the reliability of its financial reporting.

Chapter 1 - COMMON BUSINESS APPLICATIONS

This volume explains the various uses of patterns, which are convenient for handling routine processing.

- What is a pattern?
- What can a pattern do?
- Registering a pattern
- Executing a pattern



1.1 Registration Procedures

As you have perhaps noticed, routine processing operations can become very tedious as well as time-consuming. If these operations are registered in CANOBRAIN, however, most can be performed automatically by the system itself. Recording these operations in CANOBRAIN as a pattern coherent is called pattern registration. Processing data according to the pattern set is called pattern execution.

The procedures for registering and executing patterns will be explained, using pages of roll data in book 1 generated in Volume II and roll sample data as examples.

1.1.1 Preparation

First, we will modify the roll data a bit. The items to be modified are:

- . The fixed display of row 1 and column 1,
- . Addition of a column for totals,
- . Deletion of all data,
- . Entry of item names for each column,
- . Entry of a expression for the total.

Those modifications are not necessarily required when registering procedures, but are required to explain the examples. Let's begin by selecting book 1.

BOOK LIST

NO	TITLE	CREATE	UPDATE
1	CANOBRAIN	12.01.83	12.01.83
2	SALES BY BRANCH	12.01.83	12.01.83
3	BOOK1	12.01.83	12.01.83

SELECT BOOK (INPUT BOOK NO., 1)

BOOK

▶ 3 ↵

INDEX

PAGE	T I T L E	CREATE	UPDATE
0	P A G E C R E A T E		
1	ROLL DATA	12.01.83	12.01.83

SELECT PAGE (INPUT PAGE NO., 1)

BOOK 3

Select roll data.




▶ 1 ↵

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
TOKYO	REFRIGERATOR		390																
LONDON	T.V. SET		350																
MOSCOW	RADIO		950																
SHANGHAI	RADIO		250																
PARIS	REFRIGERATOR		310																
OSAKA	T.V. SET		320																
FRANKFURT	T.V. SET		350																
T.A.	RADIO		370																
CHICAGO	REFRIGERATOR		380																
CALCUTTA	RADIO		310																
MEXICO	T.V. SET		440																
DETROIT	RADIO		450																
BOMBAY	REFRIGERATOR		320																
PEKING	T.V. SET		460																
HONG KONG	REFRIGERATOR		510																
AMSTERDAM	T.V. SET		280																
CAIRO	RADIO		300																
BOSTON	REFRIGERATOR		270																
MOSCOW	T.V. SET		1320																

INPUT INPUT PAT. DATA GEN. DUPLICATE FORMATTING RETR./SORT
 PRINTOUT PCO FILE READ ROLL TABLE DEF. MONITOR
 SELECT FUNCTION(F1-F12,COPY,MOVE,DELETE,INSERT) DATA PROC. (RIC)

BOOK 3

First, specify a fixed display of row 1, column 1.
To do this, press the following keys:

 (Press the  key and then the  key.)

R.1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	TOKYO	TV SET		630																
	TOKYO	REFRIGERATOR		390																
	LONDON	TV SET		350																
	MOSCOW	RADIO		950																
	SHANGHAI	RADIO		250																

Next, add a column for totals. This column, column 15, should have a width of 10 characters.

INSERT

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
	MOSCOW	T.V. SET		1320																

ROW COLUMN GRID RETURN
 SELECT ROW/COLUMN INSERT (RIC)


BOOK 3

F2

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
	MOSCOW	T.V. SET		1320																

INSERT? (ENTER=CURSOR COL., 1), (INPUT COL.NO., NUMBER OF COL.) INSERT (RIC)

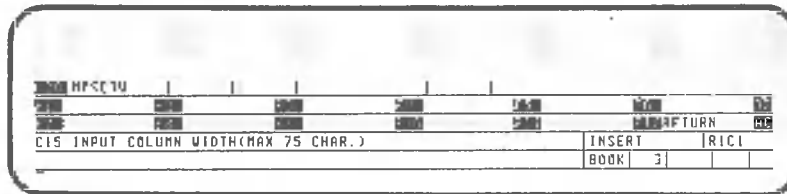
BOOK 3

The column to be added should be ready to be displayed. Activate the  and then press the following key:

▶ 

Deactivate the  and add column 15.

▶   





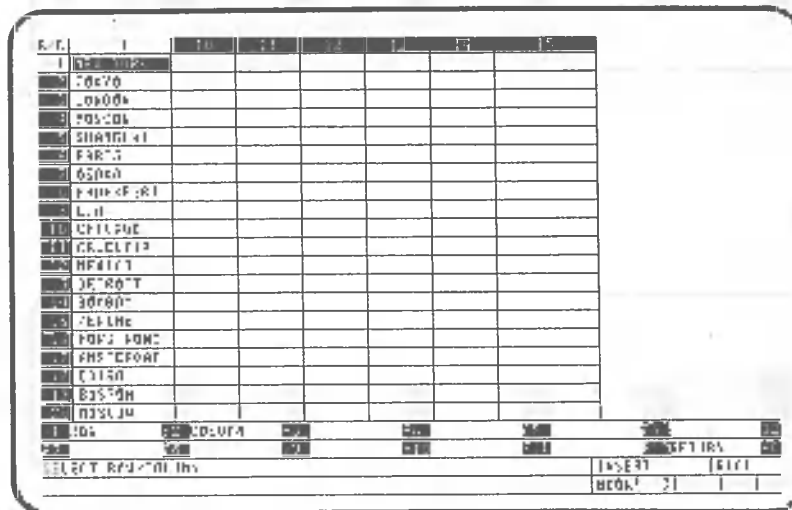
BOOK	3	1

CIS INPUT COLUMN WIDTH(MAX 75 CHAR.)

INSERT R1C1
BOOK 3

The column width should be 10 characters.


▶  

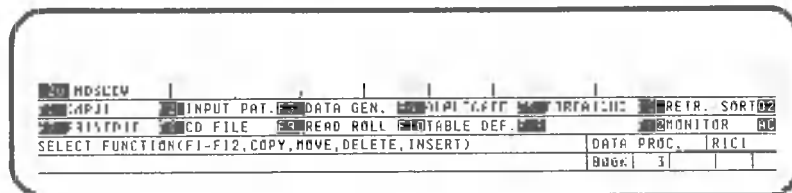


1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

SELECT R1C1:01:01:01:01:01:01:01:01:01:01:01:01:01:01:01:01

INSERT R1C1
BOOK 3


▶ 



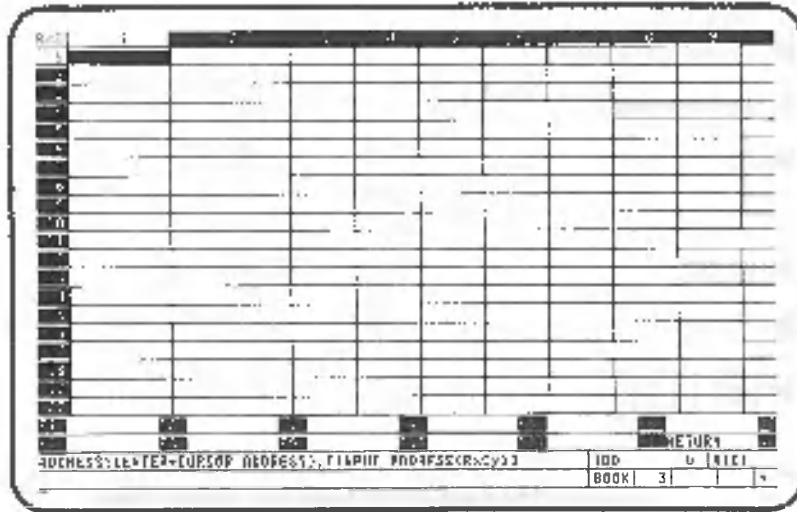
DATA PROC.	R1C1	BOOK 3

SELECT FUNCTION(F1-F12,COPY,MOVE,DELETE,INSERT)

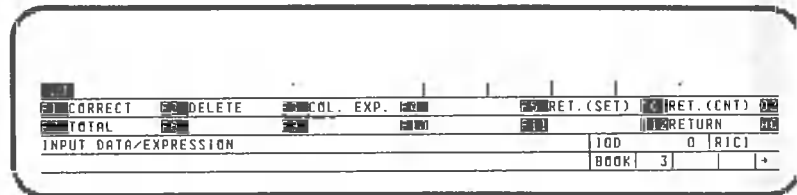
DATA PROC. R1C1
BOOK 3

Activate the  and then press the following key:

▶  







▶ F12



Data has now been cleared. The next step is to enter the item names of each column according to the sample data. The item names are as follows:

Column	Item	Column	Item
1	Branch name	9	JULY
2	Product name	10	AUG.
3	JAN.	11	SEP.
4	FEB.	12	OCT.
5	MAR.	13	NOV.
6	APR.	14	DEC.
7	MAY	15	TOTAL
8	JUNE		

Be sure to deactivate the , and then press the following keys:

- ▶ BRANCH
- ▶ PRODUCTS
- ▶ JAN.
- ...
- ▶ DEC.
- ▶ TOTAL
- ▶   

R/C	1	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.	TOTAL
1	BRANCH								
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
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100									




CORRECT DELETE COL. EXP. RET. (SET) RET. (CRT) RETURN
 INPUT DATA: EXPRESSION 100 0 R2C15
 BOOK 3 1

Enter an expression for the table.

▶ F3

INPUT ADDRESS(RxCy)	DATA GEN.	R2C15
	BOOK 3	1

Add a column for the total of the figures for January to December.

▶ @SUM(C3.14)   

▶ SALES OF TV SETS ◀

ROLL NO.	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.	TOTAL
1								*****
2								*****
3								*****
4								*****
5								*****
6								*****
7								*****
8								*****
9								*****
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99								*****
100								*****

INPUT ROLL NO. OR NAME (MAX. 20 CHAR.) READ ROLL R3C15
 BOOK 3

CANOBRAIN asks from which roll data is to be read. For this example, the roll table entitled "sample data" will be used. Press the following keys:

▶ sample data ◀

READ ROLL DATA TO CI ?(ENTER=NO READ),(INPUT ROLL COL.NO.) READ ROLL R3C15
 BOOK 3

Transfer all columns of the roll to a book by pressing the following key:

▶ F1

READ ROLL DATA TO CI ?(ENTER=NO READ),(INPUT ROLL COL.NO.) READ ROLL R3C15
 BOOK 3

Retrieval is used to gather only data on TVs from the roll data.

▶ **F2**

.....									
INPUT RETRIEVAL EXPRESSION	ROLL	NO.	READ	ROLL	R3C15				
						BOOK	3		

▶ **2** **↵**

.....									
INPUT KEY DATA	START	POSITION				READ	ROLL	R3C15	
						BOOK	3		

▶ **F2**

.....									
INPUT LIMIT VALUE						READ	ROLL	R3C15	
						BOOK	3		

Press the following keys:

▶ **↑** **↓** **←** **→** **↵**

.....									
INPUT READ	START,END	ROLL	ROW	NO.		READ	ROLL	R3C15	
						BOOK	3		

CANOBRAIN asks which roll rows are to be processed. Since all rows are to be processed, press the following key:

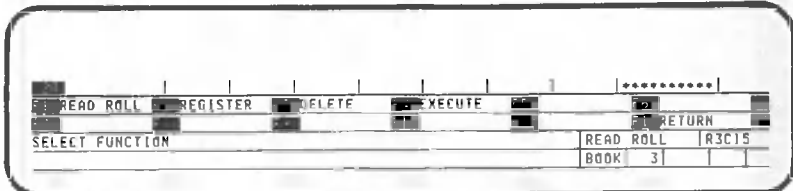
▶ **F1**

CANOBRAIN asks from which row of the book table data should be entered. It should be from the second row.

▶ 2 ↵

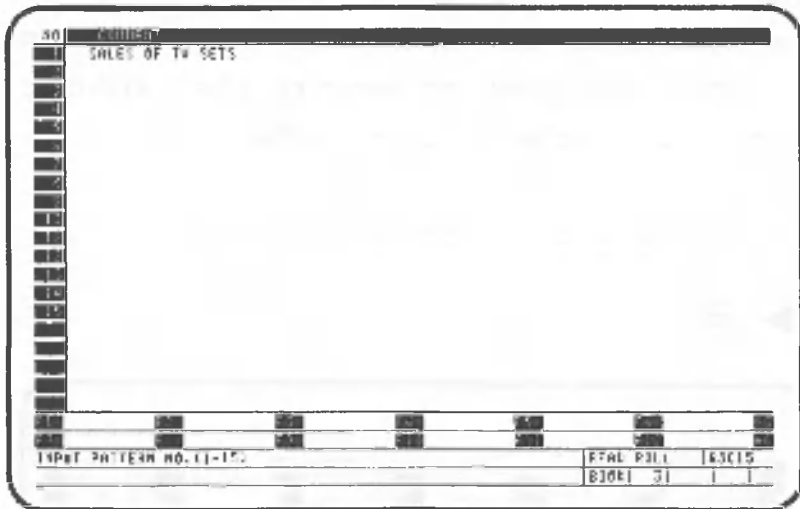
The pattern has now been registered.

▶ F12 (Twice)

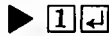


Let's execute the pattern just registered.

▶ F4



Specify the number 1 that was assigned to the newly-registered pattern.



R/C1	1								
BRANCH	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.	TOTAL	
AMSTERDAM	160	150	130	130	180	220	280	2080	
BIRMINGHAM	440	390	560	470	350	400	470		
BOMBAY	640	710	680	710	590	670	820	8430	
CAIRO	380	290	330	240	370	270	410	3980	
CALCUTTA	380	460	410	390	450	370	460	5380	
DETROIT	600	840	700	580	720	670	920	9140	
FRANKFURT	290	240	260	230	300	320	350	3330	
HONG KONG	640	690	580	630	710	680	850	8360	
L.A.	390	460	380	420	410	470	560	5630	
LONDON	390	200	150	190	210	270	350	2920	
MEXICO	280	230	330	310	360	480	440	4310	
MOSCOW	750	920	1060	840	760	720	1320	12040	
NEW YORK	520	400	350	260	440	310	630	4480	
OAKLAND	210	300	190	300	270	340	430	3590	
OSAKA	150	170	140	140	200	180	320	2310	
PARIS	310	290	250	170	170	150	230	2630	
PEKING	360	380	290	370	310	230	460	4300	
SHANGHAI	330	350	280	240	260	200	420	3960	
SYDNEY	230	280	310	270	280	280	240	3370	

READ ROLL REGISTER DELETE EXECUTE RETURN
 SELECT FUNCTION _____ READ ROLL R3C15
 BOOK 3 | | |

After a table without data appeared, roll data was entered. Thus, a pattern is registered by performing the procedures to be registered in the same manner as usual. When you want to execute the pattern, you only need to specify the pattern number.

Return to the data processing screen.



SYMBOL	230	280	310	270	280	280	240	3370
INPUT	INPUT PAT.	DATA GEN.	DUPLICATE	OPHA IN	RETR./SORT			
PRINTOUT	CD FILE	READ ROLL	AF F DE					
SELECT FUNCTION(F1-F12, COPY, MOVE, DELETE, INSERT)						DATA PROC.	R3C15	
						BOOK	3	

1.1.3 Data entry order

When the sequence of data entry to a book table or roll is predetermined, that sequence can be registered as a pattern. Press the following key after gaining access to the data processing screen.

▶ **F2**

A screenshot of a data processing screen. The screen is mostly blank with a grid of characters. At the bottom, there is a menu bar with several options: 'SELECT FUNCTION', 'INPUT PAT.', and 'RUC15'. The 'INPUT PAT.' option is currently selected, and the value '3' is entered next to it. The 'RUC15' option is also visible.

Register the pattern.

▶ **F1**

A screenshot of a data processing screen. The screen shows a menu bar with several options. The 'INPUT PATTERN NO. 11-155' option is selected. The 'INPUT PAT.' option is also visible, and the value '3' is entered next to it. The 'RUC15' option is also visible.

Specify a number for the pattern you have registered.
For this example, specify 1.

▶ **1** ↵

R/C	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
	BRANCH	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.	TOTAL											
1	AMSTERDAM	160	150	130	130	180	220	280	2080											
2	BIRMINGHAM	440	390	560	470	350	400	470												
3	BARBAY	640	710	680	710	590	670	820	8430											
4	CAIRO	380	290	330	240	370	270	410	3980											
5	CALCUTTA	380	460	410	390	450	370	460	5380											
6	DETROIT	600	840	700	580	720	670	920	9140											
7	FRANKFURT	290	240	260	230	300	320	350	3330											
8	HONG KONG	640	690	580	630	710	680	850	8360											
9	L.A.	390	460	380	420	410	470	560	5630											
10	LONDON	390	280	150	190	210	270	350	2920											
11	MEXICO	280	230	330	310	360	480	440	4310											
12	MOSCOW	750	920	1060	840	760	720	1320	12040											
13	NEW YORK	520	400	330	260	440	310	630	4400											
14	OAKLAND	210	300	190	300	270	340	430	3390											
15	OSAKA	150	170	140	140	200	180	320	2310											
16	PARIS	310	290	250	170	170	150	230	2630											
17	PEKING	360	380	290	370	310	230	460	4300											
18	SHANGHAI	330	350	280	240	260	300	420	3960											
19	SYDNEY	230	280	310	270	280	280	240	3370											
20	ALL																			

ALL

COLUMN NO.?(ENTER=END), [INPUT COLUMN NO.: (MAX 20 COL.)] INPUT PAT. R3C15
 BOOK: 3 | | |

CANOBRAIN asks you the rows in which data should be entered and the entry order. For this example, the pattern should have an order in which the roll data for columns 3 (Jan.) through 14 (Dec.) are entered serially from January.

▶ 3 4 5 ... 14 14

SYDNEY	230	280	310	270	280	280	240	3370
ALL								
INPUT START,END ROW NO.								INPUT PAT. R3C15
								BOOK: 3 | | |

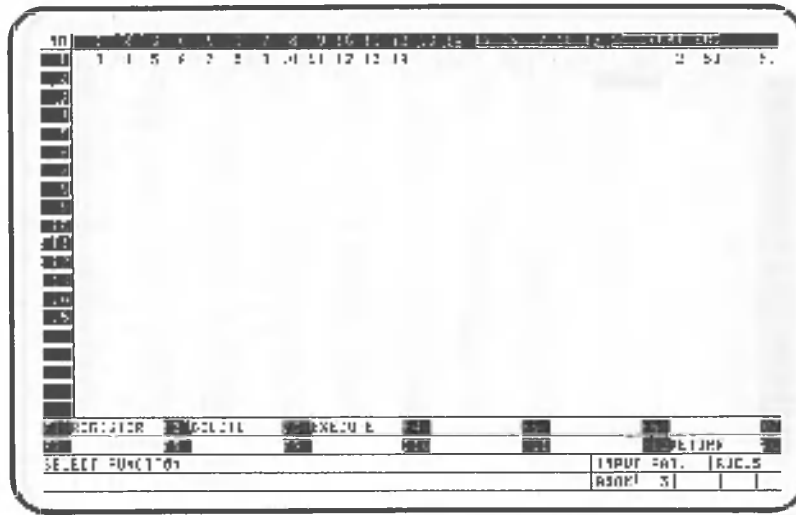
The starting and ending row numbers specify to which cells of the column the just-specified data will be entered. Rows 2 through 50 are specified for this example.

▶ 2, 50

SYDNEY	230	280	310	270	280	280	240	3370
SELECT HORIZONTAL,VERTICAL								
SELECT HORIZONTAL,VERTICAL								INPUT PAT. R3C15
								BOOK: 3 | | |

CANOBRAIN asks in which direction (vertical or horizontal) data will be entered. Specify the horizontal direction.

▶ F1

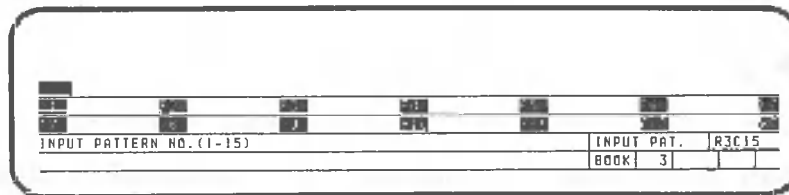


The pattern has now been registered. This pattern execution allows data to be entered in the order shown below.

	1	2	3	4	5	.....	13	14	15
1	Branch Name	Product Name	JAN.	FEB.	MAR.	.....	NOV.	DEC.	TOTAL
2			①	②	③	.....	⑪	⑫	
3			⑬	⑭	⑮	.....	⑲	⑳	
:									
:									

Execute the pattern.

▶ F3




Enter the pattern number.

▶ 1 ↵

1	BRANCH	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEP.	OC
2	AMSTERDAM			180	120	170	160	150	130	130	
3	BIRMINGHAM	510	420	570	380	420	440	390	560	470	
4	BOMBAY	780	650	680	740	760	640	710	680	710	
5	CAIRO	380	390	270	340	310	380	290	330	240	
6	CALCUTTA	520	470	420	630	420	380	460	410	390	
7	DETROIT	870	660	950	860	770	600	840	700	580	
8	FRANKFURT	340	220	270	280	230	290	240	260	230	
9	HONG KONG	740	680	640	810	710	640	690	580	630	
10	L.A.	620	450	470	580	420	390	460	380	420	
11	LONDON	120	230	220	310	280	390	200	150	190	
12	MEXICO	450	320	470	380	260	280	230	330	310	
13	MOSCOW	1400	1200	950	1250	870	750	920	1060	840	
14	NEW YORK	200	400	300	250	360	520	400	330	260	
15	OAKLAND	260	280	240	300	270	210	300	190	300	
16	OSAKA	160	230	180	320	120	150	170	140	140	
17	PARIS	280	150	160	230	240	310	290	250	170	
18	PEKING	370	320	350	440	420	360	380	290	370	
19	SHANGHAI	350	320	430	390	290	330	350	280	240	
20	SYDNEY	280	340	210	400	250	230	280	310	270	

DELETE COL. EXP. RETURN
 INPUT DATA/EXPRESSION 060 0 R2C3
 150 800K 3 |

The cell cursor is displayed at row 2, column 3. The arrow indicating the cell cursor's direction of movement (vertical or horizontal) will not be displayed on the screen, since it was determined when the pattern was registered.



Here, perform the following operation. Make sure that the  is on.



R/C	1	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEP.	OC
2	AMSTERDAM	160	200	180	120	170	160	150	130	130	
3	BIRMINGHAM			570	380	420	440	390	560	470	
4	BOMBAY	780	650	680	740	760	640	710	680	710	
5	CAIRO	380	390	270	340	310	380	290	330	240	

The cell cursor has moved to row 3, column 3. Next, press the following key:



As you can see, the cell cursor has returned to its previous position. It means that CANOBRAIN asks for data entry in the order in which the pattern has been registered. When you enter data, or press only  and omit data entry, the cell cursor automatically moves according to the pattern. Even if you move the cell cursor using the arrow key or tab key, the cell cursor moves to a cell to which data should be entered next when  is pressed. Data is now entered.

INPUT COMMENT (MAX 20 CHAR.)		SORT	R2C3
		BOOK	3

Enter a comment indicating the type of pattern being used. Press the following keys:

► DESCENDING ORDER ◀

R/C	1	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEP.	OC
1	BRANCH										
2	AMSTERDAM		200	180	120	170	160	150	130	130	
3	BIRMINGHAM	510	420	570	380	420	440	390	560	470	
4	BOMBAY	780	650	680	740	760	640	710	680	710	
5	CAIRO	380	390	270	340	310	380	290	330	240	
6	CALCUTTA	520	470	420	630	420	380	460	410	390	
7	DETROIT	870	660	950	860	770	600	840	700	580	
8	FRANKFURT	340	220	270	280	230	290	240	260	230	
9	HONG KONG	740	680	640	810	710	640	690	580	630	
10	L.S.	620	450	470	580	420	390	460	380	420	
11	LONDON	120	230	220	310	280	390	200	150	190	
12	MEXICO	450	320	470	380	260	280	230	330	310	
13	MOSCOW	1400	1200	950	1250	870	750	920	1060	840	
14	NEW YORK	200	400	300	250	360	520	400	330	260	
15	OAKLAND	260	280	240	300	270	210	300	190	300	
16	OSAKA	160	230	180	320	120	150	170	140	140	
17	PARIS	280	150	160	230	240	310	290	250	170	
18	PEKING	370	320	350	440	420	360	380	290	370	
19	SHANGHAI	350	320	430	390	290	330	350	280	240	
20	SYDNEY	280	340	210	400	250	230	280	310	270	

#1	SORT KEY COLUMN? (ENTER=END), (INPUT KEY COLUMN NO.)	SORT	R2C3
		BOOK	3

From this point on, the operation is the same as described earlier in the explanation of data sorting procedures. Let's register the pattern so that sorting will be in descending order based on the data in the totals column (column 15).

► 15 ◀

15	DESCENDING		
SELECT ASCENDING, DESCENDING		SORT	R2C3
		BOOK	3

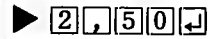
► F2

SYDNEY	280	340	210	400	250	230	280	310	270
F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
#2	SORT KEY COLUMN? (ENTER=END), (INPUT KEY COLUMN NO.)	SORT	R2C3						
		BOOK	3						



SYDNEY	280	340	210	400	250	230	280	310	270
ALL	RETR	RETR	RETR	RETR	RETR	RETR	RETR	RETR	RETR
RETR	RETR	RETR	RETR	RETR	RETR	RETR	RETR	RETR	RETR
INPUT SORT START,END ROW NO.							SORT	R2C3	
							BOOK	3	

The sorting range should be from row 2 through row 50.



The screen remains the same, but the pattern has been registered. Sorting cannot be performed during pattern registration, and will not be performed unless pattern execution is specified.



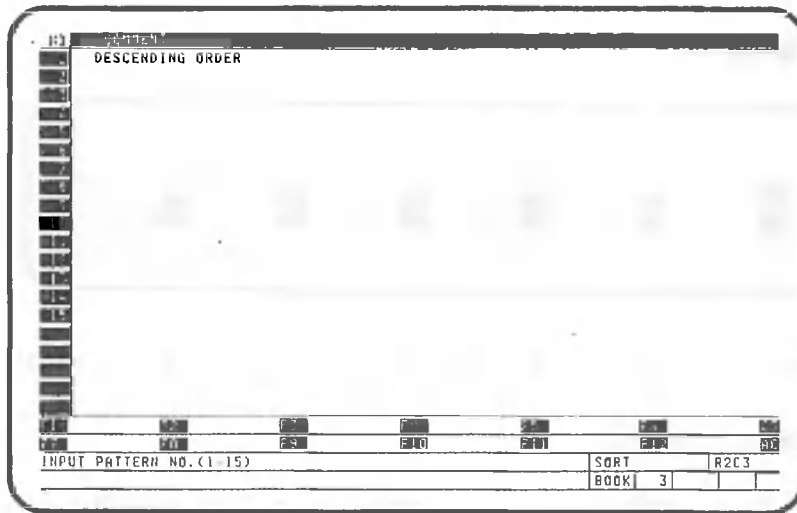
SYDNEY	280	340	210	400	250	230	280	310	270
RETRIEVAL	SORT								
								E1JP	
SELECT FUNCTION							RETR./SORT	R2C3	
							BOOK	3	

Let's execute the pattern just registered.

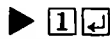


SYDNEY	280	340	210	400	250	230	280	310	270
SORT	REGISTER	DELETE	EXECUTE						
								RETURN	
SELECT FUNCTION							SCH	R2C3	
							UCOL	3	






As stated previously, the number for the pattern is 1.



R C	I	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEP.	OC
1	BRANCH										
2	MOSCOW	1200	950	1250	870	750	920	1060	840		
3	DETROIT	870	660	950	860	770	600	840	700	580	
4	BOMBAY	780	650	680	740	760	640	710	600	710	
5	HONG KONG	740	680	640	810	710	640	690	580	630	
6	I. A.	620	450	470	580	420	390	460	380	420	
7	BIRMINGHAM	510	420	570	380	420	440	390	560	470	
8	CALCUTTA	520	470	420	630	420	380	460	410	390	
9	NEW YORK	200	400	300	250	360	520	400	330	260	
10	MEXICO	450	320	470	380	260	280	230	330	310	
11	PEKING	370	320	350	440	420	360	380	290	370	
12	CAIRO	380	390	270	340	310	380	290	330	240	
13	SHANGHAI	350	320	430	390	290	330	350	280	240	
14	YOKOHAMA	300	180	260	470	320	280	310	240	190	
15	OAKLAND	260	280	240	300	270	210	300	190	300	
16	SYDNEY	280	340	210	400	250	230	280	310	270	
17	FRANKFURT	340	220	270	280	230	290	240	260	230	
18	LONDON	120	230	220	310	280	390	200	150	190	
19	PARIS	280	150	160	230	240	310	290	250	170	
20	OSAKA	160	230	180	320	120	150	170	140	140	
RETRIEVAL SORT											
SELECT FUNCTION											
										RETR./SORT	R2C3
										BOOK	3

This completes the sorting. Activate the  and then press the following key:



ROUTINE	DEC.	JAN.	FEB.	TOTAL
ENGLIS				
FOUNDA	100	121	121	342
LEISURE	70	63	121	254
FINANC	50	171	121	342
PHOTO COPY	70	60	151	281
L.A.	40	41	161	242
MARTIN LUTHER	250	40	121	411
CALCULAT	450	121	121	691
NEW YORK	101	111	121	332
MEXICO	161	101	121	382
PARIS	111	121	121	352
CELEST	121	121	121	362
SPRINGFIELD	261	100	121	482
YOUNG	261	200	121	642
ORANGE	121	200	121	442
SYDNEY	200	121	121	442
PARISIAN	100	121	121	342
LOUISIANA	210	121	121	451
PARIS	120	121	121	361
OSCAR	200	121	121	441
FINANCIAL				
REVENUE				
EXPENSE				
NET PROFIT				

Data items in the totals column have been sorted in descending order. As you can see, it is convenient to register routine conditions as a pattern.

▶ 1 ↵

INPUT COMMENT (MAX 20 CHAR.)		RETRIEVAL	R2C12
		BOOK	3

Enter a comment indicating the type of pattern. For this example, figures of 150 or less are to be retrieved, so enter "150 or less". Then press the following keys:

▶ 1 5 0 [] O R [] L E S S [] ↵

R	C1	1							
			OCT.	JAN.	FEB.	MAR.	APR.	MAY	JUN.
1		BOSLOW	220	1370					13000
2		DETROIT	720	670	520				4100
3		DOHNEY	390	570	620				4400
4		HONG KONG	710	480	830				8300
5		L.A.	410	470	560				5600
6		BIRMINGHAM	150	400	470				5700
7		CHICAGO	450	370	460				5200
8		NEW YORK	440	310	620				4400
9		MEXICO	360	480	460				4310
10		PEKING	210	270	460				4300
11		CANTON	170	270	410				2500
12		SHANGHAI	250	700	420				5900
13		HONGKONG	280	260	350				3400
14		CHENNAI	270	540	430				3550
15		SYDNEY	260	280	240				3300
16		FRANKFURT	500	320	350				3300
17		LONDON	210	270	350				2900
18		PARIS	170	150	270				2630
19		OSAKA	200	190	320				2710

INPUT RETRIEVAL EXPRESSION COLUMN NO. (1-14)		RETRIEVAL	R2C12
=R0, +=OR, (,)		BOOK	3

From this point on, the operation is the same as described earlier. For this example, numbers less than or equal to 150 are retrieved from columns 3 (Jan.) through 14 (Dec.).

Press the following keys:

▶ 3 + 4 + 5 + ... 1 4 ↵

SELECT DATA TYPE	B*4+5+6+7+8+9+10+11+12+13+14	RETRIEVAL	R2C12
		BOOK	3

▶ **F2**

OSAKA	200	180	320	2310					
GT(>)	GE(>=)	LE(<=)	LT(<)	NE(<)	EQ(=)	DN			
RT(<=X<=)	NR(X<X)								
SELECT RETRIEVAL CONDITION	3+4+5+6+7+8+9+10+11+12+13+14				RETRIEVAL	R2C12			
					BOOK	3			

▶ **F3**

OSAKA	200	180	320	2310					
INPUT LIMIT VALUE	3+4+5+6+7+8+9+10+11+12+13+14				RETRIEVAL	R2C12			
					BOOK	3			

▶ **1** **5** **0** **↓**

OSAKA	200	180	320	2310					
CHARACTER	NUMERIC								
SELECT DATA TYPE	3+4+5+6+7+8+9+10+11+12+13+14				RETRIEVAL	R2C12			
					BOOK	3			

Similarly, specify up to column 14.

▶ **F2** **F3** **1** **5** **0** **↓** (11 times)


OSAKA	200	180	320	2310					
ALL									
RETRIEVAL RANGE?(CENTER=NEXT, LAST), (INPUT START, END ROW NO)					RETRIEVAL	R2C12			
					BOOK	3			

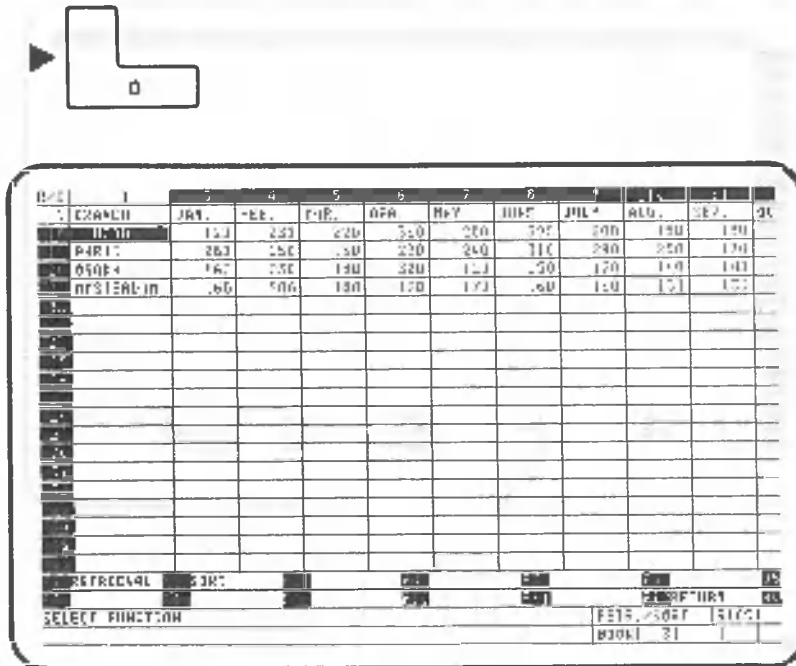
Rows 2 through 50 are to be retrieved.

▶ **2** **↓** **5** **0** **↓**

OSAKA	200	180	320	2310					
RETRIEVAL SORT									
SELECT FUNCTION					RETR./SORT	R2C12			
					BOOK	3			

As explained in the section on pattern registration, retrieval only makes it possible to determine whether there are data satisfying specified conditions. When data satisfying the conditions are retrieved, the row is displayed on line 1 of the screen (or on line 2 if a fixed display of row 1 has been set), and the cell cursor is located in the top rightmost corner of the screen. This completes the retrieval. When no data satisfying conditions are retrieved, retrieval ends with the screen unchanged.

Activate the  and then press the following key to make sure that retrieval has been performed:



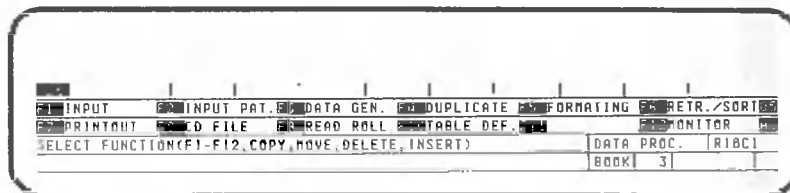
DATE	1	2	3	4	5	6	7	8	9	10	11	12
SEARCH	JAN	FE	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	20
UNIT	150	150	150	150	150	150	150	150	150	150	150	150
PART	150	150	150	150	150	150	150	150	150	150	150	150
OSQ	150	150	150	150	150	150	150	150	150	150	150	150
NR SERIAL IN	150	150	150	150	150	150	150	150	150	150	150	150

RETRIEVAL: [SEARCH] [UNIT] [PART] [OSQ] [NR SERIAL IN] [DATE] [BOOK] [PAGE] [LINE]

SELECT FUNCTION: [F1] [F2] [F3] [F4] [F5] [F6] [F7] [F8] [F9] [F10] [F11] [F12] [ESC]

Note that figures for January and August must be 150 or less. Return to the data processing screen.

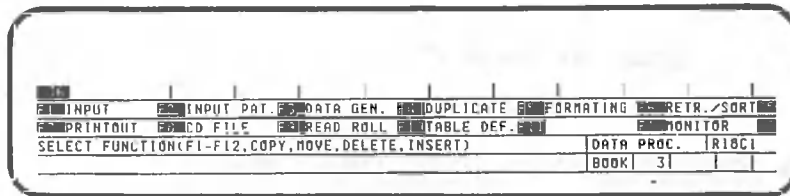
 F12



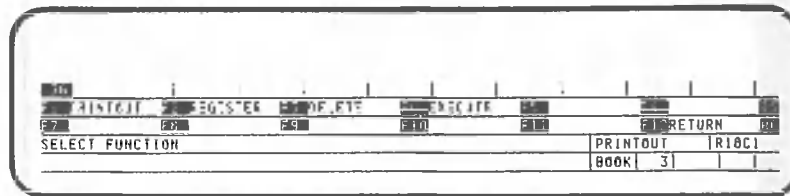
INPUT	INPUT PAT.	DATA GEN.	DUPLICATE	FORMATING	RETR./SORT
PRINTOUT	FILE	READ ROLL	TABLE DEF.	MONITOR	
SELECT FUNCTION(F1-F12, COPY, MOVE, DELETE, INSERT)					DATA PROC. [RIBC]
					BOOK 3

1.1.6 Print procedures

We can register printout conditions (the number of lines per page or specific columns to be printed) as a pattern. Our explanation begins with the data processing screen.

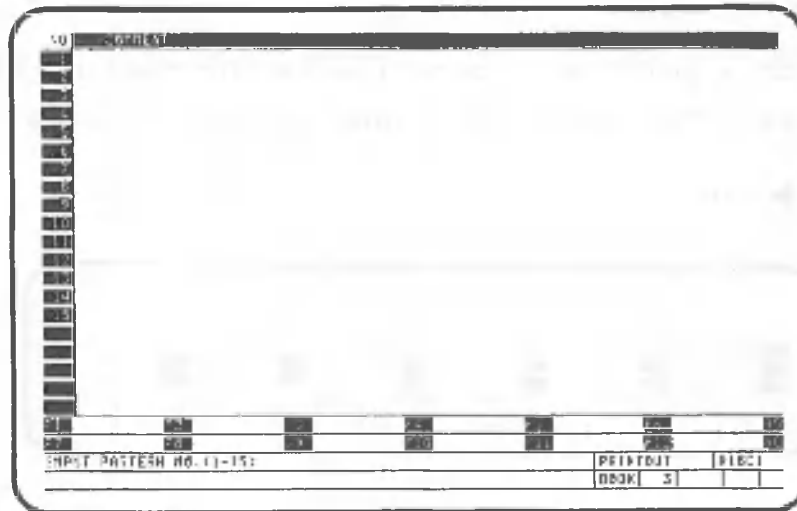


▶ F7



Register the pattern.

▶ F2



Assign 1 as the pattern number. Deactivate the



▶ 1 ↵

CHAR.	POSITION?	(ENTER=3, RIGHT MOST), (INPUT START, END CHAR.)	PRINTOUT	RIBCI
			BOOK	3



NO RUL	RULED(V)			
SELECT PAPER SET 513P			PRINTOUT	RIBCI
			BOOK	3



NO RUL	RULED(V)			
SELECT FUNCTION			PRINTOUT	RIBCI
			BOOK	3

Specify that ruled lines should not be printed.



INPUT HEADER			PRINTOUT	RIBCI
			BOOK	3

The header should be "Sales of TV Sets".

Press the following keys:



PRINT COLUMN NO.?	(ENTER=END), (INPUT PRINT COLUMN NO.)		PRINTOUT	RIBCI
			BOOK	3

Columns 1 through 8 (with the exception of column 2) should be printed.

▶ 1 ← 3 ← 4 ← 5 ← 6 ← 7 ← 8 ←
 ▶ ←

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
NO RETR.	RETRIEVAL	END	NO	END	END	END	END	PRINTOUT	RI0C1
SELECT FUNCTION								PRINTOUT	RI0C1
								BOOK	3

CANOBRAIN asks whether data is to be retrieved and printed. For this example, no retrieval should be specified. If retrieval is specified, a pattern that also contains retrieval conditions should be registered.

▶ F1

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
ALL								RETURN	RI0C1
INPUT PRINT START,END ROW NO.								PRINTOUT	RI0C1
								BOOK	3

CANOBRAIN asks which rows in the table are to be printed. The pattern should print all rows.

▶ F1

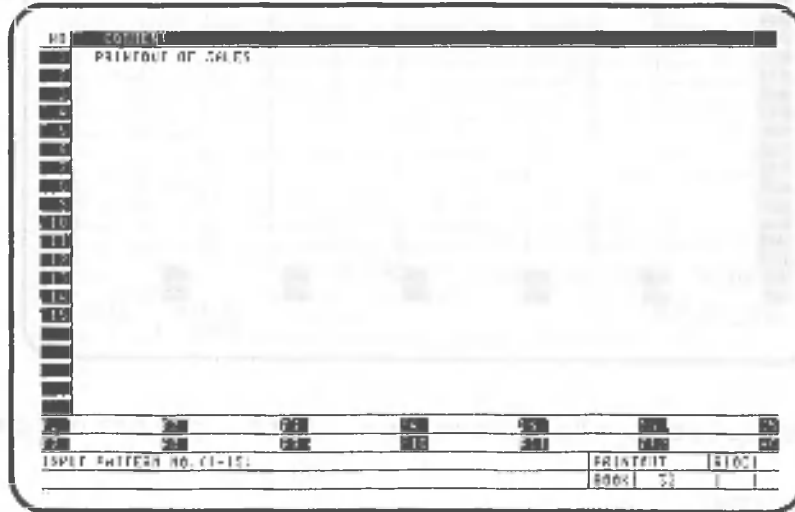
Though the screen remains unchanged, the pattern has already been registered. Printing cannot be performed during pattern registration, and will not be performed unless pattern execution is specified. Press the following key to finish pattern registration:

▶ F12 (Twice)

F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
PRINTOUT	REGISTER	DELETE	EXECUTE					RETURN	RI0C1
SELECT FUNCTION								PRINTOUT	RI0C1
								BOOK	3

Now let's execute the pattern just registered.

▶ F4



Enter the pattern number.

▶ J | ↓

Printout is then performed according to the pattern.

SALES OF TV SETS

DATE 12.01.83 PAGE 1

BRANCH	JAN.	FEB.	MAR.	APR.	MAY	JUNE
MOSCOW	1400	1200	950	1250	870	750
DETROIT	870	660	950	860	770	600
BOMBAY	780	650	680	740	760	640
HONG KONG	740	680	640	810	710	640
L.A.	620	450	470	580	420	390
BIRMINGHAM	510	420	570	380	420	440
CALCUTTA	520	470	420	630	420	380
NEW YORK	200	400	300	250	360	520
MEXICO	450	320	470	380	260	280
PEKING	370	320	350	440	420	360
CAIRO	380	390	270	340	310	380
SHANGHAI	350	320	430	390	290	330
YOKOHAMA	300	180	260	470	320	280
OAKLAND	260	280	240	300	270	210
SYDNEY	280	340	210	400	250	230
FRANKFURT	340	220	270	280	230	290
LONDON	120	230	220	310	280	390
PARIS	280	150	160	230	240	310
OSAKA	160	230	180	320	120	150
AMSTERDAM	160	200	180	120	170	160

YES	NO							
UPDATE OK ?							DATA PROC.	RIBCI
							BOOK	3

▶ **F1**

INDEX							
PAGE	T	I	T	L	E	CREATE	UPDATE
0	P	A	C	E			
1	R	O	L	L	D	12.01.83	12.01.83

DELETE	MODIFY	PRINTOUT	RETURN
SELECT PAGE (INPUT PAGE NO., T, I)			
			BOOK 3

Generate a page for the new graph.

▶ (0) ↵

SAVE	SAVE	SAVE	SAVE	SAVE	SAVE	RETURN
SELECT FUNCTION						BOOK 1

▶ F1

INPUT NAME OF TABLE/LINE/FORM (20 CHAR.)						CREATE
						BOOK 1

Assign the title "Sales of TV Sets" to the new graph.
Then press the following keys:

▶ SALES OF TV SETS ↵

INPUT COMMENT (22 CHAR.)						CREATE
						BOOK 1

A comment may be inserted here if desired.

▶ ↵

COPY PAGE? (ENTER=NO COPY), (INPUT PAGE NO.)						CREATE
						BOOK 1

▶ ↵

TABLE	GRAPH							
SELECT TABLE/GRAPH							CREATE	
							BOOK	3

▶ F2

GRAPH DEFINITION	INPUT TYPE OF GRAPH	:	
1. PIE CHART	SPECIFY TABLE PAGE NO.	:	
2. COMPOSITION RATIO CHART	HORIZONTAL=0,VERTICAL=1	:	
3. STACKED BAR CHART	INPUT START DATA	:	
4. COMPARATIVE BAR CHART	INPUT END DATA	:	
5. LINE CHART			
6. SCATTER DIAGRAM			
7. LINE & STACKED CHART			
8. LINE & COMPARATIVE CHART			

							BOOK	3
--	--	--	--	--	--	--	------	---

Now you can begin the process of generating a comparison bar graph.

▶ 4 ↵

GRAPH DEFINITION	INPUT TYPE OF GRAPH	:	4
1. PIE CHART	SPECIFY TABLE PAGE NO.	:	
2. COMPOSITION RATIO CHART	HORIZONTAL=0,VERTICAL=1	:	
3. STACKED BAR CHART	INPUT START DATA	:	
	INPUT END DATA	:	

Assign 1 as the table page's number.

▶ 1 ↵

GRAPH DEFINITION	INPUT TYPE OF GRAPH	:	4
1. PIE CHART	SPECIFY TABLE PAGE NO.	:	1
2. COMPOSITION RATIO CHART	HORIZONTAL=0,VERTICAL=1	:	FULL DATA
3. STACKED BAR CHART	INPUT START DATA	:	
4. COMPARATIVE BAR CHART	INPUT END DATA	:	

▶ 0 ↵

```

GRAPH DEFINITION      INPUT TYPE OF GRAPH : 4
                      SPECIFY TABLE PAGE NO. : 1 ROLL DATA
1. PIE CHART          HORIZONTAL=0,VERTICAL=1 : 0
2. COMPOSITION RATIO CHART INPUT START DATA :
3. STACKED BAR CHART  INPUT END DATA :
4. COMPARATIVE BAR CHART
5. LINE CHART
6. SCATTER DIAGRAM
7. LINE & STACKED CHART
8. LINE & COMPARATIVE CHART

```

1. BRANCH	2. PRODUCE	3. JAN.	4. FEB.	5. MAR.		
6. APR.	7. MA	8. JUNE	9. JULY	10. AUG.	BOOK	3

The graph will be based on data from the months January through June.

▶ 3 ↵

```

GRAPH DEFINITION      INPUT TYPE OF GRAPH : 4
                      SPECIFY TABLE PAGE NO. : 1 ROLL DATA
1. PIE CHART          HORIZONTAL=0,VERTICAL=1 : 0
2. COMPOSITION RATIO CHART INPUT START DATA : 3 JAN.
3. STACKED BAR CHART  INPUT END DATA :
4. COMPARATIVE BAR CHART

```

▶ 8 ↵

```

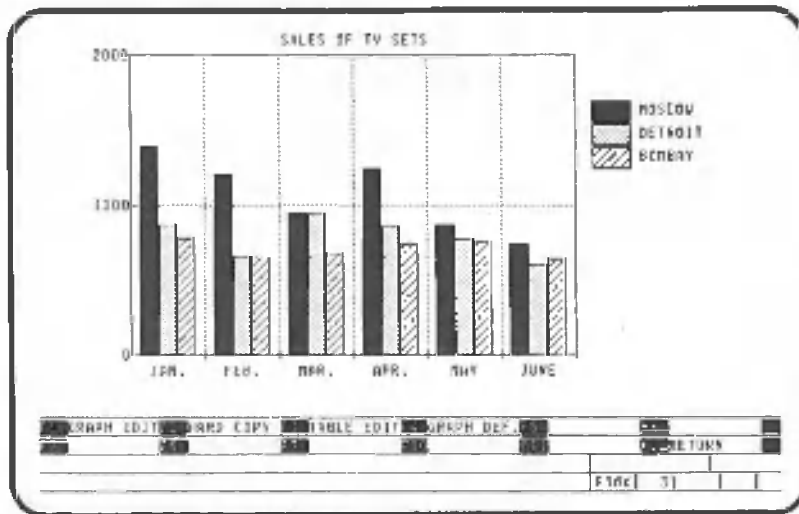
GRAPH DEFINITION      INPUT TYPE OF GRAPH : 4
                      SPECIFY TABLE PAGE NO. : 1 ROLL DATA
1. PIE CHART          HORIZONTAL=0,VERTICAL=1 : 0
2. COMPOSITION RATIO CHART INPUT START DATA : 3 JAN.
3. STACKED BAR CHART  INPUT END DATA : 8 JUNE
4. COMPARATIVE BAR CHART
5. LINE CHART          SERSES :
6. SCATTER DIAGRAM    SERSES :
7. LINE & STACKED CHART SERSES :
8. LINE & COMPARATIVE CHART SERSES :
                      SERSES :
                      SERSES :
                      SERSES :
                      SERSES :
                      SERSES :

```

1. BRANCH	2. MOSCOW	3. DETROIT	4. BOMBAY	5. HONG K		
6. L.A.	7. BIRMIN	8. CALCUT	9. NEW YG	10. MEXICO	BOOK	3

Let's compare data of MOSCOW, DETROIT and BOMBAY.

▶ 2 ↵ 3 ↵ 4 ↵ F1



Graph generation is complete. Return to the index screen.

▶ F12

INDEX

PAGE	TITLE	CREATE	UPDATE
0	PAGE CREATE		
1	ROLL DATA	12.01.83	12.01.83
2	SALES OF TV SETS	12.01.83	12.01.83

Menu: DELETE, MODIFY, PRINTOUT, RETURN

SELECT PAGE (INPUT PAGE NO., 7, 2)

Page: 3

Now you can proceed with total pattern registration.

1.2.2 Total pattern registration

We will register the total pattern according to the hierarchy of tasks just set up. The book list screen will appear. when the following key is pressed:

▶ **F12**

BOOK LIST				
NO	TITLE	CREATE	UPDATE	
1	CANDBRAIN	12.01.83	12.01.83	
2	SALES BY BRANCH	12.01.83	12.01.83	
3	BOOK1	12.01.83	12.01.83	

F1 CREATE	F2 DELETE	F3 MODIFY	F4 PRINTOUT	F5	F6
F7	F8	F9	F10	F11 ROLL	F12 RETURN
SELECT BOOK(INPUT BOOK NO.1,1)					BOOK

▶ **F12**

F1 BOOK	F2 ROLL	F3 TOTAL PAT.	F4	F5	F6
F7	F8	F9	F10	F11	F12 RETURN
SELECT FUNCTION					FNTR

Select the total pattern processing function.

▶ **F3**

TOTAL PATTERN LIST			
NO	COMMENT	CREATE	
1	HOW TO USE KEYBOARD	12.01.83	

REGISTER	EXECUTE	DELETE	MODIFY	PRINTOUT	RETURN
SELECT FUNCTION(1,1)					TOTAL PAT.
MNR					

One total pattern has already been registered for examples in Volume I. Register a new total pattern using the following procedure:

▶ **F1**

INPUT COMMENT(MAX 20 CHAR.)					TOTAL PAT.
MNR					

Enter a comment indicating the type of total pattern being registered. The total pattern should be "Sales Management". Press the following keys:

▶ **S A L E S M A N A G E M E N T** ◀

TOTAL PATTERN LIST			
NO	COMMENT	CREATE	
1	HOW TO USE KEYBOARD	12.01.83	
2	SALES MANAGEMENT	12.01.83	REGISTER

BOOK	ROLL	DELETE	MODIFY	PRINTOUT	RETURN
SELECT FUNCTION					TOTAL PAT.
MNR					REG 2

"REG" is displayed in the bottom rightmost corner of the screen. REG stands for Register, which indicates that the total pattern has been registered.

Total pattern registration requires only those operations needed when an ordinary book or roll is processed. As stated before, processing is not performed during registration. Only functions that can be registered in the total pattern are displayed on the third and fourth lines from the bottom of the screen.

The next step is to register roll processing.

▶ **F2**

NO	ROLL NAME	DATE1	DATE2
1	EXE	12.01.01	12.01.02
2	SAMPLE DATA	12.01.01	12.01.02
3	COPIES BY REATCH	12.01.01	12.01.02
4	TV SETS	12.01.01	12.01.02

SELECT ROLL:HPUI ROLL NO.: SEPOL: 80.1 1FF 2

REG

Select "sample data" from roll number 2.

▶ **2** **↵**

U	EFFICI	PRODUCT	FE1	FE2	FAE	RPR	ISSY	ISSF	JN
AMSTERDAM	REFRIGERATOR	150	130	201	50	130	150	1	
AMSTERDAM	T.V. SET	150	250	101	20	170	180	1	
BIRMINGHAM	REFRIG	310	170	250	120	130	120	1	
BIRMINGHAM	T.V. SET	500	400	375	300	400	400	1	
BIRMINGHAM	REFRIG	630	550	360	300	610	570	1	
BIRMINGHAM	REFRIGERATOR	430	500	190	400	200	500	1	
BOMBAY	T.V. SET	770	870	300	140	780	890	1	
BOSTON	REFRIG	260	101	320	270	280	280	1	
BOSTON	REFRIGERATOR	520	360	410	290	210	280	1	
CAIRO	REFRIG	260	150	20	250	250	190	1	
CAIRO	REFRIGERATOR	150	150	170	200	150	190	1	
LAHORE	T.V. SET	560	590	570	500	510	500	1	
CALCUTTA	REFRIG	260	250	210	250	250	250	1	
CALCUTTA	T.V. SET	580	470	420	670	420	380	1	
CHICAGO	REFRIG	470	410	300	510	300	210	1	
CHICAGO	REFRIGERATOR	240	280	310	220	240	290	1	
DETROIT	REFRIG	220	310	550	670	450	470	1	
DETROIT	T.V. SET	170	460	350	060	270	430	0	

RECORD= 50 COLUMN= 15 START= 1 END= 50

INPUT INPUT PAT. DATA GEN. DUPLICATE RETRIEVAL
 SORT REPORTING UTILITY RETURN
SELECT FUNCTION(F1-F12) DATA PROC. RICI
ROLL 2 | REG 2 |

Select "PAT. INPUT" to enter data to the roll.

▶ **F1**

RECORD= 50 COLUMN= 15 START= 1 END= 50

INPUT INPUT PAT. DATA GEN. DUPLICATE RETRIEVAL
 SORT REPORTING UTILITY RETURN
SELECT FUNCTION(F1-F12) DATA PROC. RICI
ROLL 2 | REG 2 |

Data input has been registered. Only "TOTAL" or "RETURN" can be registered to a total pattern. The next step is to select a book.

▶ **F12**

RECORD= 50 COLUMN= 15 START= 1 END= 50

INPUT INPUT PAT. DATA GEN. DUPLICATE RETRIEVAL
 SORT REPORTING UTILITY RETURN
SELECT FUNCTION(F1-F12) DATA PROC. RICI
ROLL 2 | REG 2 |

▶ **F12**

ROLL LIST		ROLL NAME	CREATE	UPDATE
1	EX2		12.01.83	12.01.83
2	sample data		12.01.83	12.01.83
3	SALES BY BRANCH		12.01.83	12.01.83
4	TV SETS		12.01.83	12.01.83

SELECT ROLL (INPUT ROLL NO., SCROLL)		ROLL	REG	2
--------------------------------------	--	------	-----	---

▶ **F11**

BOOK LIST		TITLE	CREATE	UPDATE
1	CANOBRAIN		12.01.83	12.01.83
2	SALES BY BRANCH		12.01.83	12.01.83
3	BOOK1		12.01.83	12.01.83

SELECT BOOK (INPUT BOOK NO., 1)		ROLL	RETURN
BOOK	REG	2	

Select "book1" with book number 3.

▶ **3** **↵**

OSAKA	IT.V. SET	160	230	180	320	120	150	170	
INPUT	FILE	FILE	FILE	FILE	FILE	FILE	FILE	FILE	
TOTAL	FILE	FILE	FILE	FILE	FILE	FILE	FILE	FILE	
INPUT DATA/EXPRESSION							100	0	FILE
							BOOK	3	REG | 2

▶ F12

OSAKA	IT.V. SET	160	230	180	320	120	150	170	
INPUT	FILE	FILE	FILE	FILE	FILE	FILE	FILE	FILE	
PRINTOUT	FILE	FILE	FILE	FILE	FILE	FILE	FILE	FILE	
PROCESS SELECTION(F1-F12)							DATA PROC.	FILE	FILE
							BOOK	3	REG | 2

Data input processing has been registered. The next step is to register a sorting pattern.

▶ F6

OSAKA	IT.V. SET	160	230	180	320	120	150	170	
RETRIEVAL	FILE	FILE	FILE	FILE	FILE	FILE	FILE	FILE	
FILE	FILE	FILE	FILE	FILE	FILE	FILE	FILE	FILE	
SELECT FUNCTION							RETR./SORT	FILE	FILE
							BOOK	3	REG | 2

▶ F2

OSAKA	IT.V. SET	160	230	180	320	120	150	170	
SORT	FILE	FILE	FILE	FILE	FILE	FILE	FILE	FILE	
FILE	FILE	FILE	FILE	FILE	FILE	FILE	FILE	FILE	
SELECT FUNCTION							SORT	FILE	FILE
							BOOK	3	REG | 2

Select the execution of the sorting pattern.

▶ F4

DESCENDING ORDER

INPUT PATTERN NO. (1-15)

BOOK 3 REG 2

RTN

▶ **1** ◀

R/C	1	PRODUCT	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG
1	1	MOSCOW T.V. SET	1400	1200	950	1250	870	750	920	1
2	1	DETROIT T.V. SET	870	660	950	860	770	600	840	
3	1	BOMBAY T.V. SET	780	650	680	740	760	640	710	
4	1	HONG KONG T.V. SET	740	680	640	810	710	640	690	
5	1	L.A. T.V. SET	620	450	470	580	420	390	460	
6	1	BIRMINGHAM T.V. SET	510	420	570	380	420	440	390	
7	1	CALCUTTA T.V. SET	520	470	420	630	420	380	460	
8	1	NEW YORK T.V. SET	200	400	300	250	360	520	400	
9	1	MEXICO T.V. SET	450	320	470	380	260	280	230	
10	1	PEKING T.V. SET	370	320	350	440	420	360	380	
11	1	CAIRO T.V. SET	380	390	270	340	310	380	290	
12	1	SHANGHAI T.V. SET	350	320	430	390	290	330	350	
13	1	YOKOHAMA T.V. SET	300	180	260	470	320	280	310	
14	1	OAKLAND T.V. SET	260	280	240	300	270	210	300	
15	1	SYDNEY T.V. SET	280	340	210	400	250	230	280	
16	1	FRANKFURT T.V. SET	340	220	270	280	230	290	240	
17	1	LONDON T.V. SET	120	230	220	310	280	390	200	
18	1	PARIS T.V. SET	280	150	160	230	240	310	290	
19	1	OSAKA T.V. SET	160	230	180	320	120	150	170	

SELECT FUNCTION

BOOK 3 REG 2

Now, sorting has been registered. Next, we move to data printout.

▶ **F12**

RETRIEVAL SORT

RETR./SORT


BOOK 3 REG 2

▶ **F12**

INDEX										
PAGE	T	I	T	L	E	CREATE	UPDATE			
0	P	A	C	E	C	R	E	A	T	E
1						12.01.83	12.01.83			
2						12.01.83	12.01.83			

REGISTER		EXECUTE		DELETE		MODIFY		PRINTOUT		RETURN			
SELECT PAGE(INPUT PAGE NO.,T,I)										BOOK	3	REG	2

Now register graph display and printout to the total pattern. Select the graph on Page 2.

▶ **2** 

The index screen is displayed again. With this operation alone, graph display and printout have been registered. For a graph, only a display and printout can be registered.

Press the following key:

▶ **F12** (3 times)

TOTAL PATTERN LIST			
NO	COMMENT	CREATE	
1	HOW TO USE KEYBOARD	12.01.83	
2	SALES MANAGEMENT	12.01.83	

REGISTER		EXECUTE		DELETE		MODIFY		PRINTOUT		RETURN	
SELECT FUNCTION(T,I)										TOTAL PAT.	
										ANTR	

R/C	BRANCH	PRODUCT	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.
1	AMSTERDAM	REFRIGERATOR	160	200	180	120	170	160	150	1
2	BIRMINGHAM	T.V. SET	510	420	570	380	420	440	390	1
3	BOMBAY	RADIO	780	650	680	740	760	640	710	1
4	BOMBAY	REFRIGERATOR	380	390	270	340	310	380	290	1
5	BOSTON	T.V. SET	520	470	420	630	420	380	460	1
6	BOSTON	RADIO	870	860	950	860	770	600	840	1
7	CAIRO	REFRIGERATOR	340	220	270	280	230	290	240	1
8	CAIRO	RADIO	740	680	640	810	710	640	690	1
9	CALCUTTA	T.V. SET	620	450	470	580	420	390	460	1
10	CALCUTTA	RADIO	120	230	220	310	280	390	200	1
11	CHICAGO	T.V. SET	450	320	470	380	260	280	230	1
12	CHICAGO	REFRIGERATOR	1400	1200	950	1250	870	750	920	1
13	CHICAGO	RADIO	200	400	300	250	360	520	400	1
14	CHICAGO	REFRIGERATOR	260	280	240	300	270	210	300	1
15	DETROIT	T.V. SET	160	230	180	320	120	150	170	1
16	DETROIT	RADIO	280	150	160	230	240	310	290	1
17	DETROIT	T.V. SET	370	320	350	440	420	360	380	1
18	DETROIT	RADIO	350	320	430	390	290	330	350	1
19	DETROIT	T.V. SET	280	340	210	400	250	230	280	1

RECORD= 50 COLUMN= 15 START= 1 END= 50

CORRECT DELETE COL. EXP. RET. (SET) RET. (CNT)

TOTAL

INPUT DATA

AMSTERDAM

BOOK 3 | AUTO | 2 |

As you can see, the input pattern has been executed automatically. At this point, enter some data. You may skip if you are in a hurry. Now data input has ended.

▶ F12

R/C	BRANCH	PRODUCT	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.
1	AMSTERDAM	T.V. SET	160	200	180	120	170	160	150	
2	BIRMINGHAM	T.V. SET	510	420	570	380	420	440	390	
3	BOMBAY	T.V. SET	780	650	680	740	760	640	710	
4	BOMBAY	T.V. SET	380	390	270	340	310	380	290	
5	CALCUTTA	T.V. SET	520	470	420	630	420	380	460	
6	DETROIT	T.V. SET	870	860	950	860	770	600	840	
7	FRANKFURT	T.V. SET	340	220	270	280	230	290	240	
8	HONG KONG	T.V. SET	740	680	640	810	710	640	690	
9	L.A.	T.V. SET	620	450	470	580	420	390	460	
10	LONDON	T.V. SET	120	230	220	310	280	390	200	
11	MEXICO	T.V. SET	450	320	470	380	260	280	230	
12	MOSCOW	T.V. SET	1400	1200	950	1250	870	750	920	1
13	NEW YORK	T.V. SET	200	400	300	250	360	520	400	
14	OAKLAND	T.V. SET	260	280	240	300	270	210	300	
15	OSAKA	T.V. SET	160	230	180	320	120	150	170	
16	PARIS	T.V. SET	280	150	160	230	240	310	290	
17	PEKING	T.V. SET	370	320	350	440	420	360	380	
18	SHANGHAI	T.V. SET	350	320	430	390	290	330	350	
19	SYDNEY	T.V. SET	280	340	210	400	250	230	280	

CORRECT DELETE COL. EXP. RET. (SET) RET. (CNT)

TOTAL

INPUT DATA/EXPRESSION

BOOK 3 | AUTO | 2 |

As you can see, book processing is performed automatically, then the roll data is read and we are ready for data input. We can modify data and expressions. For this example, we will ignore the modification and move to the next procedure.

▶ F12

When data input processing ends, sorting is performed automatically and the following table is printed.

SALES OF TV SETS

DATE 12.01.83 PAGE 1

BRANCH	JAN.	FEB.	MAR.	APR.	MAY	JUNE
MOSCOW	1400	1200	950	1250	870	750
DETROIT	870	660	950	860	770	600
BOMBAY	780	650	680	740	760	640
HONG KONG	740	680	640	810	710	640
L.A.	620	450	470	580	420	390
BIRMINGHAM	510	420	570	380	420	440
CALCUTTA	520	470	420	630	420	380
NEW YORK	200	400	300	250	360	520
MEXICO	450	320	470	380	260	280
PEKING	370	320	350	440	420	360
CAIRO	380	390	270	340	310	380
SHANGHAI	350	320	430	390	290	330
YOKOHAMA	300	180	260	470	320	280
OSAKA	260	280	240	300	270	210
SYDNEY	280	340	210	400	250	230
FRANKFURT	340	220	270	280	230	290
LONDON	120	230	220	310	280	390
PARIS	280	150	160	230	240	310
OSAKA	160	230	180	320	120	150
AMSTERDAM	160	200	180	120	170	160

The bottom four lines appear as follows:

OSAKA	T.V. SET	160	230	180	320	120	150	170
UPDATE	NO UPDATE							
SELECT UPDATE DATA						DATA PROC.	RICI	
						BOOK	3	AUTO
							2	

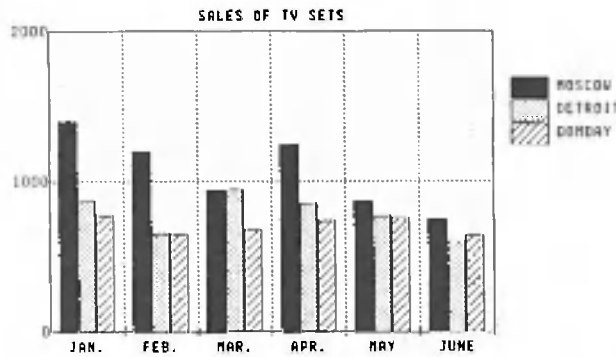
Specify "UPDATE".

▶ F1

OSAKA	T.V. SET	160	230	180	320	120	150	170
YES	NO							
UPDATE OK ?						DATA PROC.	RICI	
						BOOK	3	AUTO
							2	

▶ F1

Table processing is now complete. Next, the following graph is displayed and then printed.



When execution of the total pattern is finished, the following screen will be displayed.

TOTAL PATTERN LIST		
NO	COMMENT	CREATE
1	HOW TO USE KEYBOARD	12.01.83
2	SALES MANAGEMENT	12.01.83

REGISTER	EXECUTE	DELETE	MODIFY	PRINT	RETURN
SELECT FUNCTION(,J)					TOTAL PAT.
					MMTR

This completes our explanation of the procedures for executing total patterns.

VOLUME V

HANDBOOK

Canon AS-100

The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that every entry, no matter how small, should be recorded to ensure the integrity of the financial statements. This includes not only sales and purchases but also expenses and income. The document provides a detailed list of items that should be tracked, such as inventory levels, accounts payable, and accounts receivable. It also outlines the procedures for recording these transactions, including the use of double-entry bookkeeping and the importance of regular reconciliations.

The second part of the document focuses on the analysis of the recorded data. It explains how to interpret the financial statements and identify trends and anomalies. Key indicators such as profit margins, liquidity ratios, and debt-to-equity ratios are discussed. The document provides examples of how to calculate these ratios and what they mean for the business. It also discusses the importance of comparing the current period's performance with the previous period and with industry benchmarks.

The third part of the document addresses the reporting requirements for the business. It outlines the types of reports that should be generated, such as the balance sheet, income statement, and cash flow statement. It also discusses the frequency of these reports and the format in which they should be presented. The document provides a checklist of items to include in each report and offers tips for making the reports clear and easy to understand.

Finally, the document discusses the role of the accountant in the business. It emphasizes that the accountant is not just a number cruncher but also a strategic advisor. The accountant should be able to provide insights into the business's financial health and offer recommendations for improving performance. The document provides a list of questions that the accountant should ask the business owner to better understand the business's needs and goals.

HANDBOOK

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Chapter 1 - GENERAL DESCRIPTION

1.1 Hardware

The minimum hardware configuration for CANOBRAIN is as follows:

- CPU and memory (384K bytes or more)

A monochrome or color display can be used.

The color functions are not available when using a monochrome display.

- Keyboard
- Floppy disk drives A and B

A mini floppy (5- $\frac{1}{4}$ ") or standard floppy (8") disk drive can be used. An IBM-format file can be used only with a standard (8-inch) floppy disk drive.

The following devices are optional:

- Pointing device
- Printer

Two printers can be used with CANOBRAIN, one for printing tables and the other for printing graphs.

The A-1200, A-1210, and A-1250 printers can be used to print tables and graphs.

An electric typewriter (an AP500, for example) can be used to print tables by adding a serial interface (RS232C).

If two printers or an electric typewriter will be used, consult Appendix 3 for instructions.

- Hard disk

If a hard disk unit will be used, consult Appendix 4 for instructions.

1.2 Software

The following software is required for CANOBRAIN:

- System floppy disk

Contains the operating system (CP/M-86) and CANOBRAIN.

Two system disks are required if you are using a mini floppy disk system. One contains the operating system (CP/M-86) and the other contains CANOBRAIN.

- Data floppy disk

Stores data that is created. A new floppy disk must be formatted for this purpose.

1.3 Floppy Disk Insertion and Startup

Insert the floppy disks as follows:

- Drive A: System floppy disk (Use system disk 1 if you are using a mini-floppy disk system.)
- Drive B: Data floppy disk

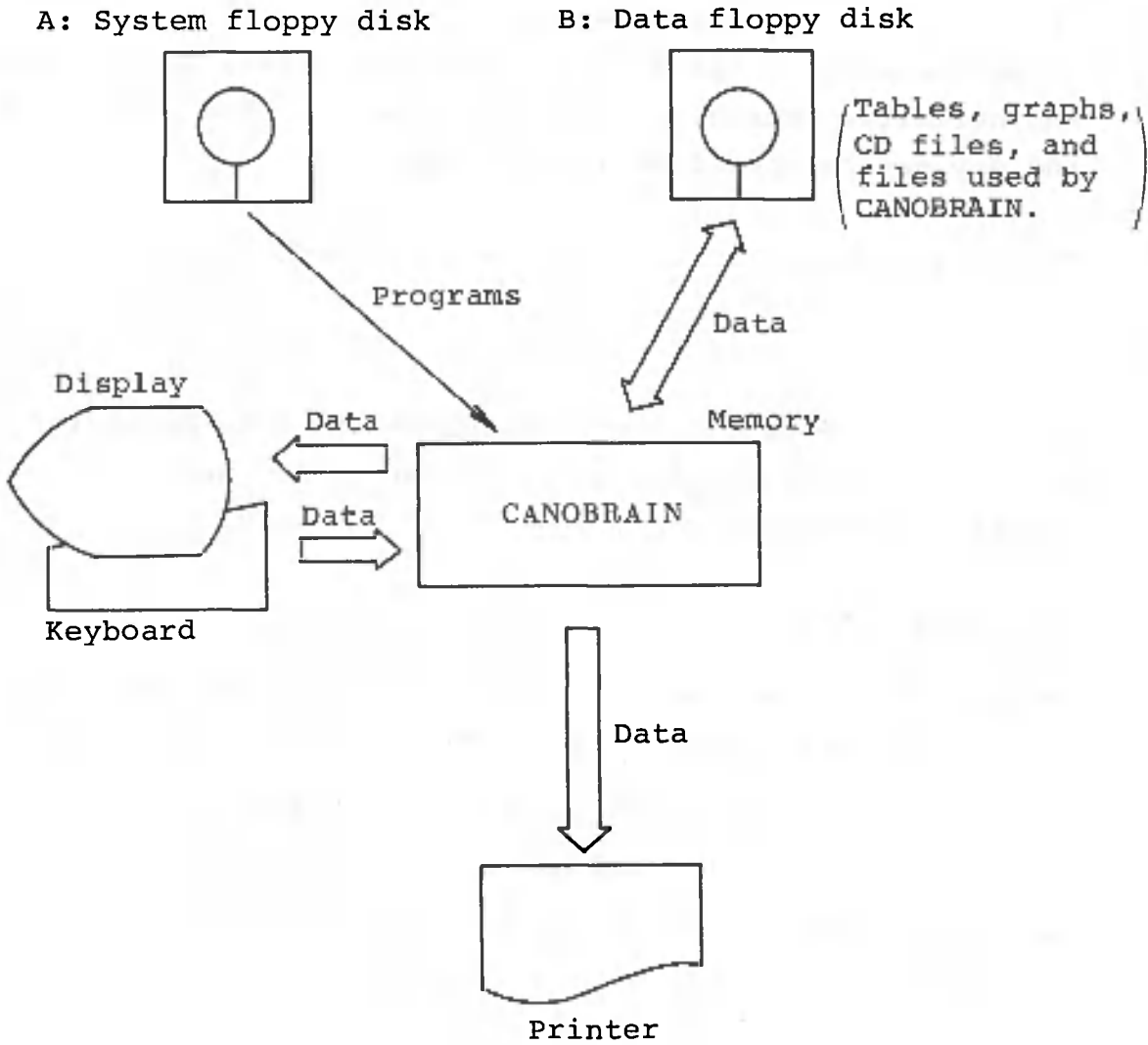
Start CANOBRAIN as follows:

- Turn on power.

The following operations must be performed if you are using a mini-floppy disk system:

1. Remove system disk 1 and insert system disk 2.
2. Press the CTRL and C keys simultaneously.
3. Press the following keys in the sequence indicated.

CBRAIN



(Tables, graphs,
CD files, and
files used by
CANOBRAIN.)

1.4 Initialization

(1) Date

A date specified during initialization is used as the creation date when books, pages, or patterns are created, and as the update date until books or pages are updated. It is also supplied when data is printed out. Enter the date as six digits. When two digits are entered, the delimiter (normally a period) appears. The year, month and day may be specified in any order.

The default value is the last date entered.

(2) User options

During initialization, you can change the date delimiter, refer to the system alteration history file, set the number of lines per page, and set up printers.

a. Date delimiter

- Input: The date delimiter is changed to the character entered immediately afterward.
- . : Changes the delimiter to a period.
- / : Changes the delimiter to a slash.
- - : Changes the delimiter to a hyphen.

b. System alteration history file

You can refer to the history file or memory that can be used to process tables.

c. Number of lines per page

You can specify three line-count options (number of lines per printer form). The allowable number of lines ranges from 4 to 255. The default values are as follows:

- Line-count option 1: 70
- Line-count option 2: 66
- Line-count option 3: 60

d. Printer setup

(3) Password







Passwords are used to prevent unauthorized access to stored data. A password can consist of one to six characters (letters, numbers or symbols) in any combination. A book or roll created with a password assigned to it will not be displayed in the book or roll list unless the password is given, and the password itself will not be displayed on the screen. A total of 20 passwords can be specified for each floppy disk. Consult Volume V, Chapter 1, to learn how to assign passwords.

1.5 Books

BOOK LIST				
NO	TITLE	CREATE	UPDATE	
1	CANOBRAIN	12.01.83	12.01.83	
2	SALES BY BRANCH	12.01.83	12.01.83	
3	BOOK1	12.01.83	12.01.83	

CREATE	DELETE	MODIFY	PRINTOUT	ROLL	RETURN
SELECT BOOK(INPUT BOOK NO. 1, 1)					BOOK

The following functions can be executed when the book list is displayed:

-   : Scrolls the book list one line at a time.
-   : Scrolls the book list one screen at a time.
-  : Displays the first book.
-  : Displays a book specified by the user.
- Number : Specifies the number of the book to be processed.
- CREATE : Creates books.
- DELETE : Deletes books.
- MODIFY : Changes book titles.
- PRINTOUT: Prints out the book list.
- ROLL : Proceeds to roll processing.
- RETURN : Returns to the CANOBRAIN startup screen.







This operating system allows you to store a maximum of 128 books. However, the actual number of books that can be stored depends upon table sizes, number of pages, number of total patterns, etc. When a book is created, the creation date and the update date are displayed. When data is updated, only the update date is changed.

1.6 Rolls

ROLL LIST				
NO	ROLL NAME	CREATE	UPDATE	
1	EXP	12.01.83	12.01.83	
2	ANALY DATA	12.01.83	12.01.83	
3	SALES BY BRANCH	12.01.83	12.01.83	
4	TV SETS	12.01.81	12.01.82	

CREATE	DELETE	MODIFY	PRINTOUT	BOOK	RETURN
SELECT ROLL(INPUT ROLL NO., SCROLL)					
					ROLL

The following functions can be executed when the roll list is displayed:

-  ,  : Scroll the roll list one line at a time in the indicated direction.
-  ,  : Scroll the roll list one screen at a time in the indicated direction.
-  : Displays the first roll.
-  : Displays a roll specified by the user.
- Number : Specifies the number of the book to be processed.
- CREATE : Creates rolls.
- DELETE : Deletes rolls.
- MODIFY : Changes book names.
- PRINTOUT: Prints out the roll list.
- BOOK : Proceeds to book processing.
- RETURN : Returns to the CANOBRAIN startup menu.







The number of rolls that can be stored depends on the capacity of the floppy disk being used.

1.7 TOTAL PAT. (Total Pattern)

TOTAL PAT. LIST		
NO	COMMENT	DATE
1	106 TO ACC KEYBOARD	12.01.82
2	TRIPS MANAGEMENT	12.01.82

REGISTER	EXECUTE	DELETE	MODIFY	PRINT	SEARCH
SELECT FUNCTION (1-6)					TOTAL PAT.
					NUMP:

The following functions can be executed when the total pattern list is displayed.

-  ,  : Scroll the total pattern list one line at a time in the indicated direction.
-  ,  : Scroll the total pattern list one screen at a time in the indicated direction.
-  : Displays the first total pattern.
-  : Displays a total pattern specified by the user.
- CREATE : Creates total patterns.
- EXECUTE : Executes total patterns.
- DELETE : Deletes total patterns.
- MODIFY : Changes comments on total patterns.
- PRINTOUT: Prints out the total pattern list.

The maximum number of total patterns that can be stored on one disk is 20.

The number of pages that can be stored depends upon the type of floppy disk used, the number of rows and columns in the tables, the number of data items or expressions, the number of processing patterns, and so forth. The following table gives the approximate number of pages that can be stored:

Page type Floppy disk type	A	B	C
Mini-floppy disk (5.25")	70	20	Less than 128
Standard floppy disk (8")	Less than 128	40	Less than 128

A pages : Tables consisting of 50 rows x 10 columns
(8 characters/column)

B pages : Tables consisting of 100 rows x 20 columns
(8 characters/column)

C pages : Graphs

Chapter 2 - BOOKS

2.1 Table Functions

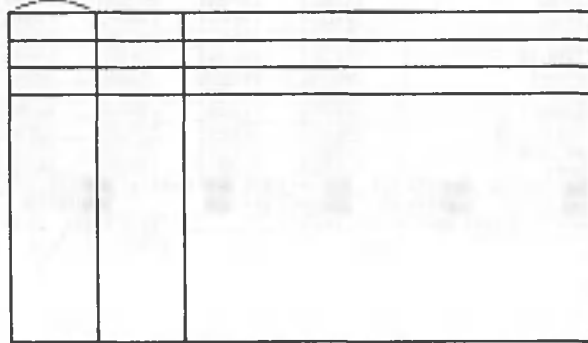
2.1.1 Defining a Table

For a table to be defined, the number of rows and columns in the table and the number of characters in each column must be specified, and must fall within the following ranges:

- Number of rows in the table : 1 - 255
- Number of columns in the table : 1 - 99
- Number of characters in each column : 1 - 75

Note that the number of characters of a table row must not be greater than 512. For example, 4 columns, each consisting of 75 characters ($75 \times 4 = 300$), cannot be defined.

Max. 75 characters



Max. 255 rows

Max. 512 characters

The size of a table is also limited by memory capacity. The following table gives the approximate number of rows, columns, and characters that can be entered:

Table size	Memory	
	384KB	512KB
Number of rows	128	128
Number of columns	32	32
Number of characters per column	8	8

2.1.2 Data Processing

(1) Screen

The screenshot shows a terminal window with a table of data. The table has columns for 'CODE', 'BRANCH', 'JAN.', 'FEB.', 'MAR.', and 'APR.'. The data rows are numbered 1 through 18. Below the table is a control panel with various function keys and a message row. Callouts 1 through 6 point to specific elements: 1 points to a cell cursor, 2 to a row number, 3 to a message row, 4 to an input row, 5 to a column number, and 6 to a data area usage ratio.

LINE	CODE	BRANCH	JAN.	FEB.	MAR.	APR.
1	0103	LONDON	547200	186400	467200	332900
2	0101	NEW YORK	466400	344500	509800	322800
3	0111	CALCUTTA	164700	213500	155600	589000
4	0112	MEXICO CITY	201600	354000	466200	245000
5	0109	LOS ANGELES	280800	426000	271500	234500
6	0102	TOKYO	264600	305000	98000	316200
7	0106	PARIS	201600	350900	445500	124300
8	0120	FRANKFURT	201600	396500	359000	202200
9	0116	PHILADELPHIA	345600	215800	342100	282200
10	0104	MOSCOW	130200	177900	291500	177700
11	0117	PEKING	264600	138900	198000	276800
12	0115	RIO DE JANEIRO	261600	228400	198000	147800
13	0121	LENINGRAD	351100	242200	335300	276100
14	0113	DETROIT	264600	284500	197800	468600
15	0107	OSAKA	164200	206500	439900	198700
16	0105	SHANGHAI	264600	115000	138500	362900
17	0108	BUENOS AIRES	236000	209400	372100	258300
18	0123	SAN FRANCISCO	209800	331800	305300	249700
19	0114	BOMBAY	334900	371000	242100	163400

CONTROL PANEL:

INPUT	LNPUT PRG.	LNPUT JEN.	DUPLICATE	PRINTING	PRINT
PRINTOUT	CD FILE	READ ROLL	TABLE DEF.	PRINT	PRINT
SELECT FUNCTION(F1-F12, COPY, MOVE, DELETE, INSERT)					DATA PAGE
					UCDF 2

- ① Cell cursor
- ② Row number
- ③ Message row
- ④ Input row
- ⑤ Column number
- ⑥ Data area usage ratio (percent)

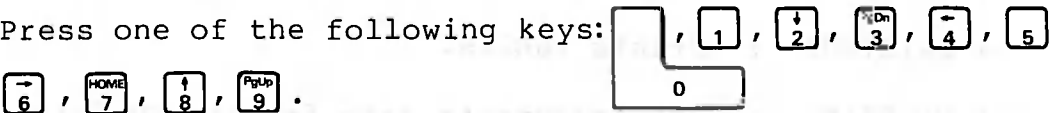









- ⑦ Calculation and calculation order
 A(Auto) : Automatic H: Horizontal
 M(Manual): Manual V: Vertical
- ⑧ Cell cursor address
- ⑨ Processing status, cell attribute, or error message.

If a color display is used, data is displayed in the following colors:


Cell cursor : White
 Bottom four rows: White
 Negative data : Cyan
 Other data : Green

(2) Moving the cell cursor

You can move the cell cursor during data processing in one of the following ways:

- Press one of the following keys:  ,  ,  ,  ,  , 
 ,  ,  ,  .





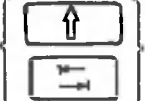
- 0 : Used to display the left side of screen.
- 1 : Used to display the right side of screen.
- 2 : Used to move the cell cursor down.
- 3 : Used to scroll the screen up.
- 4 : Used to move the cell cursor to the left.
- 5 : Used to move the cell cursor to the last row of the last column.
- 6 : Used to move the cell cursor to the right.
- 7 : Used to move the cell cursor to the first row of the first column.
- 8 : Used to move the cell cursor up.
- 9 : Used to scroll the screen down.

- Specify an address and press  .
- Use a pointing device.

If you try to move the cell cursor to a point outside the displayed area, the screen will automatically scroll.

(3) Processing

The following functions can be executed during data processing:

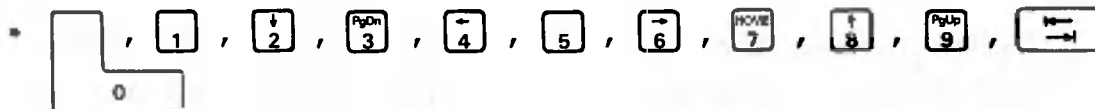
- INPUT : Inputs, corrects, and deletes data or expressions.
- INPUT PAT.: Registers, deletes, and executes patterns.
- DATA GEN. : Inputs arithmetic progressions.
- DUPLICATE : Duplicates specified data, expressions and attributes from one part of a table to another, or from table to table.
- FORMATTING: Alters attributes or column widths, etc.
- RET./SORT : Retrieves and/or sorts data.
- PRINTOUT : Prints tables.
- CD FILE : Inputs/outputs data from/to CD files.
- INPUT ROLL: Inputs roll data.
- TABLE DEF.: Re-creates tables.
- MONITOR : Returns to the index screen.
-  : Copies individual rows or columns.
-  : Moves rows or columns.
-  : Deletes rows or columns.
-  : Insert rows or columns.
-  : Start or end the permanent display of row 1, column 1.

2.1.3 INPUT Function

	COO	BRANCH	JAN.	FEB.	MAR.	APR.
1	0103	LONDON	547200	186400	467200	332900
2	0101	NEW YORK	446400	344500	509800	322800
3	0111	CALCUTTA	164700	213500	155600	589000
4	0112	MEXICO CITY	201600	354000	466200	245000
5	0109	LOS ANGELES	280800	426000	271500	234500
6	0102	TOKYO	264600	305000	98000	316200
7	0106	PARIS	201600	350900	445500	124300
8	0120	FRANKFURT	201600	396500	359000	202200
9	0116	PHILADELPHIA	345600	215800	342100	282200
10	0104	MOSCOW	130200	177900	291500	177700
11	0117	PEKING	264600	138900	190800	276800
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15	0107	OSAKA	164200	206500	439900	198700
16	0105	SHANGHAI	264600	115000	138500	362900
17	0108	BUENOS AIRES	236000	209400	372100	258300
18	0123	SAN FRANCISCO	209800	331800	305300	249700
19	0114	BOMBAY	334900	371000	242100	163400

INPUT INPUT PAT. DATA GEN. DUPLICATE MERGING CONTR. SORTING
 PRINTOUT CO FILE READ ROLL TABLE DEF. BIT EDITOR NO
 SELECT FUNCTION(F1-F12, COPY, MOVE, DELETE, INSERT) DATA PROC. RIC1
 BOOK 2

The following functions can be executed during data input processing:



Used to move the cell cursor.

- INPUT DATA/EXPRESSION:
Inputs characters, numbers, symbols, and expressions.
- CORRECT : Corrects data or expressions.
- DELETE : Deletes data or expressions.
- COL. EXP. : Inputs, corrects, or deletes column expressions.
- RETRIEVAL and CONT. RET.:
Retrieves data according to specified conditions.
- TOTAL : Calculates page totals.
- RETURN : Returns to the data processing screen.

{1} Inputting data

This function allows you to input characters, numbers, or symbols into the cell where the cursor is located. If the first data character is a number, the data is assumed to be a numeric value; if it is not, a number, +, -, (, or @, the data is assumed to be character data. However, if a number or one of the symbols just mentioned is preceded by ", the data is assumed to be character data. Mathematical expressions must begin with a number, +, -, (, or @.

[Example]

```
123      Numeric data
"123     Character data
+R2C2+1  Expression
```

To input data into a particular cell, enter a colon (:), the address, =, and then your data in that order. An address range can also be specified.

[Example]

```
:R2C2 = 1
:R2.3C2.3 = TOKYO
:R2..C2.. = +R1C5
```

Characters entered from the keyboard are displayed on the input line and at the cell cursor position. The number of characters to be entered cannot exceed the number of characters in the cell. Numbers entered from the keyboard are first displayed on the input line. When one of the following keys is pressed to indicate the end of input, the number is displayed in the cell:



: Move the cursor in the direction indicated by the arrow displayed in the bottom right corner of the screen. Cursor direction remains unchanged.

- ↑
2 , ←
4 , →
6 , ↓
8 : Move the cell cursor in the direction indicated by the arrow. Cursor direction changes.
- ←
7 : Moves the cursor to column 1, row 1. Cursor direction remains unchanged.
- ←
→ : Moves the cursor to the address specified after this key. Cursor direction remains unchanged.

CANOBRAIN can process numbers with 2-digit exponents (-64 to +63) and 14-digit mantissas. Up to 80 digits can be entered. When the number of characters exceeds the column width, the number is rounded off and expressed in E notation. If it is too large to be displayed in the E notation, the column will be filled with question marks. Numbers can be entered in E notation if desired. The following keys are used to correct data on the input line:

- DEL : Deletes the character immediately preceding the cursor.
- DELETE
LINE : Deletes data that has been entered.

When all data is deleted with the DEL key, be sure to press the DELETE
LINE key or re-enter data, since further processing is impossible until one or the other is performed.

(2) Inputting expressions

An expression can be entered at the cell cursor position. The entered expression is effective for one cell. If it is to be used for the entire column rather than a single cell, specify a column expression. An expression must begin with a number, +, -, (, or @.

[Example]

```
+R2C-R2C3  
-R2C+R2C3  
(R2C2+R2C3)*100  
@SUM(R2C2..)
```

Enter a colon (:), the address, =, and then the expression to enter the desired expression into a particular cell. An address range can also be specified.

[Example]

```
:R2C10=+R2C2-R2C3  
:R2.3C10=(R2C2+R2C3)*100  
:R2..C10=@SUM(R2C2..)
```

The following operators can be used in an expression:

- + : Addition
- - : Subtraction
- * : Multiplication
- / : Division
- ^ : Exponentiation
- () : Change in calculation sequence
- [] : Calculation result of an expression (one cell address or constant only)

A mathematical expression can consist of up to 80 characters, including the address and operators. This limit also applies to a function or column expression. The result of an expression is rounded off to 14 significant digits. The result is displayed according to the attributes of the cell.





Calculation is not performed and asterisks are displayed for all digits when a cell specified in an expression does not contain data, another expression, or a column expression.





When a number is entered in a cell containing an expression, calculation is performed according to one of the following methods:

- When automatic calculation is specified, recalculation is performed immediately. Only the result is displayed; the entered number is ignored.
- When manual calculation is specified, the entered number is displayed in the cell until recalculation is specified.

(3) CORRECT (Correction) Function

The data or expression at the cell cursor position can be corrected, but the result of an expression cannot. Data on the input line can be corrected with the cursor. The following functions can be executed:

-  ,  : These keys move the cursor in the direction of their respective arrows.
- Key input : Replaces the character at the cursor position with the input character and moves the cursor one position to the right.
-  ,  : These keys delete the character at the cursor position and shift the characters following it one position to the left. The cursor does not move. If the cursor is to the right of the character string, no operation will be performed.

-  : Puts CANOBRAIN in the INSERT mode when pressed once; when pressed a second time, CANOBRAIN leaves the INSERT mode. In the INSERT mode, characters entered are inserted at the position immediately to the left of the cursor and the characters following it are shifted one character to the right. The cursor also moves one position to the right.
-  ,  : These keys end data correction and display the corrected data in the cell.
-  : Cancels a correction and makes the previous data effective. CANOBRAIN then returns to the INPUT mode.

The input line is scrolled to the left or right when the cursor moves off the screen.

{4} DELETE Function

Cell data and expressions can be deleted, but column expressions cannot. Column expressions can be deleted only in the COLUMN EXPRESSION mode.

Procedures for deleting the contents of cells are shown in the table below.

Cell contents \ Deletion specified	Data	Expression	Both
Data	Data deleted	/	Automatic calculation: Recalculated Manual : All asterisks calculation displayed
Expression	/	Expression deleted	Expression deleted
Both	Data deleted	Expression deleted	Both data and expression deleted

A cell from which data or an expression (or both) is to be deleted can be specified by moving the cell cursor to it, or by specifying the address. An address range can also be specified, meaning data from more than one cell can be deleted.

(5) COL. EXP. (Column Expression)

A column expression can be entered in the column where the cell cursor is located, or in a column specified by an address. As stated previously, an expression must begin with a number, +, -, (, or @. An address is specified by the column number alone except when a single cell is being specified, in which case both the row number and the column number must be specified.

[Example]

```
+C1+12
(C1+C2)*C3
@MIN(C1.5,10)
+C1+C2+R1C10+10
```

Only the stepping total of rows can be obtained when @TSUM is used as a column expression.

To enter a column expression in a particular column, enter a colon (:), the address, =, and then the column expression in that order. The address is specified by a column number alone. Except for those described above, a column expression is similar to an ordinary expression.

[Example]

```
:C4=+C1+C2-C3
:C5=@TSUM(C1,C3,2)
```

Column expressions can be corrected just like data. Only the column expression at the cell cursor position or specified by the address will be deleted when deletion is specified.

(6) RET.(SET) and RET.(CNT)

This retrieval function allows you to locate rows that contain data satisfying set conditions. When there is more than one row containing such data, the first one located will be displayed at the top of the screen and the cell cursor will then be positioned in the left-most column of the row.

The difference between this retrieval function and the retrieval function on the data processing screen is that the former can input or modify data after retrieval. Subsequent rows can be accessed by selecting RET.(CNT). Be sure to set the retrieval conditions before selecting RET.(CNT).

If there is no data satisfying the specified conditions, the screen will remain unchanged and cell cursor will not move. At this time, "DATA ERR." will be displayed in the message column.

The retrieval condition setting procedure is the same as the retrieval function on the data processing screen (see page 404).

(7) TOTALS

You can calculate totals between pages. However, the pages must satisfy the following conditions:

- . Each page must have exactly the same number of rows and columns.
- . All pages must be contained in the same book.
- . The attributes of cells which have the same address in each page must be unified.

There are two ways to calculate totals. One is by using `PAGE TOTAL`, in which the numbers in the specified page are written in the table being displayed. The other method is to specify `GRAND TOTAL`, so that the number in the table being displayed is added to the page total result.

Note that all cells in a page which have the numeric attribute will be processed.



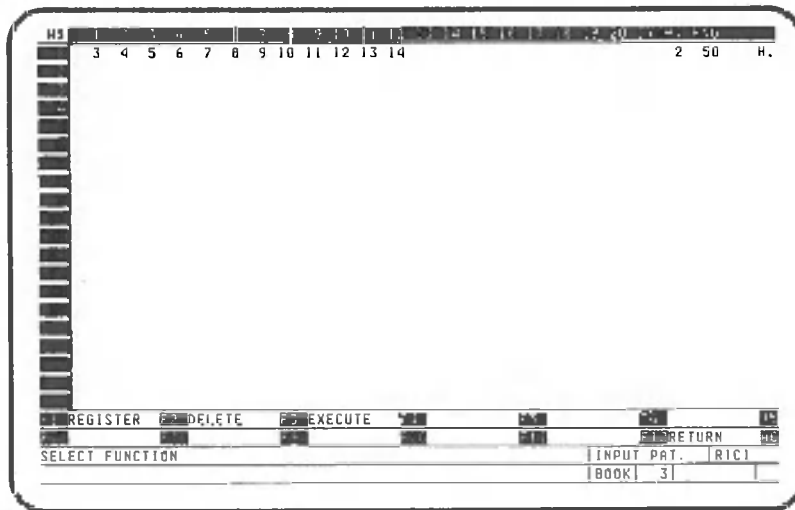
2.1.4 INPUT PAT. (Input Pattern) Function

The following functions can be executed with patterns:

- REGISTER: Creates a pattern or changes an existing pattern.
- DELETE : Deletes a pattern.
- EXECUTE : Executes a pattern.
- RETURN : Returns CANOBRAIN to the data processing mode.

(1) REGISTER Function

Specify the numbers of the columns in which data is to be entered, as well as a row range. Also specifies the cell cursor movement direction: horizontal or vertical. The following is displayed when a pattern is defined:













Up to 15 patterns can be defined. If the pattern number entered is already assigned to a pattern, that pattern will be updated.

(2) DELETE Function

An unnecessary or obsolete pattern can be deleted by specifying its number.

(3) EXECUTE Function

A defined pattern can be executed by specifying its number. When pattern execution starts, the cell cursor appears in the cell where data is to be entered first. Whenever  is pressed, the cell cursor moves according to the defined pattern. Even if the cell cursor is moved by using , , , , , , or , pressing  moves the cell cursor to where data is to be entered next.

After data is entered in the last cell specified in the pattern and  is pressed, pattern execution ends and CANOBRAIN automatically returns to the DATA PROCESSING mode.

2.1.5 DATA GEN. (Data Generation) Function

Arithmetic progressions can be entered in rows or columns. Specifies the addresses of the cells where numbers are to be entered. These cells must all have the same data attributes and must be either "numeric" or "free". The address used cannot specify multiple rows or columns.

Specify the initial value and the increment to be used for the arithmetic progression. Since this function is used to enter numeric data, expressions or column expressions may be in the cells. However, note that the data values will change when the expression is re-calculated.

2.1.6 DUPLICATE Function

In the DUPLICATE mode, one or more cells can be copied from a table to the table being processed by specifying the source table name or its page number. The contents of the source cell remain unchanged. Data can also be copied from one part to another within the table being processed.

The contents of a cell can also be selectively copied; i.e., only the data, expression, or attribute (format) will be copied if so specified. Note that column expressions cannot be copied.

In the following explanation, the source cell is called the FROM cell, and the destination cell is called the TO cell.

When copying an expression, the addresses can be automatically converted (relative address) or not converted (absolute address).

There are three options: all addresses in an expression are converted to relative addresses, all addresses are not converted (i.e., all addresses are absolute), or address conversion is specified for each address (individual selection). However, if the specified range contains multiple rows or columns, data copied with the individual selection method is not displayed. When data or an expression is copied, the FROM cell and the TO cell must have the same attribute or the TO cell must have the "free" attribute.

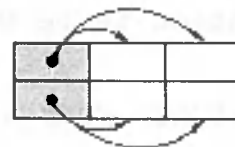
Cells are specified by addresses. If a row (or column) range is specified for the FROM cell, the number of rows (or columns) of the TO cell must match that specified for the FROM cell.

[Example]

R1 C1 → R1 C2



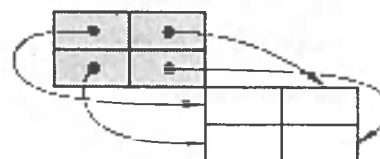
R1.2 C1 → R1.2 C 2.3



R1 C 1.2 → R3.4 C 2.3



R 1.2 C 1.2 → R 3.4 C 3.4



2.1.7 FORMATTING Function

The following can be specified and executed for tables, columns, and cells during formatting:

- Data type:

The attribute (character, numeric, both) of an entire table, column, or individual cell can be specified.

- Character shift:

The characters in a cell can be right- or left-justified.

- Numeric format:

Numeric data in a cell can be changed to the real format (E notation if data cannot be displayed in a screen cell), integers, or decimal fractions.

- Numeric editing:

Commas can be inserted after every third digit. The plus sign (+), minus sign (-), or dollar sign (\$) can be attached. Decimal fractions can be rounded down, rounded off, or rounded up.

- Calculation:

The calculation method, automatic or manual, can be specified.

- Calculation order:

The order in which calculation is to be performed (row order or column order) can be specified.

- Column width modification:

Column widths (the number of characters in each column) can be modified.

- Data protection:

Data can be protected so that it is not altered or deleted during data input or recalculation.

(1) Data type

Depending upon the attribute specified, character data, numeric data or both can be entered into a table, column or cell. In addition to the character, numeric, and free attributes, table-dependent and column-dependent attributes can be specified. When the table-dependent attribute is assigned, column attributes are converted to match that of the table. Assigning the column-dependent attribute changes the attributes of the cell to match that of the column. For example, when a column has the free attribute, the free attribute is assigned to all the cells of the column. If data is already stored, however, any attempt to change the attribute from character to numeric (or vice versa) causes a message to be displayed indicating that the attribute cannot be changed.

Immediately after a table is created, the "both" attribute is assumed for the table and the columns, and the column-dependent attribute is assumed for the cells (i.e., free).

The other options specified during formatting, i.e., those described in paragraphs (2) through (9) following, are closely related to the data type assigned. The table on the next page shows the legality of attribute specifications:

Category Data type Speci- fication	Table			Column			Cell		
	Char- acter	Nu- meric	Both	Char- acter	Nu- meric	Both	Char- acter	Nu- meric	Both
Character shift	o	x	o	o	x	o	o	x	o
Numeric format	x	o	o	x	o	o	x	o	o
Numeric editing	x	o	o	x	o	o	x	o	o
Calculation	x	o	o	-	-	-	-	-	-
Calculation order	o	o	o	-	-	-	-	-	-
Column width modification	-	-	-	o	o	o	-	-	-
Data protection	-	-	-	-	-	-	o	o	o

o: Can be specified

x: Cannot be specified

-: Not applicable

The data type is displayed in the status column.

(2) Character shift

A character shift can be specified only when the data involved possesses either the "character" or the "both" attribute. If character shifting is specified for a column having the table-dependent attribute, the column attribute is automatically converted to "both." If it is specified for a cell possessing the column-dependent attribute, the cell attribute is automatically converted to "character." If numeric data is stored in the cell, the message "DATA STORED" is displayed and automatic attribute conversion is not performed.

Notes: 1. Spaces are treated as characters during character shifting.

2. All columns are left-justified when a table is created.

(3) Numeric format

Numeric formats can be specified only when the data involved possesses either the "numeric" or the "both" attribute. If a numeric format is specified for a column having the table-dependent attribute, the column attribute is automatically converted to "both." If a numeric format is specified for a cell possessing the column-dependent attribute, the cell attribute is automatically converted to "numeric." If character data is stored in the cell, the message "DATA STORED" will be displayed and automatic attribute conversion will not be performed.

The following three numeric formats are available:

- Real : Numeric data is displayed exactly as entered. If it does not fit in the cell, it is displayed in E notation. If it is too large to be displayed in E notation, the cell is filled with question marks.
- Integer: The decimal fractions are rounded off to the nearest whole number. If the integer does not fit in the cell, the cell is filled with question marks.
- Decimal: Numeric data is rounded off and displayed to the specified number of decimal places. If the number of digits exceeds the column width, the cell is filled with question marks.
From 0 to 15 decimal places can be specified. The decimal point is displayed even if 0 is specified.

The real format is assumed for a table that has been created.

(4) Numeric editing

The following numeric data editing options are available:

- Commas can be inserted after every third digit.
- Editing characters can be specified.
- Numbers can be rounded down, rounded off, or rounded up.

These options can be specified only when data has either the "numeric" or the "both" attribute. Automatic attribute conversion is performed as described previously in (3), Numeric format.

a. Comma insertion:

Commas can be specified for insertion after every third digit, and will be included in the number of positions.

b. Editing characters:

Numeric editing characters such as 0, +, -, *, \$ or a space can be specified.

When specifying this option, you must consider the numeric format and comma insert option. The table below shows how to specify numeric editing characters and how numeric data is edited. Each column in the table can contain 12 characters. Each cell contains two numbers, 1234.567 at the top and -1234.567 at the bottom. A number is rounded off to the nearest two decimal places.

The character "-" is assumed for a table that has been created.

	Without commas			With commas		
	Real	Integer	Decimal	Real	Integer	Decimal
0	00001234.567 -0001234.567	000000001235 -00000001235	000001234.57 -00001234.57	001,234.567 -001,234.567	000,001,235 -000,001,235	0,001,234.57 -001,234.57
+	+1234.567 -1234.567	+1235 -1235	+1234.57 -1234.57	+1,234.567 -1,234.567	+1,235 -1,235	+1,234.57 -1,234.57
-	1234.567 -1234.567	1235 -1235	1234.57 -1234.57	1,234.567 -1,234.567	1,235 -1,235	1,234.57 -1,234.57
*	***1234.567 ***1234.567-	*****1235 *****1235-	****1234.57 ****1234.57-	**1,234.567 **1,234.567-	*****1,235 *****1,235-	***1,234.57 ***1,234.57-
␣ (Space)	1234.567 1234.567-	1235 1235-	1234.57 1234.57-	1,234.567 1,234.567-	1,235 1,235-	1,234.57 1,234.57-
\$	\$1234.567 \$1234.567-	\$1235 \$1235-	\$1234.57 \$1234.57-	\$1,234.567 \$1,234.567-	\$1,235 \$1,235-	\$1,234.57 \$1,234.57-

c. Rounding options:

Numbers can be rounded down, rounded off, or rounded up to the number of decimal places specified by the user.

Although numbers are rounded in the cell as specified, internal values (14-digit mantissa and 2-digit exponent) are displayed on the input line. Internal values can be converted to the format identical to the display data by inputting "%" via the data processing screen or data input screen.

(5) Calculation

The calculation method can be specified only for an entire table, not for an individual column or cell. When automatic calculation is specified, the results of expressions are automatically recalculated whenever a related data item is modified. When manual calculation is specified, recalculation of expressions is not performed unless explicitly specified. To start recalculation, enter "!" from the data processing screen or data input screen.

The two calculation options, automatic or manual, are displayed with the calculation order at the far right of the third line from the bottom as follows:

A : Automatic
M : Manual

The automatic calculation option is assumed for a newly-created table.

(6) Calculation order

As with the calculation method, the calculation order can be specified only for an entire table. When horizontal calculation is specified, the expression for the second row is calculated after the first row has been calculated, etc. When vertical calculation is specified, the expression for the second column is calculated after the first column, etc.

The two calculation orders, horizontal or vertical, are displayed with the calculation method at the far right of the third line from the bottom as follows:

H : Horizontal
V : Vertical

The horizontal calculation order is assumed for a newly-created table.

(7) Column width modification

Column width modification can be specified for an entire column. To modify the width of a column, specify the number of characters within the 1 to 75 range.

Note that if the column width is reduced, any data item exceeding the new column width will be lost.

(8) Data protection

Data protection can be specified for individual cells. If data protection is given to a cell, the cell cursor skips that cell to prevent data, except a column expression, from being entered. If an expression is in the cell, recalculation is not performed and data and expressions cannot be deleted. If data protection is removed from a cell containing an expression, the message "RECALCULATION OK?" is displayed.

Note: Data protection cannot be specified for a cell containing neither data nor expressions.

(9) Status column

The status column at the bottom of the screen provides information such as assigned data attributes and the number of decimal places being used in the table, individual columns, and individual cells. The status for the entire table is displayed when a table is selected during formatting. The status of a column is displayed when the column is specified during formatting or when a column expression is entered. The status for each cell is displayed when a cell is selected during formatting or when data is entered in a cell.

The status symbols are defined as follows:

		1	2	3	4	5	6	7	8	9	10	11
Table		C	L	R								
	mm	N	R	□□□□	□□□□	□□□□	□□□□	C	E	D		
		B	L	R	□□□□	□□□□	□□□□	□□□□	I	T		
Column		C	L	R								
	mm	N	R	□□□□	□□□□	□□□□	□□□□	C	E	D		
		B	L	R	□□□□	□□□□	□□□□	□□□□	I	T		
Cell		C	L	R								
	mm	N	R	□□□□	□□□□	□□□□	□□□□	C	E	D		
		D										P

mm: Number of characters in the cell

nn: Number of decimal fractions

Meanings of status indicators

- Data type (character 3)
 - C : Character
 - N : Numeric
 - B : Both
 - D : Dependent

- Character shift (character 4)
 - L : Left-justified
 - R : Right-justified

- Numeric format (character 5)
 - R : Real
 - I : Integer
 - D : Decimal fraction

- Numeric editing (characters 8 and 9)
 - C : With commas
 - : Without commas
 - Editing : 0, +, -, *, □, \$

- Rounding (character 10)
 - D : Round down
 - O : Round off
 - U : Round up

- Data protection (character 11)
 - P : Protected
 - : Not protected

2.1.8 RET./SORT (Retrieval/Sort) Functions

(1) Retrieval

The retrieval function allows you to locate rows that contain data satisfying set conditions. When there is more than one row containing such data, the first one located is displayed at the top of the screen and the cell cursor is positioned in the leftmost column of the row. Subsequent rows can be accessed by pressing .

If there is no data satisfying the specified conditions, the screen remains unchanged and the cell cursor does not move. At this time, "DATA ERR." will be displayed in the message column.

Conditions are specified in two levels. First, specify the columns, i.e., column numbers combined with * (AND) and + (OR), for which conditions are specified. Set conditions, such as "greater than" or "equal to", are then specified for each column. The condition "equal to" can be specified for a substring of a character string. In addition, you can search a character string for a specific character substring.

When specifying conditions, the attributes of the other rows must match that of the attribute of the column on the row from which retrieval starts.

	1	2	3	4	5 ...
1	Numeric	Numeric	Character	Character	←Retrieval start row
2	Numeric	Character	Numeric	Character	
3	Numeric	Numeric	Numeric	Character	
4	Numeric	Character	Numeric	Character	
5	Numeric	Numeric	Numeric	Character	
⋮					

For example, if a condition is specified for column 1 and if retrieval starts on row 1, the retrieval will be performed normally. However, if a condition is specified for column 3, the message "DATA ERR." will be issued.

If a condition is specified for a numeric value entered as a character string (a numeric value preceded by "), the value used as the condition must also be preceded by ".

A conditional expression consists of up to 80 characters. Up to 15 retrieval conditions can be registered as patterns.

{2) SORT Function

The SORT function allows you to rearrange rows according to specified conditions. When rows are sorted, data and attributes are moved.

The sort order, ascending or descending, can be specified for up to five columns. It cannot be specified for one or more character positions within a column.

If numeric and character data are mixed in the sort row range, the rows will not be sorted.

Rows containing cells in which neither data nor expressions are stored will be added to the end of the table.

If a cell of a row in the sort range contains a mathematical expression, the message "EXPRESSION DELETE OK?" will be displayed. If you respond with YES, the expression is deleted and the rows, including that row, are sorted. If you respond with NO, the rows will not be sorted.

	1	2	3	4	5	
1	Character	Character	Numeric	Character	Numeric (column expression)	← Start row
2	Numeric	Character	Numeric	Character	Numeric (column expression)	
3	Numeric	Character	Numeric	Character	Numeric (column expression)	
4	Numeric	Contains neither data nor expression	Numeric	Character	Numeric (column expression)	
5	Numeric	Character	Numeric (cell expression)	Character	Numeric (column expression)	
6	Numeric	Character	Numeric	Character	Numeric (column expression)	← End row
7	Numeric	Character	Numeric	Numeric	Numeric (column expression)	
	⋮					

For example, in the table given above, the rows will not be sorted if column 1 is selected because column 1 contains both character and numeric data. If column 2 is selected, row 4 is added at the end (e.g., if the sort range is row 1 to row 6, row 4 is moved to row 6). If column 3 is selected, the message is issued to check that the user intends to delete the cell expression in row 5.

Up to 15 sort conditions can be registered as patterns. They can also be registered in a total pattern.

2.1.9 PRINTOUT Function

The PRINTOUT function allows you to print out table data. This function cannot be used if a printer is not connected to the system or is not activated. When an A-1200 or A-1250 printer is used, you can select one of three ruled line options (no ruled lines, vertically-ruled lines, vertically- and horizontally-ruled lines). With other printers, only horizontally-ruled lines can be printed.

The columns to be printed and the order in which they are to be printed out can be specified. The columns are printed in the specified order from left to right. The print range can also be specified to match the size of the paper used. Specify the range as follows:

- Lines per page:
Specify the number of lines desired by entering a number from 4 to 255, or select one of the three preset options assigned to F1, F2 and F3, respectively. These options can be assigned when the environment is first set up.
- Start and end lines:
Specify the print start and end lines, each in a number not less than 1. The default for the start line is 3, and that for the end line is (No. of lines per page - 2).
- Start and end columns:
Specify the print start and end columns (these vary with printers). The minimum print width is 26 columns. The default value for the start column is 3, and that for the end column is the maximum print width of the printer.

```
A-1200 : 1 - 80
A-1210 : 1 - 80
A-1250 : 1 - 156
```

For other printers, it will be assumed that the maximum print width is 136 columns. However, a different default value can be specified when the printer is set up.

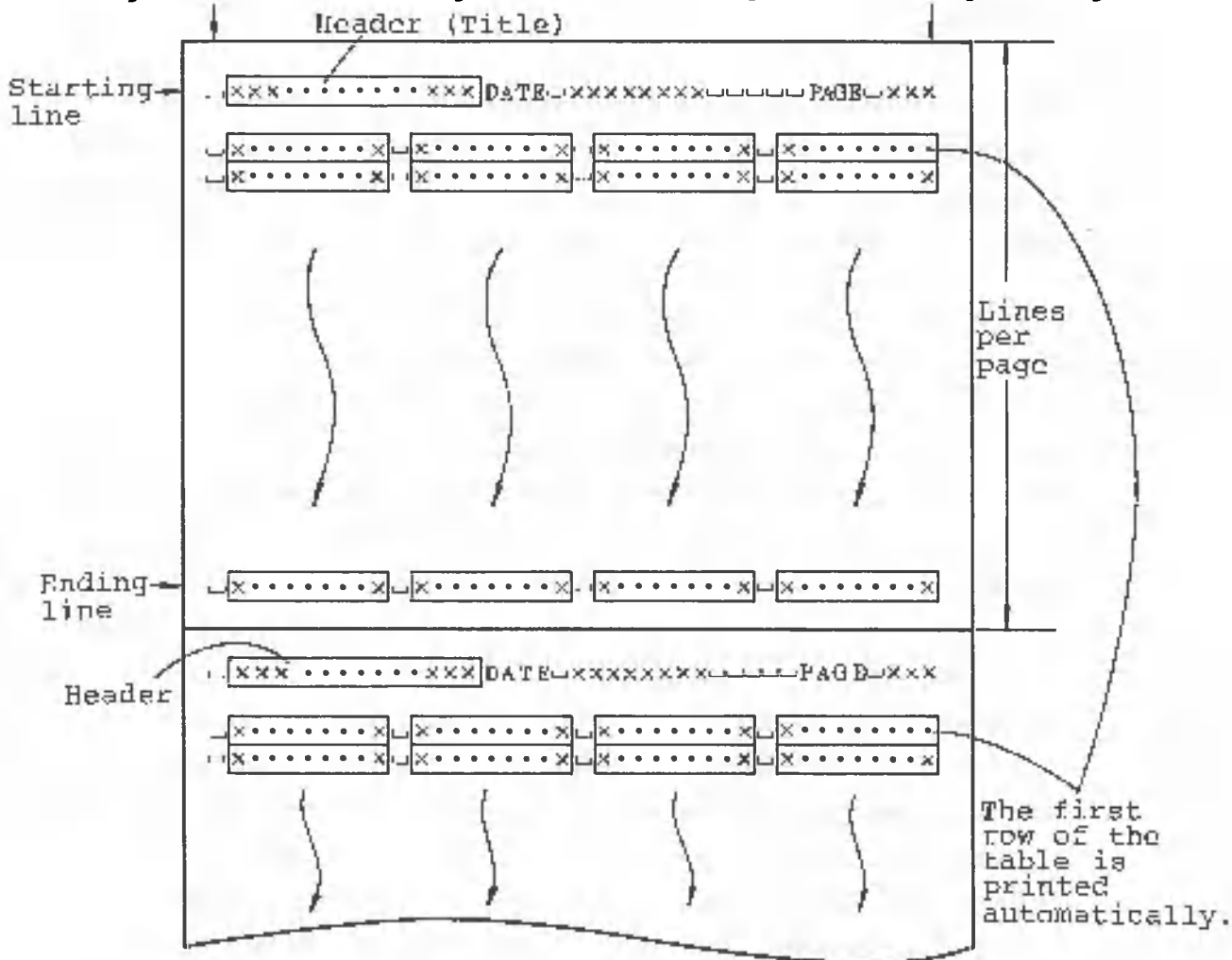
Cut sheets can be used with these printers. When you use cut sheets you may specify whether printing is to be stopped when the page ends or not. If you specify STOP, the message prompt advising you to set paper in the printer will be displayed.

A header 1 to 80 characters long can be printed on the start line of each page.

The date and page number are also automatically printed on each page. The date is the one entered when CANOBRAIN was started. If the date and the header overlap, the overlapping part of the header will not be printed.

To stop printing, press the key.

Starting column (Left margin) Ending column (Right margin)



× : Indicates a character. □ : Indicates a space.

The first row of the table is automatically printed at the top of each page. To print it on a different line, you must enter a number greater than 1, because if 1 is specified, the first row of the table will be printed twice at the top of each page. When (ALL) is pressed, it is assumed that rows 2 through the final row are being specified.

Data can be retrieved before being printed. When data that match the specified conditions are found, only the columns containing data satisfying those conditions are printed. When there is no data satisfying the conditions, nothing is printed. For instructions on how to retrieve data, see Section 2.1.8, (1) RETRIEVAL. Print format specifications and retrieval conditions can be defined as patterns. They can also be registered in a total pattern.

2.1.10 CD Files

The CD (common data) files contain data created by CANOBRAIN. They are stored on a floppy disk in a format allowing them to be used as data by nonprogramming software or programs coded in BASIC.

CANOBRAIN allows you to read (input) table data from CD files and to write (output) table data to CD files. Only data can be read from, to written to, CD files; expressions and attributes cannot.

When data is entered from a CD file, the table attributes are the same as they were when the table was created. The floppy disk drive containing the CD files can be specified by entering the drive name and a colon. The default drive is B.

When writing data in a CD file, specify the file name. A file name consists of from one to eight alphabetic and/or numeric characters. The first character must be alphabetic. The file type, consisting of one to three characters immediately following a period, can be specified if required. If the floppy disk in drive B contains a file with the identical name, CANOBRAIN will ask you if the old file may be erased.

CD files have the following advantages:

- Table data can be copied from one book to another.
- Table data created by CANOBRAIN is available for use by programs such as BASIC.

To copy table data, first output the table to be copied to a CD file. Then create a table in the book to which the table data is to be copied, and read the data from the CD file. The number of rows or columns and column widths must be less than or equal to those of the table into which data is copied.

When using created table data with a program written in BASIC or other language, output the table into a CD file.

For instructions on how to output table data into a CD file and the CD file structure, see Appendix 1.

2.1.11 INPUT ROLL Function

Roll data can be read into a book table by specifying the roll name or roll number. If the password of the roll does not match the password specified at initialization, "INPUT PASSWORD" will be displayed. Unless the two passwords match, data cannot be read from the roll. Only data can be read; expressions and attributes cannot. Specify the range of columns and rows from which data is to be read and the range of columns and rows of the book table into which data is to be read. Data can be selectively read by specifying retrieval conditions. See Section 2.1.8, (1) RETRIEVAL, for further information.

2.1.12 TABLE DEF. (Table Definition) Function

The table definition function allows you to redefine a table. When the function key is pressed, a confirmation message is displayed. If you respond with YES, the table being processed is erased and the user is requested to input the number of rows to be used to create another table.

2.1.13 MONITOR Function

When this function is selected, table processing ends. At this time, a message is displayed to ask you if floppy disk data is to be updated. This message is not displayed after a page is created or when an option was specified to prevent data from being written on a floppy disk ("temporary" specified when the page is created). When TABLE EDIT is selected during graphic processing, CANOBRAIN returns to graphic processing after the edit has been checked.

2.1.14 COPY Function

The COPY function allows you to copy rows or columns from one location to another as follows:

1	ROW1	
2	ROW2	
3	ROW3	
4	ROW4	
5	ROW5	



(Rows 2 and 3 are copied to rows 5 and 6.)

1	ROW1	
2	ROW2	
3	ROW3	
4	ROW4	
5	ROW2	
6	ROW3	
7	ROW5	

All information, including data, expressions, and attributes, is copied. The original rows (columns) are not deleted in this procedure, meaning that the number of rows (columns) will increase.

If a row (column) to be copied has a cell containing an expression, the addresses in that expression will automatically be converted so that they point to the original addresses. However, if an address in that expression points to the address of the expression itself (its own address), it is converted to a relative address.

	1	2	3
1	1 0	1 0 0	@SUM(R1C1. 2)
2	2 0	2 0 0	@SUM(R2C1. 2)
3	@SUM(R1. 2C1)	@SUM(R1. 2C2)	@SUM(R1. 2C3)
4	1 5	1 5 0	@SUM(R4C1. 2)



(Row 4 is copied to row 2.)

	1	2	3
1	1 0	1 0 0	@SUM(R1C1. 2)
2	1 5	1 5 0	@SUM(R2C1. 2)
3	2 0	2 0 0	@SUM(R3C1. 2)
4	@SUM(R1. 3C1)	@SUM(R1. 3C2)	@SUM(R1. 3C3)
5	1 5	1 5 0	@SUM(R5C1. 2)

2.1.15 MOVE Function

The MOVE function allows you to move rows or columns from one location to another as follows:

1	ROW1	
2	ROW2	
3	ROW3	
4	ROW4	
5	ROW5	



(Rows 2 and 3 are inserted between row 4 and row 5.)

1	ROW1	
2	ROW4	
3	ROW2	
4	ROW3	
5	ROW5	

All information, including data, expressions, and attributes, is moved. The original rows (columns) are deleted during this procedure, meaning that the number of rows (columns) remains unchanged. The expressions in the rows (columns) are treated in the same manner as they are when the copying procedure is performed.

	1	2	3
1	1 0	1 0 0	@SUM(R1C1.2)
2	2 0	2 0 0	@SUM(R2C1.2)
3	@SUM(R1.2C1)	@SUM(R1.2C2)	@SUM(R1.2C3)
4	1 5	1 5 0	@SUM(R4C1.2)



(Row 4 is moved to row 2.)

	1	2	3
1	1 0	1 0 0	@SUM(R1C1.2)
2	1 5	1 5 0	@SUM(R2C1.2)
3	2 0	2 0 0	@SUM(R3C1.2)
4	@SUM(R1.3C1)	@SUM(R1.3C2)	@SUM(R1.3C3)

2.1.16 DELETE Function

The DELETE function allows you to delete rows or columns as follows:

1	ROW1	
2	ROW2	
3	ROW3	
4	ROW4	
5	ROW5	



(Rows 3 and 4 are deleted.)

1	ROW1	
2	ROW2	
3	ROW5	

Deleting a row or column erases it from the screen. Any addresses referring to that row or column will be displayed as 0.

	1	2	3
1	1 0	1 0 0	+R1C1+R1C2
2	2 0	2 0 0	+R2C1+R2C2
3	3 0	3 0 0	+R3C1+R3C2
4	+R1C1+R2C1+R3C1	+R1C2+R2C2+R3C2	+R1C3+R2C3+R3C3



(Row 2 is deleted.)

	1	2	3
1	1 0	1 0 0	+R1C1+R1C2
2	3 0	3 0 0	+R2C1+R2C2
3	+R1C1+0+R2C1	+R1C2+0+R2C2	+R1C3+0+R2C3

2.1.17 INSERT Function

The INSERT function allows you to insert rows or columns. Rows or columns inserted do not contain data, expressions, or column expressions, and assume the same data type assigned during table creation.

1	ROW1	
2	ROW2	
3	ROW3	
4	ROW4	
5	ROW5	



(Two rows are inserted between rows 1 and 2.)

1	ROW1	
2		
3		
4	ROW2	
5	ROW3	
6	ROW4	
7	ROW5	



The width of each column must be specified when inserting columns. Any addresses pointing to the insertion position are converted so that they point to the original address.

	1	2	3
1	1 0	1 0 0	@SUM(R1C1.2)
2	2 0	2 0 0	@SUM(R2C1.2)
3	@SUM(R1.2C1)	@SUM(R1.2C2)	@SUM(R1.2C3)



(One row is inserted between rows 1 and 3.)

	1	2	3
1	1 0	1 0 0	@SUM(R1C1.2)
2			
3	2 0	2 0 0	@SUM(R3C1.2)
4	@SUM(R1.3C1)	@SUM(R1.3C2)	@SUM(R1.3C3)

After a graph type is specified, "CURSOR + " is displayed in F9. F9, which is effective during graph definition, is used to backspace the cursor to the previous item. If the entries from INPUT GRAPH TYPE to INPUT END DATA are redefined, input all the entries again. To move the cursor down one line, press  or .

When the graph page is temporary or if the graph is being redefined, "CANCEL" is displayed in F12 to allow you to cancel the definition.

(2) Page

When specifying a page for graph creation, you must use a page in the same book as the table. Specifying page 0, a page containing a graph, or a non-existent page will cause an error. When a table number is entered, the title is automatically displayed.

When a graph is redefined, the page number may not be displayed.

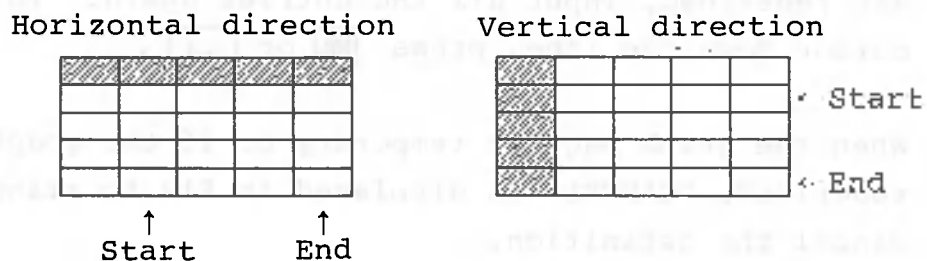
(3) Row/column data

Specifies whether the lines or bars of the graph will be based on row (horizontal) or column (vertical) data. Specify 0 for row data, and 1 for column data. One or the other must be selected, since a number other than 1 or 0 will produce an error.

When this option is specified, "→→" is displayed in F10, and "←←" in F11. At the same time, table data is displayed on the two lines at the bottom of the screen to allow you to specify a range. When a row-oriented graph is created (i.e., 0 is selected), the first 10 data items of row 1 are displayed. To display the next 10 items, press F10; to display the previous 10 items, press F11. When a column-oriented graph is created (i.e., 1 is selected), the first 10 data items of column 1 are displayed.

{4) Range

Specifies the start and end data in the rows and columns that will be included in the graph as follows:



Note: Data corresponding to the shaded area is displayed on the two lines at the bottom of the screen.

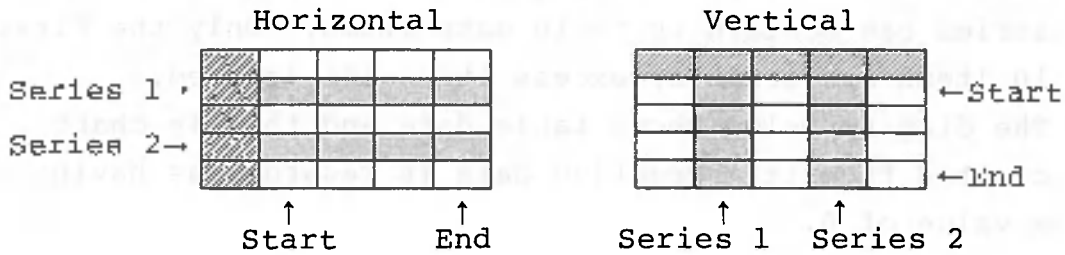
Specify column numbers for a row-oriented graph, and row numbers for a column-oriented graph. The number must be 2 or greater because row 1 and column 1 are assumed to contain titles. Refer to the two lines at the bottom when specifying a range.

The titles are automatically displayed on the graph screen as titles for the horizontal axis or as a legend, except when row 1 or column 1 contains numeric data.

Up to 10 characters can be displayed. The start row or column number must be less than the end row or column number.

(5) Series

Specifies the rows or columns of data that will be graphed as follows:



Note: Data corresponding to the shaded area is displayed on the two lines at the bottom of the screen.

Specifies row numbers to graph table data horizontally, and column numbers to graph table data vertically. Specifying a nonexistent row or column number will cause an error. Refer to the data displayed on the two lines at the bottom of the screen when specifying row or column numbers.

The title in the first cell of the row is displayed in the graph when a row is specified. When a column is specified, the title in the first cell of the column is displayed in the graph. However, if the first cell contains numeric data, no title will be displayed.

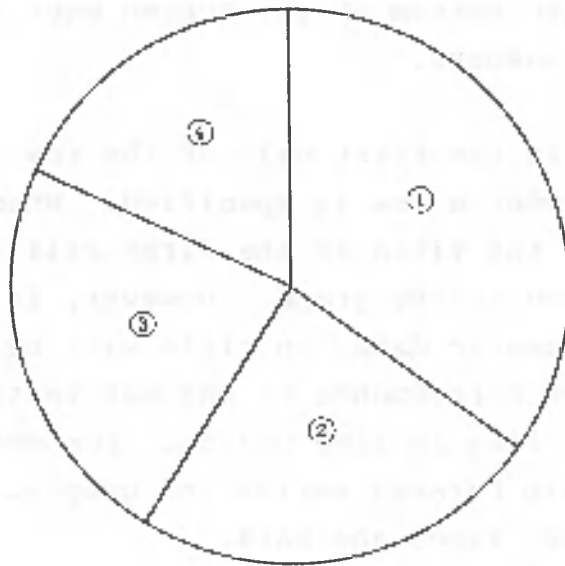
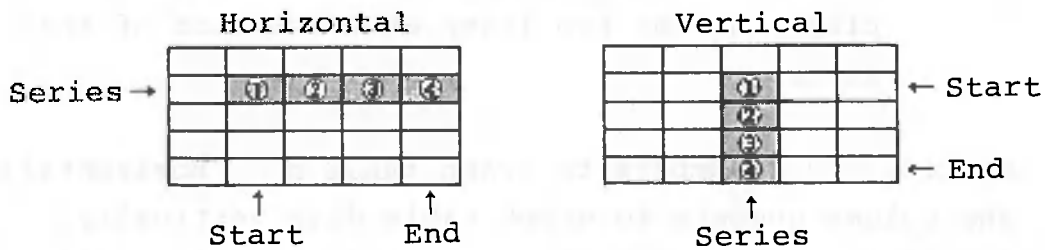
Each series corresponds to one bar in the bar graph, and to one line in line charts. For details about the relationship between series and graphs, see Section 2.2.2, Graph Types and Data.

After specifying the desired series, press F1 (END DEF.) to display the graph.

2.2.2 Graph Types and Data

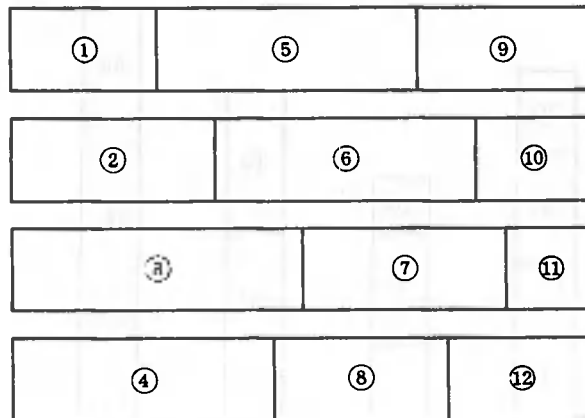
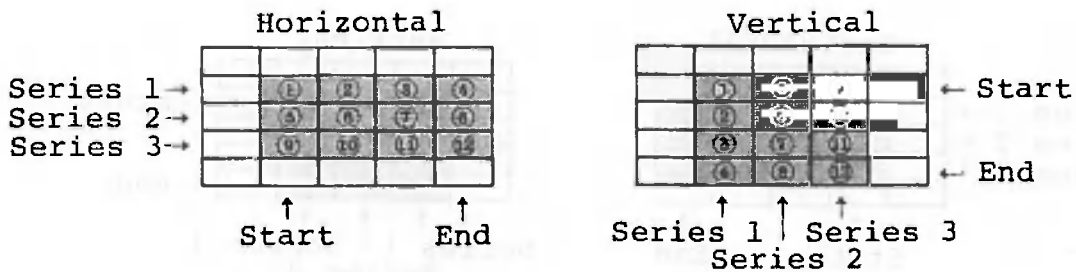
(1) Pie chart

Only one series can be specified for a pie chart. A series can contain up to 10 data items. Only the first 10 items are graphed; excess items are ignored. The diagram below shows table data and the pie chart created from it. Negative data is regarded as having a value of 0.



(2) Composition ratio chart

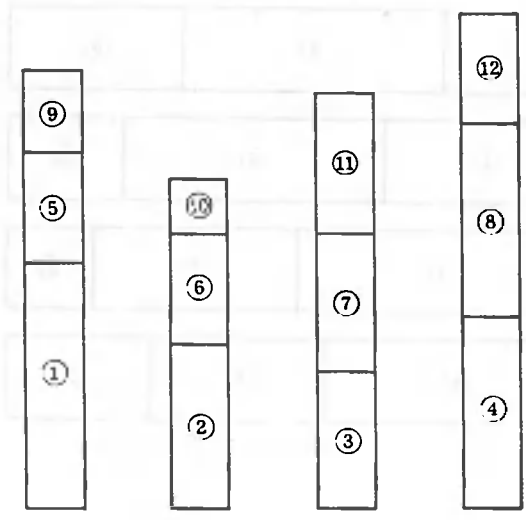
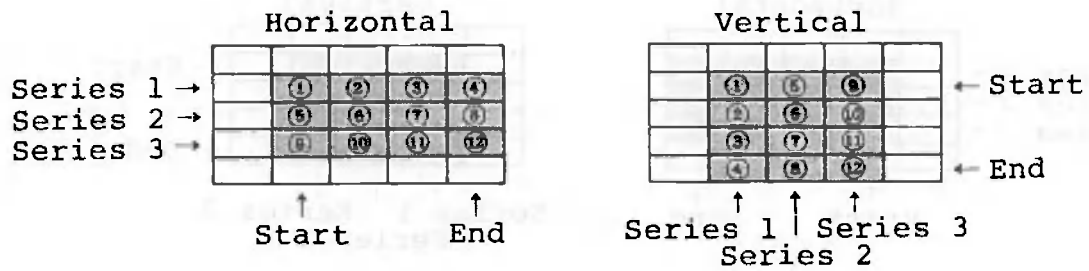
Up to 10 series can be specified for a composition ratio chart. This means that each belt of the chart can be divided into 10 sections. Each series can include up to 31 data items, so the chart can include up to 31 belts. Only the first 31 items from each series are graphed; excess data items are ignored. The diagram below shows table data and its composition ratio chart. Negative data is regarded as having a value of 0.



(3) Stacked bar chart

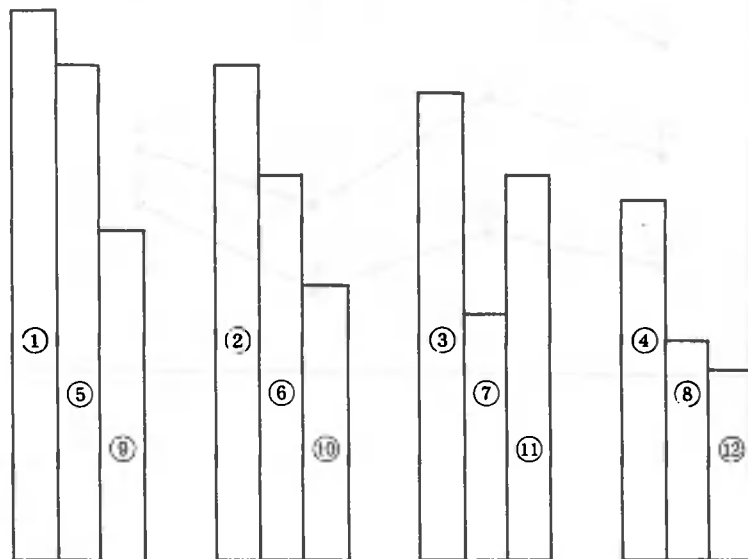
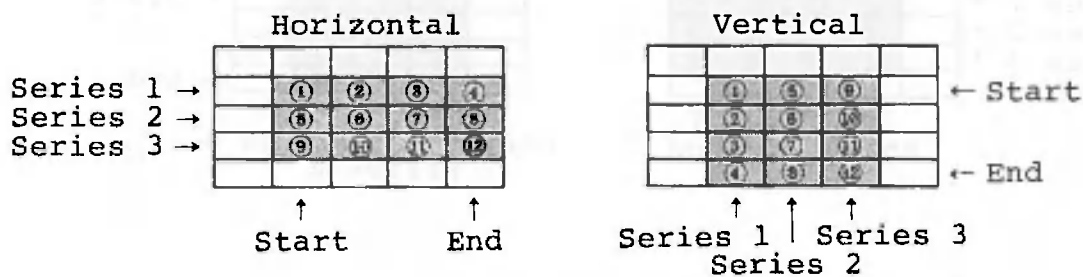
Up to 10 series can be specified for a stacked bar chart. This means that each bar can be divided into 10 blocks. Each series can include up to 31 data items, so the chart can include up to 31 bars. Only the first 31 data items from each series are graphed; excess data items are ignored.

The diagram below shows table data and its stacked bar chart.



(4) Comparative bar chart

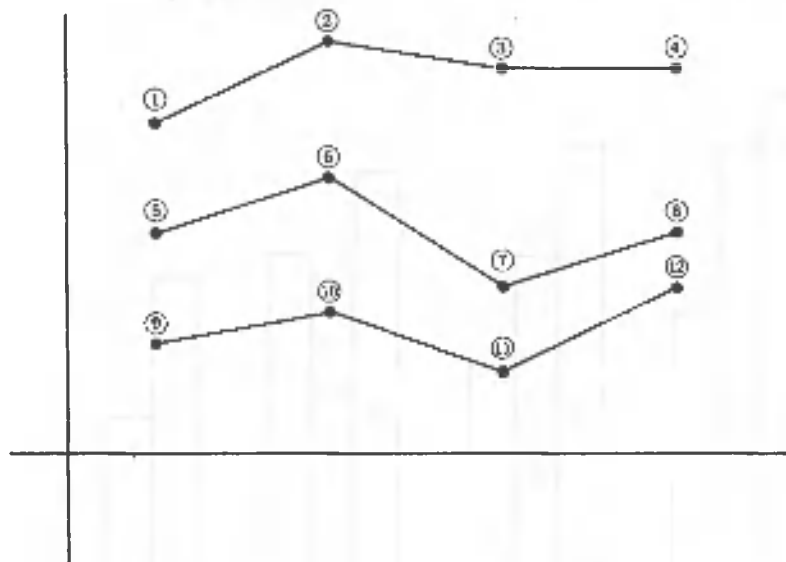
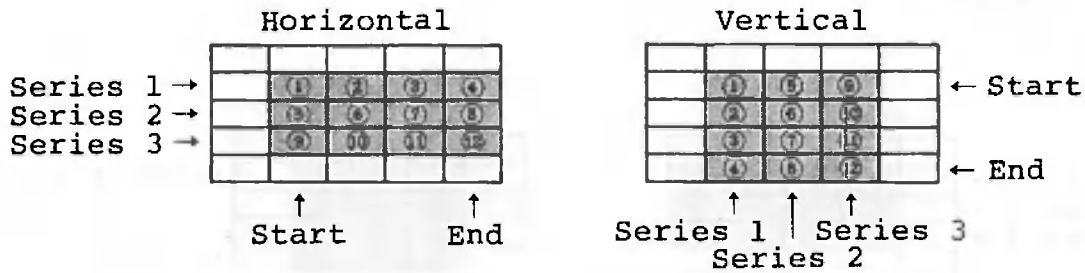
Up to 10 series can be specified for a comparative bar chart. This means that 10 bars can be included in each comparative group. Each series can include up to 31 data items, so 31 groups of bars can be included in one chart. Only the first 31 data items from each series are graphed; excess data items are ignored. The diagram below shows table data and its comparative bar chart.



(5) Line chart

Up to 10 series can be specified for a line chart. This means that one line chart can include up to 10 lines. Each series can include up to 31 data items. Only the first 31 data items from each series are graphed; excess data items are ignored.

The diagram below shows table data and its line chart.

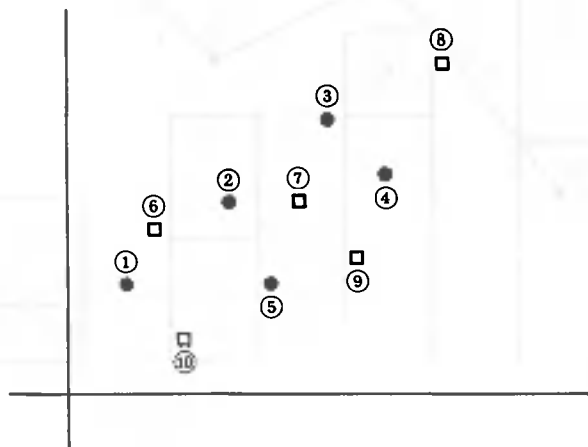
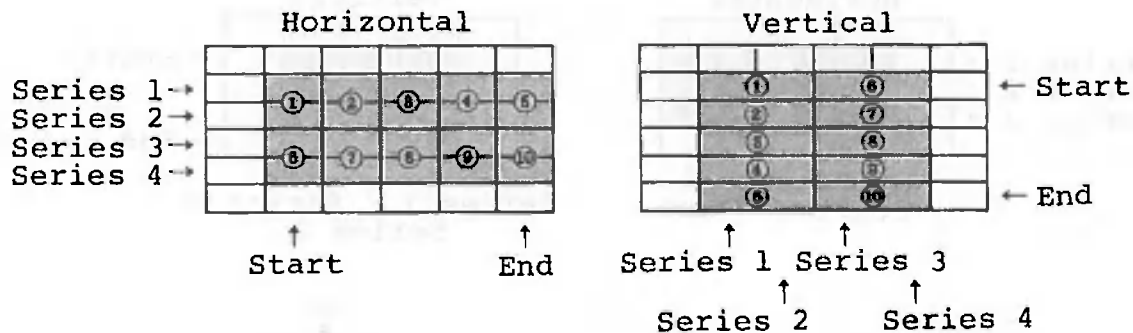


(6) Scatter diagram

Up to 10 series can be specified for a scatter diagram. However, since two numeric values (X axis and Y axis) are required to determine the position of each dot, an even number of series must be specified. This means that up to five types of symbols can be used to display dots. Each series can include up to 31 data items, so 31 dots can be displayed for each symbol.

Only the first 31 data items from each series are graphed; excess data items are ignored.

The diagram below shows the table data and its scatter diagram.

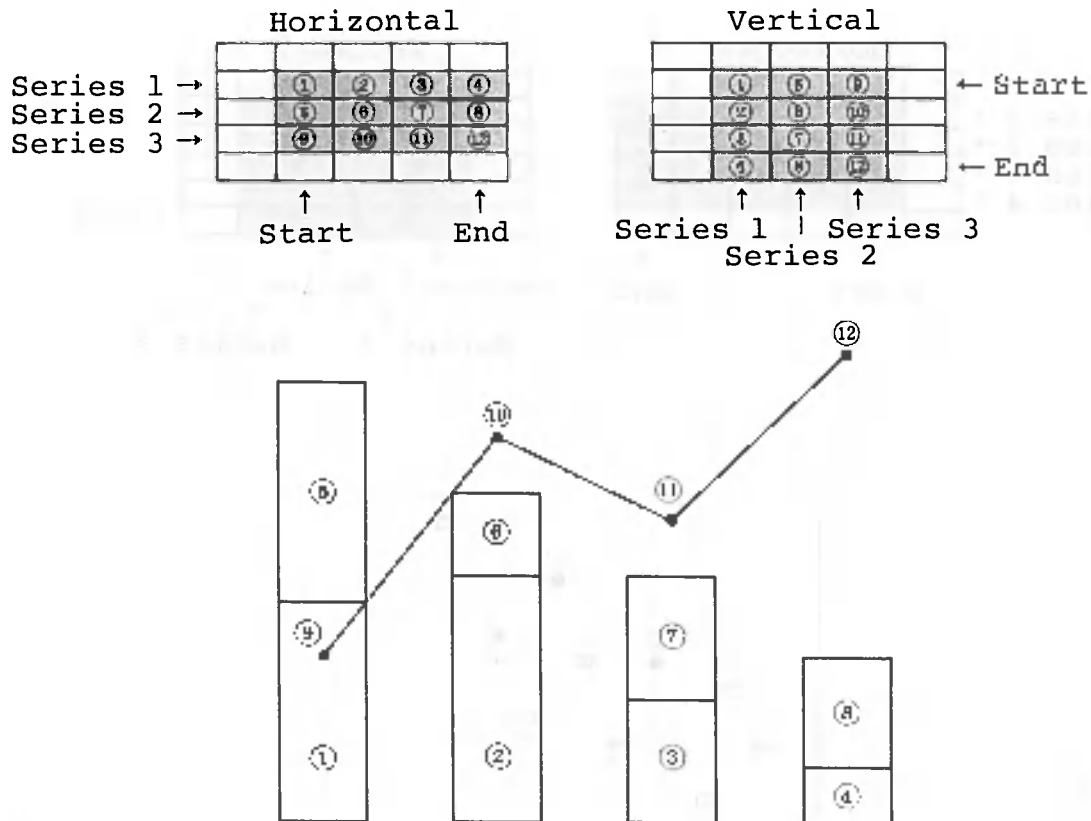


(7) Line and stacked bar chart

Up to 10 series can be specified for a line and stacked bar chart. The number of blocks to be included in the graph must be specified immediately after range specification. The number of lines that can be specified is equal to 10 minus the number of bar chart blocks.

Up to 31 data items can be included in each series, so up to 31 bars and 31 dots can be displayed. Only the first 31 data items in each series are graphed; excess data items are ignored.

The diagram below shows table data and its line and stacked bar chart (the number of blocks is 2).



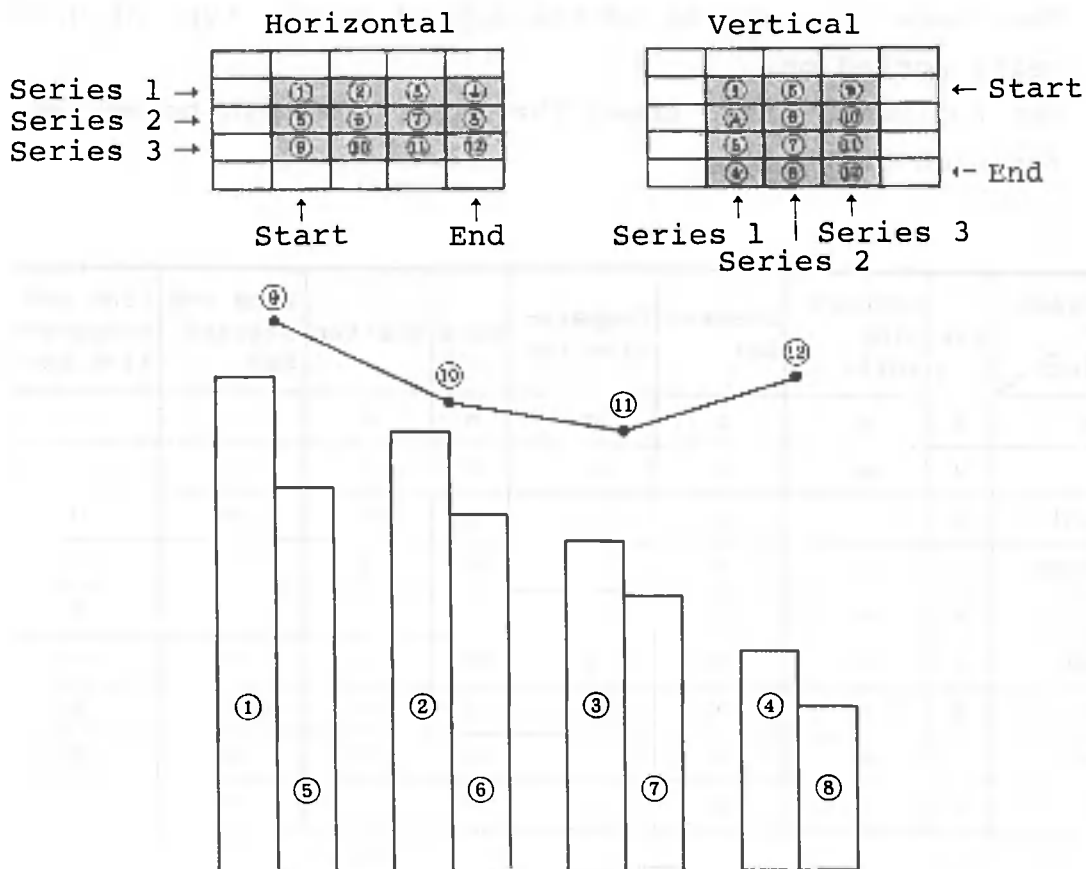
The scale for the bar chart is displayed on the left vertical axis; the scale for the line chart is displayed on the right vertical axis.

(8) Line and comparative bar chart

Up to 10 series can be specified for a line and comparative bar chart. The number of bars to be included in each group must be specified immediately after range specification. The number of lines that can be specified is equal to 10 minus the number of bars included in one group.

Up to 31 data items can be included in each series, so up to 31 groups and 31 dots can be displayed. Only the first 31 data items in each series are graphed; excess data items are ignored.

The diagram below shows the table data and its line and comparative bar chart (the number of bars is 2).



The scale for the bar chart is displayed on the left vertical axis; the scale for the line chart is displayed on the right vertical axis.

2.2.3 Graph Editing

Displayed graphs can be edited automatically. The following items can be edited:

- SCALE
- GRID
- COMMENT
- HATCHING
- LINE
- SYMBOL
- AXIS
- LEGEND
- COLOR

The items that can be edited depend on the type of graph being worked on.

The following table shows the items that can be edited for each graph type:

Graph Editing	Pie	Composition ratio	Stacked bar	Comparative bar	Line	Scatter	Line and stacked bar	Line and comparative bar
Scale	x	x	o	o	o	o	o	o
Grid	x	x	o	o	o	o	o	o
Comment	o	o	o	o	o	o	o	o
Hatching	o	o	o	o	x	x	o	o
Line	x	x	x	x	o	x	o	o
Symbol	x	x	x	x	o	o	o	o
Axis	x	x	x	x	o	o	x	x
Legend	o	o	o	o	o	o	o	o
Color	o	o	o	o	o	o	o	o

o : Can be specified.

x : Cannot be specified.

(1) SCALE

The maximum value, minimum value, and the interval of the vertical axis (Y axis) can be modified. The horizontal axis (X axis) of a scatter diagram can also be modified. Both the right and left vertical axes for line and stacked bar charts and line and comparative bar charts can be modified. However, the minimum value of a stacked bar chart cannot be changed. The following maximum, minimum, and interval values cannot be specified:

- A maximum value that is greater than the largest data value
- A minimum value that is less than the smallest data value
- A negative or zero interval value

When a logarithmic scale is used for an axis, the maximum and minimum values are automatically converted to powers of 10 based on the specified value. In this case, the assigned interval becomes meaningless.

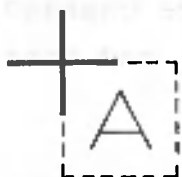
(2) GRID





You can specify whether or not grids are to be displayed. If grids are displayed, you can select vertical grids, horizontal grids, or both.

(3) COMMENT

You can write a character string (comment) on the screen on which a graph is displayed. The specified comment is erased when the graph is redisplayed. Comments are not written on the floppy disk.

When writing a comment, specify the position with the cursor (+). The graphic cursor is positioned as follows:



The graphic cursor is controlled with the cursor keys ( ,  ,  , ). Pressing a cursor key once moves the graphic cursor eight dots (a dot is a luminous point on the screen) in the direction indicated on the key. The distance the graphic cursor moves can be changed by pressing F3 (FAST) or F4 (SLOW). The distance the graphic cursor moves doubles each time F3 is pressed; conversely, the distance halves each time F4 is pressed. The range of movement speeds is as follows:

FAST : 1, 2, 4, 8, 16, 32, and 64 dots

SLOW : 64, 32, 16, 8, 4, 2, 1 dots


When a comment is entered, you must specify whether it is to be displayed horizontally or vertically. Characters entered horizontally are displayed to the right of the graphic cursor. Characters entered vertically are displayed below the graphic cursor. The graphic cursor does not move at this time, nor can it be moved by the cursor keys.



Characters entered : A B C D

Horizontal Vertical

+ ABCD

+ A
B
C
D

40 characters can be entered for a horizontal display, and 20 characters for a vertical display. Character input ends when  is pressed or when the maximum number of characters has been entered.

If characters entered overlap part of a graph, the overlapping part of the graph is erased and cannot be restored until the graph is redisplayed. Input errors can be corrected during input with  or . These keys cannot be used after the characters have been entered.

(4) HATCHING

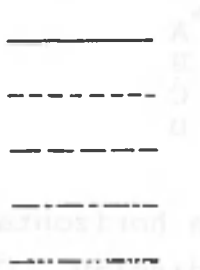
The following patterns are available:



Hatching cannot be specified for line charts and scatter diagrams.

(5) LINE

The following line types are available for line charts:



The no-line option can also be specified.

(6) SYMBOL

The following symbols are available for line charts and scatter diagrams:



The no-symbol option can also be specified.

(7) AXIS

A logarithmic scale can be used for the axes of line charts or scatter diagrams. For line charts, a logarithmic scale can be used only for the vertical (Y) axis. It cannot be used when line charts and bar charts (stacked or comparative bar charts) are displayed together. It can be used for both the horizontal and vertical axes of a scatter diagram. The scales used for line charts and scatter diagrams are listed in the following table:

	Line chart	Scatter diagram
Linear	Linear scales for both axes	Linear scales for both axes
Logarithmic scale (X-axis)	Linear scales for both axes	Logarithmic scale for horizontal (X) axis only
Logarithmic scale (Y-axis)	Logarithmic scale for vertical (Y) axis only	Logarithmic scale for vertical (Y) axis only
Logarithmic scale for both	Logarithmic scale for vertical (Y) axis only	Logarithmic scale for both axes

Logarithmic scales cannot be used when the table contains negative or zero data or when part of the graph is not displayed.

(B) LEGEND

The legend option allows you to display a legend to the right of the graph. If this option is not desired, the graph is automatically expanded to the right.

(9) COLOR

This is effective only when the system being used has a color display. A total of 27 colors, (or no color, as preferred), can be used; however, only 8 colors can be displayed at one time.

When any of the original colors used in a graph is changed to another color, all areas displayed in that color are also changed. In other words, the color is changed for the entire series of related data.

2.2.4 HARD COPY

The hard copy option allows you to produce a hard copy of a graph. The four lines at the bottom of the screen are not printed out. Instead, a horizontal line is printed below the graph.

If the system has no printer, or has a printer other than the A-1200, A-1210, or A-1250, no hard copy will be produced.

To stop printing, press .

2.2.5 TABLE EDIT

The table editing option allows you to edit the table on the page specified during graph definition.

The editing procedure is the same as that for table processing.

After data is updated, graphs are generated based on the updated data. If the scale or axes of the original data cannot be used for the updated data, they are automatically changed for the updated data. The grid, hatching, lines, symbols, legend, and colors do not change.

2.2.6 REDEF(Redefinition)

When the redefinition option is selected, the graph definition screen will be displayed. During the redefinition process, the displayed graph will be erased. Please note that using this option will cause the pertinent data on the floppy disk to be deleted.

2.2.7 RETURN

The return option ends graph processing. At this time, if the graph has been written on the same page on the floppy disk, CANOBRAIN asks you if the graph is to be updated. Specify graph format information, such as graph types or hatching, if it is to be updated. The screen will then change to the index screen.

When the redefinition option is selected, the graph definition screen will be displayed. During the redefinition process, the displayed graph will be erased. Please note that using this option will cause the permanent data on the floppy disk to be deleted.

3.2.7 RETURN

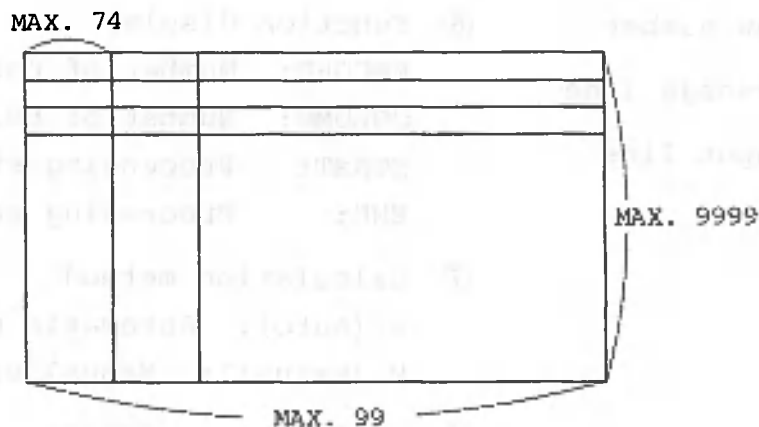
The return option ends graph processing. At this time, if the graph has been written on the same page on the floppy disk, CAROBRAIN asks you if the graph is to be updated. Specify graph format information, such as graph types or batching, if it is to be updated. The screen will then change to the index screen.

3.1 Defining a Roll

For a roll to be defined, the number of rows and columns in the roll and the number of characters and attributes for each column must be specified. They must be within the following ranges:

- Number of rows in a roll: 1 - 9999
- Number of columns in a roll: 1 - 99
- Number of characters in each column: 1 - 74

Note that the number of characters of a roll row must not be greater than 512. For example, 7 columns, each consisting of 74 characters ($7 \times 74 = 518$), cannot be defined.



After a roll has been defined, the attributes of each column must be specified. For a list of possible attributes, see Section 3.7, Format Definition.

3.2 Data Processing

(1) Screen

0	BRANCH	FUNCTION	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY
	AMSTERDAM	REFRIGERATOR	140	120	200	160	140	150	1
	AMSTERDAM	T.V. SET	160	200	100	120	170	160	1
	BIRMINGHAM	RADIO	320	170	250	320	190	170	1
	BIRMINGHAM	T.V. SET	510	420	570	300	420	400	3
	BOMBAY	RADIO	620	500	760	700	640	520	5
	BOMBAY	REFRIGERATOR	420	310	390	440	280	300	3
	BOMBAY	T.V. SET	780	650	680	740	760	640	7
	BOSTON	RADIO	260	180	320	270	280	330	2
	BOSTON	REFRIGERATOR	320	360	410	280	260	330	2
	CAIRO	RADIO	240	150	130	210	250	140	1
	CAIRO	REFRIGERATOR	190	130	170	280	150	180	2
	CAIRO	T.V. SET	380	390	270	340	310	380	2
	CALCUTTA	RADIO	260	230	210	250	270	270	2
	CALCUTTA	T.V. SET	520	470	420	630	420	300	4
	CHICAGO	RADIO	470	410	380	500	360	310	4
	CHICAGO	REFRIGERATOR	340	280	310	250	240	300	2
	DETROIT	RADIO	620	510	550	660	430	480	3
	DETROIT	T.V. SET	870	660	950	860	770	600	8

RECORD= 50 COLUMN= 15 START= 1 END= 50

INPUT INPUT PAY. DATA GEN. DUPLICATE FORMATTING RETRIEVAL
 SORT REPORTING UTILITY RETURN

SELECT FUNCTION(F1-F12,COPY,MOVE,DELETE,INSERT) data PROC. TRICK
 ROLL 21 1 1

- ① Cell cursor
- ② Row number
- ③ Message line
- ④ Input line
- ⑤ Column number
- ⑥ Function display
 RECORD: Number of roll rows
 COLUMN: Number of roll columns
 START: Processing start row
 END: Processing end row
- ⑦ Calculation method
 A (Auto): Automatic calculation
 M (Manual): Manual calculation
- ⑧ Cell cursor address
- ⑨ Processing status, column attribute, or error message

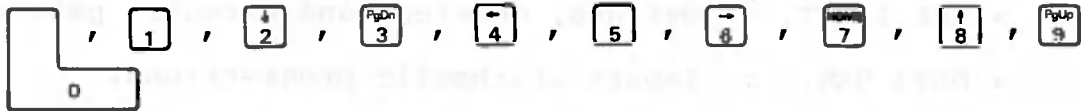
If a color display is used, data is displayed in the following colors:

- Cell cursor : White
- Five lines at the bottom : White
- Negative data : Cyan
- Other : Green


(2) Moving the cell cursor



You can move the cell cursor during data processing in one of the following ways:

- Press one of the following keys:








- 0 : Used to display the left side of screen.
- 1 : Used to display the right side of screen.
- 2 : Used to move the cell cursor down.
- 3 : Used to scroll the screen up.
- 4 : Used to move the cell cursor to the left.
- 5 : Used to move the cell cursor to the last row of the last column.
- 6 : Used to move the cell cursor to the right.
- 7 : Used to move the cell cursor to the first row of the first column.
- 8 : Used to move the cell cursor up.
- 9 : Used to scroll the screen down.

- Specify an address and press .
- Use a pointing device.

If a key on the ten-key pad is pressed when  is on, only the lines indicated by START and END are processed. If  is pressed, all the rows in the roll are processed. If you try to move the cell cursor to a location outside the screen, the screen will automatically scroll.

(3) Processing

The following functions can be executed during data processing:

- INPUT : Inputs, corrects, and deletes data.
- INPUT PAT. : Defines, deletes, and executes patterns.
- DATA GEN. : Inputs arithmetic progressions.
- DUPLICATE : Duplicates columns and rows.
- FORMATTING : Alters attributes or column widths, etc.
- RETRIEVAL : Retrieves data.
- SORT : Sorts data.
- REPORTING : Prints tables.
- UTILITY : Inputs/outputs data from/to IBM-format floppy disks or RJE-86 files.
- RETURN : Returns to the roll list screen.
-  : Copies rows or columns.
-  : Moves rows or columns.
-  : Deletes rows or columns.
-  : Inserts rows or columns.
-  : Start or end the permanent display of column 1.

3.3 INPUT Function

R-C	BRANCH	PRODUCT	JAN	FEB	MAR	APR	MAY	JUNE	JUL
0		REFRIGERATOR	140	120	280	160	140	150	1
	AMSTERDAM	T.V. SET	160	200	180	120	170	150	1
	BIRMINGHAM	RADIO	320	170	250	320	190	170	1
	BIRMINGHAM	T.V. SET	510	420	570	380	420	440	3
	BOMBAY	RADIO	620	580	760	700	640	520	5
	BOMBAY	REFRIGERATOR	420	310	390	440	280	300	3
	BOMBAY	T.V. SET	780	650	680	740	760	640	7
	BOSTON	RADIO	260	180	320	270	280	330	2
	BOSTON	REFRIGERATOR	320	360	410	280	260	330	2
	CAIRO	RADIO	240	150	130	210	250	140	1
	CAIRO	REFRIGERATOR	190	130	170	280	150	180	2
	CAIRO	T.V. SET	380	390	270	340	310	380	2
	CALCUTTA	RADIO	260	230	210	250	270	270	2
	CALCUTTA	T.V. SET	520	470	420	630	420	380	4
	CHICAGO	RADIO	470	410	380	500	360	310	4
	CHICAGO	REFRIGERATOR	340	280	310	250	240	300	2
	DETROIT	RADIO	620	510	550	660	430	480	3
	DETROIT	T.V. SET	870	660	950	860	770	600	8

RECORD= 50 COLUMN= 15 START= 1 END= 50

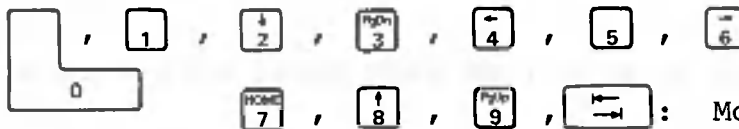
INPUT INPUT PAT. # CONT. RET. DUPLICATE FORMATTING RETRIEVAL

EDIT SPECIALTY PRINT

SELECT FUNCTION(F1-F12, COPY, MOVE, DELETE, INSERT) DATA PROC. (R/C)

ROLL 2

The following functions can be executed during data input:


 : Move the cell cursor.

- INPUT : Inputs characters, symbols, and numeric values.
- CORRECT : Corrects characters, symbols, and numeric values.
- DELETE : Deletes data.
- COL. EXP. : Inputs, corrects, and deletes column expressions.
- RETRIEVAL : Sets retrieval conditions.
- CONT. RET. : Continues retrieval under the same conditions.
- TOTAL : Calculates the total data of multiple rolls of the same format.
- RETURN : Returns to the data processing screen.

A book and a roll differ in the following area:

- Only column expressions are used for a roll.

3.4 INPUT PAT. (Input Pattern) Function

Patterns can be entered in a roll in the same way they are entered in a book. See Section 2.1.4, INPUT PAT.

3.5 DATA GEN. (Data Generation) Function

Roll data is generated in the same way book data is generated. See Section 2.1.5, DATA GEN.

3.6 DUPLICATE Function

Roll data is copied in the same way book data is copied, with the three following exceptions:

- The attribute of a TO item must agree with that of a FROM item.
- The items on row 0 can be copied only to row 0 of another roll or to a different location in row 0 of the same roll.
- When copying data from one column to another, the item names (row 0) are not copied.

3.7 FORMATTING Function

During formatting, the attributes of each column or the column widths defined at roll creation time can be changed. The items given below can be changed:

- Data type:
Column attributes (character, numeric) can be changed.
- Character shift:
Characters can be right-justified.
- Numeric value format:
The numeric value of a string can be changed to the general format (E notation if the value cannot be contained in a screen cell), integer format, or decimal format.
- Numeric value editing:
Commas can be inserted after every third digit.
The plus (+), minus (-), and dollar (\$) signs can also be attached.
The rounding options (round down, round off, round up) can be specified for decimal fractions.
- Column width:
Column widths (number of character in a column) can be changed.
- Calculation method:
Calculations can be performed automatically (automatic) or be delayed until specified (manual).
- Data protection:
Data can be protected so that it is not changed during data input or recalculation.

(1) Data type

There are two kinds of attributes: character and numeric. The following points must be considered when changing data types:

- When the data type is changed, data other than item names (row 0) is lost.

- If the attribute of a numeric value is changed to the character type, the column width is adjusted automatically to 8 characters. Thus, if an item name (row 0) is longer than 8 characters, the excess characters will be truncated.

The following table lists the relationship among the data types, character shift, numeric formats, and numeric value editing:

Option \ Data type	Character	Numeric
Character shift	o	x
Numeric format	x	o
Numeric editing	x	o

o : Can be specified.

x : Cannot be specified.

(2) Character shift

Character shift specification is effective only when the column has the character attribute. Characters on row 0, however, can be changed regardless of column attributes. Right-justification is assumed for a roll that has been created.

(3) Numeric value formats

These are identical to formats used for books, except that format specification is effective only when the column has the numeric attribute.

(4) Numeric value editing

This is specified in the same way as for a book table, except that numeric value editing options can be specified only when the column has the numeric attribute.

(5) Column width alteration

Column widths are changed in the same way as book column widths.

(6) Calculation method

The specified calculation method is effective for the entire roll. When 'automatic' is specified, calculation of the related expression is performed immediately after data is changed. When 'manual' is specified, calculation is not performed until specified. For a roll, calculation is performed immediately after the end of data input mode. In the manual mode, however, calculation is performed if data is entered by specifying a row, not indicated by START and END, for the address immediately after the colon (:). Calculation can be restarted by entering '!' via the data processing or data input screen.

The calculation method, automatic or manual, is displayed at the far end of row 3 as follows:

A : Automatic
M : Manual

Immediately after a roll is defined, A (Automatic) is assumed.

(7) Data protection

Individual columns of roll data can be protected. If data protection is specified for a column, the cell cursor skips that column to prevent data, except a column expression, from being entered in the cells. If a column expression is in the column, recalculation is not performed and data and expressions cannot be deleted.

If data protection is removed from a column containing a column expression, the message "RECALCULATION OK?" will be displayed.

(8) Status column

In the status column, information such as the width and the attribute of the column where the cell cursor is positioned is displayed. when INPUT, INPUT PAT., or FORMATTING is selected.

The following symbols are displayed:

1	2	3	4	5	6	7	8	9	10	11		
m	m	C	L	/								
			R									
		N		R	┌	┌			E	□	P	
				I	┌	┌			C	D	O	
				D	n	n			T	U	┌	
		K	L	/								
			R									

Meaning of status indicators

- Data type (character 3)
 - C: Character
 - N: Numeric
- Character shift (character 4)
 - L: Left-justified
 - R: Right-justified
- Numeric value format (character 5)
 - R: Real
 - I: Integer
 - D: Decimal
- Numeric value editing (characters 8, 9)
 - C: With comma
 - ┌: Without comma
 - Editing: 0, +, -, *, ┌, \$
- Rounding (character 10)
 - D: Round down
 - O: Round off
 - U: Round up
- Data protection
 - P: Protected
 - ┌: Not protected

Where mm is the column width, nn is the number of fractional places, and ┌ indicates a blank.

3.8 RETRIEVAL Function

Data satisfying set conditions can be retrieved and displayed on the screen or outputted in another roll. If data satisfying the condition is not found, 'DATA ERR.' is displayed in the error message column on the second line from the bottom.

A condition is specified in the same way as it is for a book. A conditional expression is from 1 to 80 characters long. Up to 15 retrieval condition patterns can be registered.

3.9 SORT Function

Rows can be sorted in ascending or descending order, and up to five columns can be specified as sort keys. Note that a particular character within a column cannot be specified as a condition. Sorted results can be outputted in another roll by specifying the roll name or number. In this case, a sort range can be specified. Up to 15 sort conditions can be registered as patterns.

3.10 REPORTING Function

Using the printer, all roll data or selected data can be printed out by specifying conditions. Roll data is printed in the same way as book data, with the following exceptions:

- Item names (row 0) are printed below the header of each page.
- A specified number of spaces can be inserted before each column.
- Roll data can be printed while calculations are being performed on it.

When concurrent calculation is specified, a total is printed if the contents of the specified column do not match those of the specified column on the preceding row. The grand total is also printed out at the end. If the column specified has the character attribute, it can be specified that the total be printed when the specified portion of a particular character string does not match the corresponding portion of the corresponding character string on the preceding row.

[Example]

A-1200	If the last two characters are used for
A-1200	comparison in this example, specify the
A-1210	two-character string starting with the
	fifth position. An intervening blank is
	counted as one character.

3.11 UTILITY Function

When the UTILITY function is selected, you can input data from or output data to either an AS-100 floppy disk for use by online software packages (RJE-86) or an IBM-format floppy disk. This function is available only with systems using 8-inch floppy disk.

Layouts such as record format can be registered for later use. Layouts can also be registered in a total pattern.

3.11.1 FILE Function

Files that can be transmitted via RJE-86 can be used. Like CD files, these files can be used by other programs coded in such languages as BASIC or COBOL.

Note that when roll data is outputted in a file, only the integer part is outputted on the floppy disk.

If the width of a column differs from the length of the corresponding field when data is transferred, the following truncation or padding is will be performed:

- Length of data sent > Length of receiving area:
The data is truncated to the length of the receiving area.
- Length of data sent < Length of receiving area:
When data is sent from a file to a roll, trailing null (00) characters or leading zeros are added for character data or numeric data, respectively. When data is sent from a roll to a file, trailing spaces or leading zeros are added for character data or numeric data, respectively.

3.11.2 IBM FORMAT Function

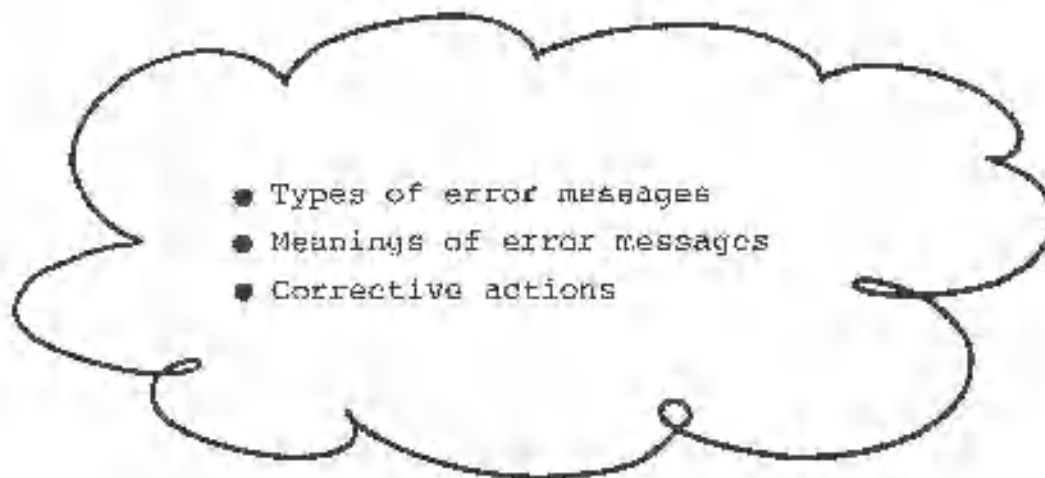
Data can be read from or written to 8-inch IBM format floppy disks. The following two types of floppy disks are available as IBM-format disks:

- Single-sided, single-density, 128 bytes/sector
(The exchange indicator in the file label is blank.)
- Double-sided, double-density, 256 bytes/sector
(The exchange indicator in the file label is 'H'.)

Floppy disks meeting the above standards may not be usable under certain conditions. For details on IBM-format floppy disks' internal code, see Appendix 2. For data transfer processing and notes on it, see Section 3.11.1, FILE Function.

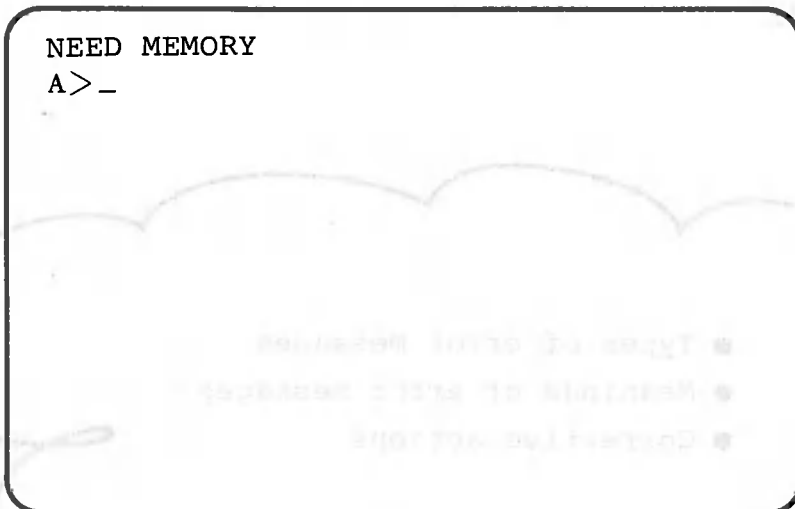
Chapter 4 - ERROR MESSAGES AND CORRECTIVE ACTIONS

This chapter explains the various error messages displayed by CANOBRAIN. It also explains what to do when an error message is displayed.



4.1 Error Messages Displayed during Start-up

Error messages are displayed in the top left-hand corner of the screen if an error occurs during CANOBRAIN start-up.



Error messages displayed during CANOBRAIN start-up and the steps to take to clear the error are shown in the table below.

Error message	Meaning	Remedy
NEED MEMORY	Memory area available is insufficient.	Expand memory.
xxxxxxxxxx ERR.	File xxxxxxxxxxxx is not found on the floppy disk or cannot be created.	Replace the floppy disk with another and try again if xxxxxxxxxxxx is any of the following: <ul style="list-style-type: none"> • SYSTEM CAT • BOOK CAT • FILE CAT • CALOG CAT. If anything else is displayed for xxxxxxxxxxxx, make a new system floppy disk and try again.
COMMAND ERR.	Erroneous procedures have been taken to activate CANOBRAIN.	Restart at power-on.

Note: x indicates a letter or number.

4.2 Error Messages Displayed during Password Registration

The error message "FULL" is displayed if you try to register more than 20 passwords.

```

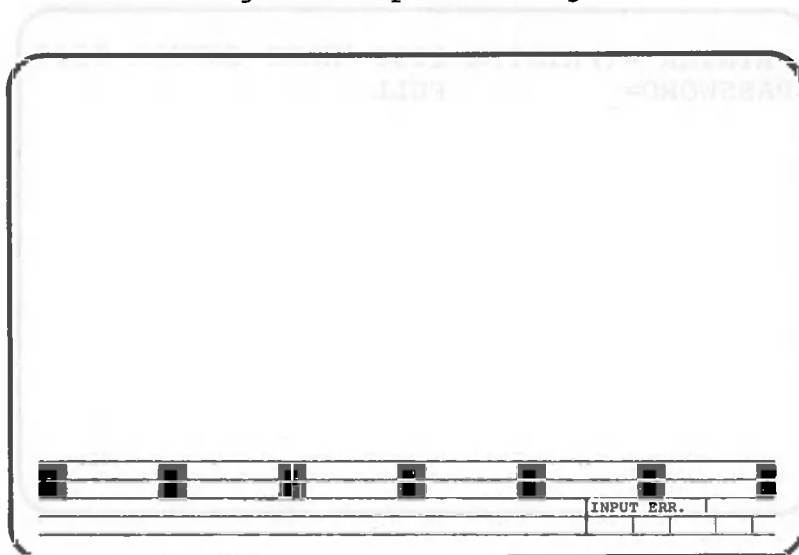
PRINTER =(PRINT)A-1200 (HARD COPY)A-1200
PASSWORD=_          FULL
    
```

Remember that only 20 passwords can be registered. No other passwords can be registered when this error message is displayed. Use one of the passwords already registered, omit the password, or prepare a new data floppy disk.

Remedy	Meaning	Error message
Return to the roll list or index screen, and register the same roll as back. If data has been corrupted, delete the desired paper, book, roll, perforator and then re-register the operation. It may be that the operation, register, copy, more, insert or delete is now in column, or other column width was not	The data floppy disk was full, or no data space could be allocated for the way file when an attempt to perform a COPY, MORE, INSERT or DELETE is now in column, or other column width was not	Volume full
Deplete the roll from the pattern. If the pattern is not available, attempt to register the operation.	The roll was empty after pattern or a roll pattern was not available. The pattern width was not	Roll empty

4.3 Error Messages Displayed during Table Processing

The corresponding error message is displayed at the right of the second line from the bottom of the screen if an error occurs during table processing.



Error messages displayed during table processing and procedures for handling them are as described in the table below.

Error message	Meaning	Remedy
VOLUME FULL	The data floppy disk was full, or no file space could be allocated for the work file when an attempt to perform a COPY, MOVE, INSERT or DELETE of rows or columns, or change of column width was made.	Return to the roll list or index screen, and reselect the same roll or book. If data has not been destroyed, delete undesired pages, books, rolls, patterns and then total patterns and retry the operation. If data has been destroyed, replace the disk with the backup one and delete undesired things as described above. Then retry the operation.
PATTERN ERR.	The table was edited after patterns or a total pattern had been registered, making pattern execution impossible.	Delete the pattern or total pattern you attempted to execute, and reregister it.

(Continued)

Error message	Meaning	Remedy
CD FILE ERR.	An attempt was made to read a file other than a CD file.	Check the CD file name, then try again.
INPUT ERR.	An incorrect data item, expression, or address was entered.	The cursor moves to the error; enter the correct data, item, expression, or address.
FORMAT ERR.	Data generation cannot be used to enter numbers to a column with the character attribute.	Change the attribute of the column.
	The range specified for retrieval, sorting, or printout/retrieval included both character and numeric data.	Change the range specification so that only one type of data is included, or change the data type.
LACK MEMORY	Insufficient memory area was available for table processing.	End CANOBRAIN operation, then start over after turning the power off and on again. If the error message is still displayed, expand the memory.
DATA ERR.	No data was found which satisfied the conditions specified for a retrieval or printout/retrieval operation.	Make sure the conditions were correctly specified, then try again, or re-specify the range of the operation.
ERR.	An incorrect book or page number was entered.	The cursor moves to the error; enter the correct book or page number.
OVERLAP ERR.	The title specified for a new book, page, or total pattern has already been used. The title specified as the new title has already been used.	Enter a different title and try again.
ROW NO. OVER	The number of rows specified to contain the transferred roll data was insufficient.	Specify a greater number of rows and retry the operation.
COMMAND ERR.	Part of the data floppy disk contents have been destroyed.	Replace the disk with a new one and retry the operation.

(Continued)

Error message	Meaning	Remedy
WIDTH OVER	One of the columns is too wide, and a fixed display of the first column cannot be maintained.	Press <input type="checkbox"/> and continue the operation.
NO FIXED COL	The first column cannot be fixed because only one column has been defined.	Press <input type="checkbox"/> and continue the operation.
NO FILE	The specified file could not be found in the disk written in the IBM format.	Confirm that the file name specified was correct. If it was correct, create the specified file on the disk.
OPEN ERR.	The specified file cannot be opened.	Insert the system disk in drive A and press <input type="checkbox"/> F12 . Check the IBM-format disk.
READ ERR.	Data cannot be read from the specified file.	Same as above.
WRITE ERR.	Data cannot be written to the specified file.	Same as above.
CONVERT ERR.	Numeric data on the IBM-format disk was arranged incorrectly.	Same as above.
OVERFLOW	A numeric value was too large and could not be converted.	Same as above.
DATA ERR.	Layout information was incorrect and data was not transferred.	Insert the system disk in drive A and press <input type="checkbox"/> F12 , then redefine the layout.
I/O ERR.	An error occurred during I/O operation.	Insert the system disk in drive A and press <input type="checkbox"/> F12 , then check the IBM-format disk.

(Continued)

Error message	Meaning	Remedy
LENGTH ERR.	Numeric roll data could not be outputted to the disk because the length of the field assigned to that numeric data was too short.	Insert the system disk in drive A and press F12 . Redefine the layout to increase the length of the field.
CLOSE ERR.	The specified file could not be closed.	Insert the system disk in drive A and press F12 . Check the IBM-format disk.
I. OPEN ERR.	The data floppy disk contents have been destroyed.	Terminate CANOBRAIN and use another data disk.
D. OPEN ERR.	Same as above.	Same as above.
I. READ ERR.	Same as above.	Same as above.
D. READ ERR.	Same as above.	Same as above.
F. OPEN ERR.	Same as above.	Same as above.
F. READ ERR.	Same as above.	Same as above.
R. REG ERR.	Same as above.	Same as above.
I. DEL. ERR.	Same as above.	Same as above.
D. DEL. ERR.	Same as above.	Same as above.
RI UNDEF	Same as above.	Same as above.
ROLL UNDEF	Same as above.	Same as above.
INIT 31 ERR.	The system disk contents have been destroyed.	Terminate CANOBRAIN and make a new backup copy of the system disk.
31 OPEN ERR.	Same as above.	Same as above.
31 LOAD ERR.	Same as above.	Same as above.
32 OPEN ERR.	Same as above.	Same as above.
32 LOAD ERR.	Same as above.	Same as above.
33 OPEN ERR.	Same as above.	Same as above.
33 LOAD ERR.	Same as above.	Same as above.

(Continued)

Error message	Meaning	Remedy
34 OPEN ERR.	An attempt to select a utility was made with the 5- $\frac{1}{4}$ -inch disk system.	Press F12 to restart at roll selection. If this error occurs with an 8-inch disk system, make a new backup copy of the system disk.
34 LOAD ERR.	The system disk contents have been destroyed.	Terminate CANOBRAIN and make a new backup copy of the system disk.
OTHER ERR.	Same as above.	Same as above.
RANGE OVER	The address specification at the source exceeds that at the destination.	Divide data to be copied into several segments and retry copying.
WRONG RANGE	The range specified for data to be copied at the source is not equal to the range specified for the copy data at the destination.	Respecify the range at the destination.
xxxx FORMAT	This occurs during page total calculation. There was at least one table or roll whose row or column number was different from that of the others. xxxx indicates the first 4 characters of the table or roll name.	Make the number of rows or columns in that table or roll equal to that of the others.
xxxx NUMERIC	At least one cell whose attribute is not numeric has been found during page total calculation. xxxx indicates the first 4 characters of the table or roll name which contains the erroneous cell.	Change the attribute of the cell to the numeric value.
PROTECTED	Data cannot be deleted or updated because it is protected.	Reset protection of the cell to be deleted or updated, and then retry the operation.
SORT ERR. (M)	Memory capacity was insufficient for sorting.	Install additional memory.

(Continued)

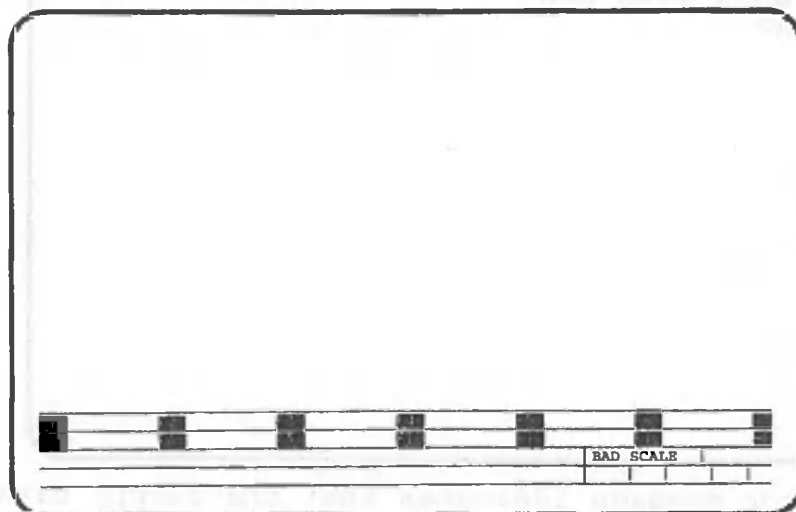
Error message	Meaning	Remedy
SORT ERR.(F)	Sufficient work file space could not be allocated for sorting.	Return to the roll list or index screen, and re-select the same roll or book. If data has not been destroyed, delete undesired pages, books, rolls, patterns and total patterns and then retry the operation. If data has been destroyed, replace the disk with the backup disk and delete undesired things as described above. Then retry the operation.
CONDENSING	Memory is being reallocated by compression to make it possible to reuse the areas which had been used but are not being used now.	Wait until the message disappears.
C. OPEN ERR.	The data floppy disk contents have been destroyed.	Terminate CANOBRAIN and use another floppy disk.
C. READ ERR.	Same as above.	Same as above.
T. REG ERR.	Same as above.	Same as above.
T. OPEN ERR.	Same as above.	Same as above.
T. DEL ERR.	Same as above.	Same as above.
BK OPEN ERR.	The data floppy disk contents have been destroyed.	Terminate CANOBRAIN and use another data floppy disk.
BK READ ERR.	Same as above.	Same as above.
BX OPEN ERR.	Same as above.	Same as above.
BX DEL ERR.	Same as above.	Same as above.
BX REG ERR.	Same as above.	Same as above.
PG DEL ERR.	Same as above.	Same as above.
pB OPEN ERR.	Same as above.	Same as above.
pB READ ERR.	Same as above.	Same as above.

(Continued)

Error message	Meaning	Remedy
pP OPEN ERR.	The data floppy disk contents have been destroyed.	Terminate CANOBRAIN and use another data floppy disk.
pP DEL ERR.	Same as above.	Same as above.
pP REG ERR.	The system floppy disk contents have been destroyed.	Terminate CANOBRAIN and make a new backup copy of the system disk.
02 OPEN ERR.	Same as above.	Same as above.
02 LOAD ERR.	Same as above.	Same as above.
03 OPEN ERR.	Same as above.	Same as above.
03 LOAD ERR.	Same as above.	Same as above.
21 OPEN ERR.	Same as above.	Same as above.
21 LOAD ERR.	Same as above.	Same as above.
25 OPEN ERR.	Same as above.	Same as above.
25 LOAD ERR.	Same as above.	Same as above.
BK NOT FOUND	An error was found in the total pattern specification.	Redefine the total pattern and then retry the operation. If this message is still displayed, use a new data disk.
BK UNDEFINE	Same as above.	Same as above.
PG NOT FOUND	Same as above.	Same as above.
PG UNDEFINE	Same as above.	Same as above.

4.4 Error Messages Displayed during Graph Processing

The corresponding error message is displayed on the right of the second line from the bottom of the screen if an error occurs while a graph is being processed.

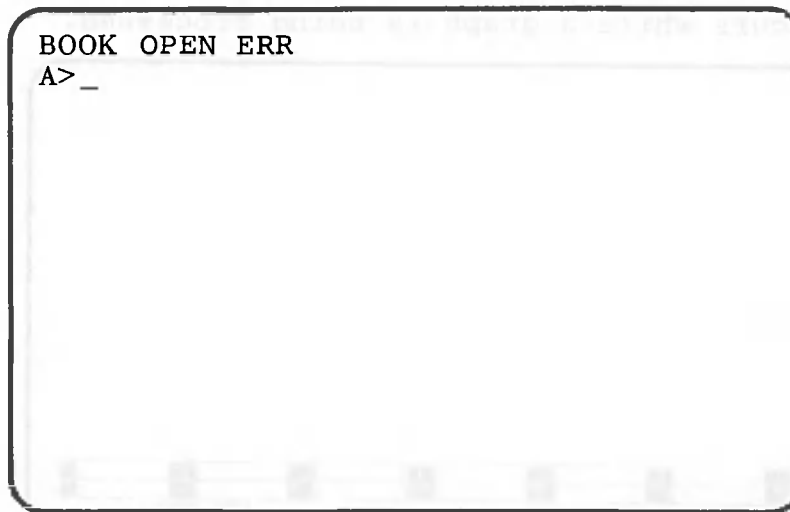


Error messages displayed during graph processing and procedures for handling them are explained in the table below.

Error message	Meaning	Remedy
NO TABLE	The table on which the graph was based has been erased, or its title has been changed.	Recreate the deleted table or restore its original name.
BAD SCALE	An incorrect maximum value, minimum value, or interval was specified when a scale change was attempted.	Enter the correct value.
INVALID LOG.	0 or a negative value was included in table data being graphed when an attempt was made to change to a logarithmic axis scale, or a specified series included an empty cell.	Do not use 0 or negative values in the table or correct the data value.
OVERFLOW	An attempt was made to graph data which is outside the specified range.	A meaningless graph is displayed; correct the data.

4.5 Other Error Messages

One other error message issued after CANOBRAIN start-up is displayed in the upper left hand corner of the screen.



This error message indicates that the floppy disk has been destroyed. Create a new system floppy disk.

Error message	Meaning	Remedy
NO TABLE	The table on which the graph was to be plotted has been destroyed. It has been replaced by a new one.	Recreate the table.
TABLE FULL	An attempt was made to add a new record to the table but the table is full.	Delete some records from the table.
INVALID X	A negative value was entered for the x-axis.	Enter a positive value.
INVALID Y	A value was entered for the y-axis which was outside the specified range.	Enter a value within the specified range.
OVERFLOW	An attempt was made to plot a graph with a value outside the specified range.	Reduce the range of the data.

APPENDIX

Canon AS-100

The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that every entry, no matter how small, should be recorded to ensure the integrity of the financial statements. This includes not only sales and purchases but also expenses and income.

The second part of the document provides a detailed breakdown of the accounting cycle. It outlines the ten steps involved in the process, from identifying the accounting entity to preparing financial statements. Each step is explained in detail, with examples provided to illustrate the concepts.

The third part of the document focuses on the classification of accounts. It discusses the different types of accounts, such as assets, liabilities, equity, and income, and how they are used to record transactions. It also explains the relationship between these accounts and the accounting equation.

The fourth part of the document covers the journalizing process. It describes how transactions are recorded in the journal, including the use of debits and credits. It also discusses the importance of balancing the journal and how to identify and correct errors.

The fifth part of the document discusses the posting process. It explains how the journal entries are transferred to the ledger accounts and how the ledger is used to summarize the financial data. It also discusses the importance of maintaining a balanced ledger.

The sixth part of the document covers the preparation of financial statements. It discusses the different types of financial statements, such as the balance sheet, income statement, and statement of cash flows, and how they are prepared from the ledger data.

The seventh part of the document discusses the closing process. It explains how the temporary accounts are closed to the permanent accounts and how the closing entries are prepared. It also discusses the importance of closing the books at the end of the accounting period.

The eighth part of the document covers the reversing entries. It discusses how reversing entries are used to correct errors and how they are prepared. It also discusses the importance of maintaining accurate records of reversing entries.

The ninth part of the document discusses the importance of internal controls. It explains how internal controls are used to prevent and detect errors and how they are designed to ensure the accuracy and reliability of the financial statements.

The tenth part of the document covers the final steps of the accounting cycle. It discusses the importance of reviewing the financial statements and how they are used to make business decisions. It also discusses the importance of maintaining accurate records of all transactions.

APPENDIX 1 CD FILES

CANOBRAIN creates CD files in the format shown below.

Header section

TABLE
0,1
" "
VECTORS
0,mm
" "
TUPLES
0,nn
" "
DATA
0,0
" "

Here, what mm and nn represent varies according to the output operation specified when data is sent to the file.

- When a row output operation in which all items on a row are outputted successively before those on the next row are outputted is specified as follows:
 - mm represents the number of rows, and
 - nn the number of columns.
- When a column output operation in which all items in a column are successively outputted before those on the next column are outputted is specified as follows:
 - mm represents the number of columns, and
 - nn the number of rows.

Data section

-1,0
BOT
t,n
Character string

⋮

-1,0
BOT
t,n
Character string

⋮

t,n
Character string
-1,0
EOD

TABLE
0,1
..
VECTORS
0,nn
..
TUPLES
0,nn
..
DATA
0,0
..

t: Indicates data type, in which:

- 0: Numeric data
- 1: Character data

n: Represents the value of numeric data. 0 is used for character data.

Character string: The letter V is used for numeric data; characters composing the string are enclosed by quotation marks (") to indicate that they are character data.

When conversion from numeric data to character data is specified during data output to a CD file, CANOBRAIN handles numeric data (including commas and dollar signs) as character strings.

The listing on the following page shows the contents of a CD file (in hexadecimal code and alphanumerics) which is created from the table below with column output specified as the output mode.

BRANCH	AMT BUDGETED	SALES 1ST HALF	SALES 2ND HALF	TOTAL	PCT GAIN
BRANCH A	1,000,000	550,000	600,000	1,150,000	115.00
BRANCH B	1,200,000	520,000	500,000	1,020,000	85.00
BRANCH C	1,500,000	600,000	720,000	1,320,000	88.00
BRANCH D	1,500,000	950,000	700,000	1,650,000	110.00
BRANCH E	1,600,000	820,000	860,000	1,680,000	105.00
TOTAL	6,800,000	3,440,000	3,380,000	6,820,000	100.29

record no.=1
0000: 5441 424C 450D 0A30 2C31 0D0A 2222 0D0A TA BL E .0 :1 .. " " ..
0010: 5645 4354 4F52 530D 0A30 2C37 0D0A 2222 VE CT OR S. .0 :7 .. ""
0020: 0D0A 5455 504C 4553 0D0A 302C 360D 0A22 .. TU PL ES .. 0: 6. ."
0030: 220D 0A44 4154 410D 0A30 2C30 0D0A 2222 ' .D AT A. .0 :0 .. ""
0040: 0D0A 2D31 2C30 0D0A 424F 540D 0A31 2C30 .. -1 :0 .. B0 T. .1 :0
0050: 0D0A 2242 5241 4E43 4822 0D0A 312C 300D .. "B RA NC H" .. 1: 0,
0060: 0A22 4252 414E 4348 2041 220D 0A31 2C30 ' BR AN CH A ". .1 :0
0070: 0D0A 2242 5241 4E43 4820 4222 0D0A 312C .. "B RA NC H B" .. 1:

record no.=2
0000: 300D 0A22 4252 414E 4348 2043 220D 0A31 0. ." BR AN CH C ". .1
0010: 2C30 0D0A 2242 5241 4E43 4820 4422 0D0A :0 .. "B RA NC H D" ..
0020: 312C 300D 0A22 4252 414E 4348 2045 220D 1: 0. ." BR AN CH E ".
0030: 0A31 2C30 0D0A 2220 544F 5441 4C22 0D0A .1 :0 .. " T0 TA L" ..
0040: 2D31 2C30 0D0A 424F 540D 0A31 2C30 0D0A -1 :0 .. B0 T. .1 :0 ..
0050: 2241 4D54 2042 5544 4745 5445 4422 0D0A "A MT B UD GE TE D" ..
0060: 302C 3130 3030 3030 300D 0A56 0D0A 302C 0: 10 00 00 0. .V .. 0:
0070: 3132 3030 3030 300D 0A56 0D0A 302C 3135 12 00 00 0. .V .. 0: 15

record no.=3
0000: 3030 3030 300D 0A56 0D0A 302C 3135 3030 00 00 0. .V .. 0: 15 00
0010: 3030 300D 0A56 0D0A 302C 3136 3030 3030 00 0. .V .. 0: 16 00 00
0020: 300D 0A56 0D0A 302C 3638 3030 3030 300D 0. .V .. 0: 68 00 00 0.
0030: 0A56 0D0A 2D31 2C30 0D0A 424F 540D 0A31 .V .. -1 :0 .. B0 T. .1
0040: 2C30 0D0A 2253 414C 4553 2031 5354 2048 :0 .. "S AL ES 1 ST H
0050: 414C 4622 0D0A 302C 3535 3030 3030 0D0A AL F" .. 0: 55 00 00 ..
0060: 560D 0A30 2C35 3230 3030 300D 0A56 0D0A V. .0 :5 20 00 0. .V ..
0070: 302C 3630 3030 3030 0D0A 560D 0A30 2C39 0: 60 00 00 .. V. .0 :9

record no.=4
0000: 3530 3030 300D 0A56 0D0A 302C 3632 3030 50 00 0. .V .. 0: 82 00
0010: 3030 0D0A 560D 0A30 2C33 3434 3030 3030 00 .. V. .0 :3 44 00 00
0020: 0D0A 560D 0A2D 312C 300D 0A42 4F54 0D0A .. V. .- 1: 0. .B 0T ..
0030: 312C 300D 0A22 5341 4C45 532D 324E 4420 1: 0. ." SA LE S 2ND
0040: 4841 4C46 220D 0A30 2C36 3030 3030 300D HA LF ". .0 :6 00 00 0.
0050: 0A56 0D0A 302C 3530 3030 3030 0D0A 560D .V .. 0: 50 00 00 .. V.
0060: 0A30 2C37 3230 3030 300D 0A56 0D0A 302C .0 :7 20 00 0. .V .. 0:
0070: 3730 3030 3030 0D0A 560D 0A30 2C38 3630 70 00 00 .. V. .0 :8 60

record no.=5
0000: 3030 300D 0A56 0D0A 302C 3333 3630 3030 00 0. .V .. 0: 33 80 00
0010: 300D 0A56 0D0A 2D31 2C30 0D0A 424F 540D 0. .V .. -1 :0 .. B0 T.
0020: 0A31 2C30 0D0A 2220 5420 4F20 5420 4120 .1 :0 .. " T 0 T A
0030: 4C22 0D0A 302C 3131 3530 3030 300D 0A56 L" .. 0: 11 50 00 0. .V
0040: 0D0A 302C 3130 3230 3030 300D 0A56 0D0A .. 0: 10 20 00 0. .V ..
0050: 302C 3133 3230 3030 300D 0A56 0D0A 302C 0: 13 20 00 0. .V .. 0:
0060: 3136 3530 3030 300D 0A56 0D0A 302C 3136 16 50 00 0. .V .. 0: 16
0070: 3830 3030 300D 0A56 0D0A 302C 3638 3230 80 00 0. .V .. 0: 68 20

record no.=6
0000: 3030 300D 0A56 0D0A 2D31 2C30 0D0A 424F 00 0. .V .. -1 :0 .. B0
0010: 540D 0A31 2C30 0D0A 2250 4354 2047 4149 T. .1 :0 .. "P CT 6 AI
0020: 4E22 0D0A 302C 3131 350D 0A56 0D0A 302C H" .. 0: 11 5. .V .. 0:
0030: 3835 0D0A 560D 0A30 2C38 380D 0A56 0D0A 85 .. V. .0 :8 8. .V ..
0040: 302C 3131 300D 0A56 0D0A 302C 3130 350D 0: 11 0. .V .. 0: 10 5.
0050: 0A56 0D0A 302C 3130 302E 3239 3431 3137 .V .. 0: 10 0. 29 41 17
0060: 3634 3730 350D 0A56 0D0A 2D31 2C30 0D0A 64 70 5. .V .. -1 :0 ..
0070: 454F 440D 0A1A 1A1A 1A1A 1A1A 1A1A 1A1A E0 D.

A sample BASIC program which reads a CD file into the memory and displays the contents of the file, and another sample BASIC program which outputs data in the memory to a CD file in the CD file format, are provided. These examples assume that column output was specified and conversion was not specified when the CD file was created.

```

CDFILE2E.2731
 10 REM #####
 20 REM # CD FILE TO CPU #
 30 REM #####
 40 DIM WORKSHEET$20(50,10) :REM DEPEND ON TABLE DATA
 50 DIM STRNG$77:A$=""
 60 FORMAT #####
 70 DIM FILENAME$12:ERR=0
 80 REM *****
 90 REM * MAIN *
100 REM *****
110 GOSUB 160 :REM CD FILE NAME DEF.
120 GOSUB 230 : IF ERR=1 GOTO [END] :REM READ HEADER
130 GOSUB 340 :REM READ TABLE DATA
140 IF (PRT=1) OR (ERR=1) THEN GOSUB 500 :REM PRINTOUT DATA(CPU)
150 [END] CLOSE #1 : END
160 REM *****
170 REM * CD FILE NAME DEF. *
180 REM *****
190 PRINT %HOME: INPUT MSG(" FILE NAME = ") FILENAME$
200 PRINT : INPUT MSG("PRINT DATA(CPU) : YES=1 , NO=0 ") PRT
210 OPEN #1,FILENAME$
220 RETURN
230 REM *****
240 REM * READ HEADER *
250 REM *****
260 INPUT #1,TITLE$
270 INPUT #1,TYPE,NUMBER
280 INPUT #1,STRNG$
290 IF TITLE$="TABLE" GOTO 230
300 IF TITLE$="VECTORS" THEN VECTORS=NUMBER : GOTO 230
310 IF TITLE$="TUPLES" THEN TUPLES =NUMBER : GOTO 230
320 IF TITLE$="DATA" THEN RETURN
330 GOSUB 600 : RETURN
340 REM *****
350 REM * READ TABLE DATA *
360 REM *****
370 FOR COL=1 TO TUPLES
380 INPUT #1,TYPE,NUMBER
390 INPUT #1,STRNG$
400 IF (TYPE <> -1) OR (STRNG$ <> "BOT") THEN GOSUB 690 : RETURN
410 FOR ROW=1 TO VECTORS
420 INPUT #1,TYPE,NUMBER
430 INPUT #1,STRNG$
440 IF TYPE=0 THEN WORKSHEET$(ROW,COL)=STR$(CHR$(NUMBER),2) : GOTO 480
450 IF (TYPE=1) AND (LEN(STRNG$)<=2) THEN WORKSHEET$(ROW,COL)="":GOTO 480
460 IF TYPE=1 THEN COUNT=LEN(STRNG$):WORKSHEET$(ROW,COL)=STR$(STRNG$,2,COU
NT-2):GOTO 480
470 GOSUB 690 : RETURN
480 NEXT ROW
490 NEXT COL
495 RETURN

```

```

500 REM *****
510 REM * PRINT DATA(CPU) *
520 REM *****
530 FOR ROW=1 TO VECTORS
540 PRINT #0;
550 FOR COL=1 TO TUPLES
560 PRINT #0; USING 60 WORKSHEET$(ROW,COL);
570 NEXT COL
580 NEXT ROW
590 RETURN
600 REM *****
610 REM * HEADER ERROR *
620 REM *****
630 PRINT "%07 HEADER ERROR"
640 PRINT TAB(5);"TITLE = ";TITLE$
650 PRINT TAB(5);"TYPE = ";TYPE
660 PRINT TAB(5);"NUMBER = ";NUMBER
670 PRINT TAB(5);"STRNG = ";STRNG$
680 ERR=1 : RETURN
690 REM *****
700 REM * DATA ERROR *
710 REM *****
720 PRINT "%07 DATA ERROR"
730 PRINT TAB(5);"TYPE = ";TYPE
740 PRINT TAB(5);"NUMBER = ";NUMBER
750 PRINT TAB(5);"STRNG = ";STRNG$
760 ERR=1 : RETURN

```

CDFILE6E.1255

```
10 REM #####
20 REM # CD FILE DUMP LIST #
30 REM #####
40 DIM FILENAME$12
45 DIM STRNG$77
50 REM *****
60 REM * MAIN *
70 REM *****
80 GOSUB 120 :REM CD FILE NAME DEF.
90 GOSUB 180 :REM READ HEADER
100 GOSUB 290 :REM READ TABLE DATA
110 [END] CLOSE #1 : END
120 REM *****
130 REM * CD FILE NAME DEF. *
140 REM *****
150 PRINT %HOME$: INPUT MSG(" FILE NAME = ") FILENAME$
160 OPEN #1,FILENAME$
170 RETURN
180 REM *****
190 REM * READ HEADER *
200 REM *****
210 FOR HED=1 TO 4
220 INPUT #1,TITLE$
230 INPUT #1,TYPE,NUMBER
240 INPUT #1,STRNG$
250 PRINT #0,TITLE$
260 PRINT #0,TYPE,NUMBER
270 PRINT #0,STRNG$
280 NEXT HED
285 RETURN
290 REM *****
300 REM * READ TABLE DATA *
310 REM *****
320 INPUT #1,TYPE,NUMBER
330 INPUT #1,STRNG$
340 PRINT #0,TYPE,NUMBER
350 PRINT #0,STRNG$
360 IF (TYPE <> -1) OR (STRNG$ <> "EOD") GOTO 290
370 RETURN
```

CDFILE9E.2091

```
10 REM #####
20 REM # CPU TO DISK(CDFILE) #
30 REM #####
40 VECTORS=7 : TUPLES=6 :REM DEPEND ON ROW & COLUMN NO.
50 ROW=VECTORS : COL=TUPLES
60 DIM WORKSHEET$20(ROW,COL) :REM DEPEND ON TABLE DATA
70 DIM TYPE(COL) :REM DEPEND ON TABLE DATA
80 DIM FILENAME$12:A$="":NUL$=" "
90 TYPE(1)=1 : TYPE(2)=0 : TYPE(3)=0:REM COL. INFORMATION CHR.=1,NUM.=0
100 TYPE(4)=0 : TYPE(5)=0 : TYPE(6)=0
110 REM *****
120 REM * MAIN *
130 REM *****
140 GOSUB 190 :REM CD FILE NAME DEF.
150 GOSUB 250 :REM READ HEADER
160 GOSUB 330 :REM READ TABLE DATA
170 GOSUB 470 :REM END OF DATA RECORD
180 [END] CLOSE #1 : END
190 REM *****
200 REM * CD FILE NAME DEF.*
210 REM *****
220 PRINT %HOME$:INPUT MSG(" FILE NAME = ") FILENAME$
230 OPEN #1:FILENAME$
240 RETURN
250 REM *****
260 REM * READ HEADER *
270 REM *****
280 PRINT #1,"TABLE" : PRINT #1,"0,1" : PRINT #1,NUL$
290 PRINT #1,"VECTORS" : PRINT #1,"0," :STR$(CHR$(ROW),2) : PRINT #1,NUL$
300 PRINT #1,"TUPLES" : PRINT #1,"0," :STR$(CHR$(COL),2) : PRINT #1,NUL$
310 PRINT #1,"DATA" : PRINT #1,"0,0" : PRINT #1,NUL$
320 RETURN
330 REM *****
340 REM * READ TABLE DATA *
350 REM *****
360 FOR COL=1 TO TUPLES
370 PRINT #1,"-1,0"
380 PRINT #1,"BOT"
390 PRINT #1,"1,0"
400 PRINT #1,A$+WORKSHEET$(1,COL)+A$
410 FOR ROW=2 TO VECTORS
420 IF TYPE(COL)=0 THEN PRINT #1,"0," ;WORKSHEET$(ROW,COL) : PRINT #1,"V"
430 IF TYPE(COL)=1 THEN PRINT #1,"1,0" : PRINT #1,A$+WORKSHEET$(ROW,COL)+A$
440 NEXT ROW
450 NEXT COL
460 RETURN
470 REM *****
480 REM * END OF DATA RECORD *
490 REM *****
500 PRINT #1,"-1,0" : PRINT #1,"EGD"
510 RETURN
```


APPENDIX 2 IBM-FORMAT FLOPPY DISKS

All IBM-format floppy disks used with CANOBRAIN must satisfy the following requirements:

- The record sequence field (bytes 76 and 77) in the volume label must be space or 01.
- The interchangeable type indicator in the file label must be space for 128 bytes/sector, single-sided, single-density disks and H for 256 bytes/sector, double-sided, double-density disks.
- Tracks 1 to 73 are used for data and track 74 is not used.
- The alternate tracks are not used.

Either EBCDIC or ASCII code can be used as internal codes.

CANOBRAIN automatically reads the kind of code used.

If the length of the data received is not equal to that of the data sent, the following will occur:

- Send data length > receive data length: The data length is set to the receive data length.
- Send data length < receive data length: Zeros (for numeric data) or blanks (for character data) are added to the data sent when CANOBRAIN sends data to the disk.
Zeros (for numeric data) or NULLs (for character data) are added to the received data when CANOBRAIN receives data from the floppy.

Volume label

The volume label containing volume information is located in sector 07, head 0, cylinder 00.

Volume label

Offset (byte)	Name	Length (bytes)	Contents	Explanation
0	Label ID	3	VOL	Standard volume label ID
3	Label number	1	1	Order of volume labels
4	Volume serial number	6	Volume number Alphanumerics Left-justified, Blanks for remainder, No blanks allowed between characters.	Any volume ID code specified by user
10	Access condition	1	␣	No access limitation
11	Reserved	26	␣...␣	_____
37	User name	14	User ID Alphanumerics The first character must be a letter. Left-justified, Blanks for remainder	User name or code
51	Reserved	13	␣...␣	_____
64	Label extension indicator	1	␣	File label not extended.
			109	The specified cylinders starting at cylinder 01 are used for file label.
65	Reserved	6	␣...␣	_____
71	Volume medium type	1	␣	Single-sided medium
			M	Double-sided, double-density medium
72	Extent arrangement indicator	1	␣	No restrictions.
73	Special requirements	1	␣	No restrictions.
74	Reserved	1	␣	_____

Offset (bytes)	Name	Length (bytes)	Contents	Explanation
75	Sector length	1		128 bytes/sector
			1	256 bytes/sector
			3	1024 bytes/sector
76	Record sequence	2	␣ ␣	Same as record sequence '01'.
			01␣13	Sector sequence on a track
78	Reserved	1	␣	_____
79	Label standard level	1	W	Standard label and data format

(Note) The 48 bytes after offset byte 80 are filled with the padding characters shown below.

Standard density: X'00'

Double density: Space

File label

The file label containing file information is located on sectors 08 to 26, track 0 (0 and 1 for double-sided media), cylinder 00.

File label

Offset (byte)	Name	Length (bytes)	Contents	Explanation
0	Label ID	3	HDR	Standard file label ID
			DDR	Delete/unused file label ID
3	Label number	1	1	Order in file label group
4	Reserved	1	␣	_____
5	File ID	17	File name Alphanumerics The first character must be a letter. Left-justified, with blanks for remainder. No blanks allowed between characters.	User file ID
22	Block length	5	␣ ␣ nnn (001 ≤ nnn ≤ 1024)	Indicates the length of block
27	Record attribute	1	␣	Unblocked/unspanned
			B	Blocked/unspanned
28	Beginning of extent (BOE)	5	CCHRR (Decimal notation item for display)	Beginning of file extent
33	Sector length	1	␣	128 bytes/sector
			1	256 bytes/sector
			3	1024 bytes/sector
34	End of extent (EOE)	5	CCHRR (Cecimal notation item for display)	End of file extent
39	Record/block type	1	␣	Fixed length record in fixed length block
40	Bypass indicator	1	␣	Not to be bypassed

Offset (byte)	Name	Length (bytes)	Contents	Explanation
41	Security file indicator	1	␣	Not a security file
42	Write/protect indicator	1	␣	Not write protected
43	Interchangeable type indicator	1	␣	Basic type
			H	Basic type for double-sided media
			E	Extended type
44	Multiple volume indicator	1	␣	Single volume file
45	Volume sequence number	2	␣...␣	Not used.
47	Date of creation	6	␣...␣	Not written.
53	Record length	4	␣...␣	Block length=record length
			0001~1024	Record length (Blank in higher byte is equal to zero.)
57	Offset	5	␣...␣	Not used, or 00000.
			00000~32767	Offset value (Blank in higher byte is equal to zero.)
62	Reserved	4	␣...␣	_____
66	Expiration date	6	␣...␣	Not used.
72	Verify/copy indicator	1	␣	Not changed.
73	File organization	1	␣	Sequential file
74	End-of-data address (EOD)	5	CCHRR (Decimal notation item for display)	The starting address of unused area in the file area
79	Reserved	1	␣	_____

(Note) The 48 bytes after offset byte 80 are filled with the padding characters shown below.

Standard density: X'00'

Double density: Space

APPENDIX 3 PRINTER CONNECTION

Two printers can be connected to the AS-100 by installing an optional parallel interface. One printer can be used for printing tables and the other for printing graphs. A serial interface printer (such as the AP500) can be connected to the AS-100 by installing an optional serial interface.

However, since only one port (port 2) can be used for optional interfaces, only one parallel or one serial interface can be used at a time.

For details, see Chapters 6 and 7 of the AS-100 CP/M-86 User's Manual.

3.1 Parallel Interfaces

Take the following procedures to use a second printer:

- 1 Insert the system disk into drive A and a data disk into drive B, then turn on the power of the AS-100. If your system uses a 5¼-inch floppy disk system, skip step 2 .
- 2 Press **F72** to terminate CANOBRAIN after it has been activated.
- 3 Type the following when the prompt "A>" is displayed.

A>A1210_JUL1:

```
| A1200 for A-1200  
| A1210 for A-1210  
| A1250 for A-1250  
| CNTHND for other printers
```

The underlined section differs according to the printer connected as shown above.

- 4 Start CANOBRAIN. With a 5¼-inch disk system, start CANOBRAIN after inserting system disk 2 into drive A.
A>CBRAIN **↵**

- 5 Enter the date.
- 6 Press (SYSTEM).
- 7 Press (print setting).
- 8 Press (hard copy) to use the second printer for printing graphs.
- 9 Specify the name of the device connected to port 2 using .
- 10 Press (RETURN) twice to return to the password screen.
- 11 Operate the AS-100 in the normal manner.

3.2 Serial Interface

To print tables using a serial interface, follow the procedure outlined below.

- 1 Insert the system floppy disk into drive A and a data floppy disk into drive B. If your system uses 5¼-inch floppy disks, skip step 2.
- 2 Press to terminate CANOBRAIN after it has been started.
- 3 Type the following when the prompt "A>_" is displayed:
A>RSHND

- 4 Type the following when the prompt "A>" is displayed after step 3:
A>RSINITTTY:48008SSBUFSIZ(0,512)

The underlined part must be the same as the settings in the output device. For details, see Chapter 7 of the AS-100 CP/M-86 User's Manual.

- 5 Start CANOBRAIN. With a 5¼-inch disk system, insert system disk 2 into drive A before starting CANOBRAIN.
A>CBRAIN

- 6 Enter the date.
- 7 Press (SYSTEM).
- 8 Press (print setting).
- 9 Press to use the printer for printing tables.
- 10 Specify the name of the device (TTY:) connected to port 2 by using .
- 11 Press twice to return to the password screen.
- 12 Operate the AS-100 in the normal manner.

APPENDIX 4 USING HARD DISK SYSTEMS

To use CANOBRAIN with a hard disk system, you must make copies of the operating system (CP/M-86) and CANOBRAIN on a single hard disk.

1. Preparation

First, initialize the hard disk being formatted for CP/M-86. Be sure to assign 2M bytes or more to drive G. For details on the initialization process, see the Hard Disk User's Manual. Load the hard disk handler by typing the following:

```
A><u>hdhnd</u> [↵]
```

2. Copying CP/M-86

The system floppy disk must be in drive A. Type the following:

```
A><u>pip</u> [↵]
```

An asterisk (*) will be displayed. Type the following:

```
<u>*g:=a:*. *</u> [↵]
```

An asterisk will be displayed again to indicate the completion of the operation.

3. Copying CANOBRAIN

Remove the system floppy disk from drive A when an asterisk is displayed. Insert the original floppy disk containing CANOBRAIN into drive A. If you used two floppy disks (Originals 1 and 2) for CANOBRAIN, insert Original 1. Enter the following:

g:=a:.*

After execution is completed for Original 1, perform the same operation for Original 2. If the following message is displayed during execution, type .

DESTINATION IS R/O, DELETE (Y/N)?

An asterisk is displayed to indicate the completion of the operation.

After all floppy disks have been copied, press the key.

*

Copies of the original disks are now registered on the hard disk.

4. Switching the current drive

The current drive is A at this point.

To switch the current drive to G type the following.

A>g:

The prompt changes to "G>_".

5. Creating a SUBMIT file for CANOBRAIN activation

This section describes how to create a SUBMIT file, which is used to activate CANOBRAIN.

First, type the following:

G>ed start.sub

Type the following when an asterisk is displayed following the editor start message.

*i

Then, the display prompt changes as follows:

l:~

Type the following.

a1200 (*1)
cbrain b: (*2)

*1: This string varies according to the printer connected.

a1200 for A-1200
a1210 for A-1210
a1250 for A-1250

If no printer is connected, entry of this line is not necessary.

*2: Specify the name of the drive in which data is to be stored. The drive names which can be specified differ according to the system configuration.

Generally, the following names can be specified:

a: b: c: g: h: i: j:

Press after the above operation has been completed. When an asterisk appears on the display, type the following:

*e

The SUBMIT file for activating CANOBRAIN has been created. If you find that incorrect letters have been typed before you have pressed , press to restart typing. If incorrect letters have been typed and has already been pressed, terminate the editor and start from the beginning by typing the following:

G>era start.sub

7. Activating CANOBRAIN

- 1 Insert the floppy disk containing CP/M-86 into drive A.
- 2 Turn the power of the AS-100 on.
- 3 Load the hard disk handler.
- 4 Change the current drive from A to G.
- 5 Type `submit_start` .

The SUBMIT file will then be executed and CANOBRAIN will be activated.

F3	NUM. FORMAT	F1	REAL		
		F2	INTEGER		
		F3	DECIMAL		
F4	NUM. PUNCT.	F1	COMMAS		
		F2	NO COMMAS		
		F3	PUNCT.		
		F4	NO PUNCT.		
		F5	ROUND DOWN		
		F6	ROUND OFF		
		F7	ROUND UP		
F5	PROTECT				
F1	RETRIEVAL	F1	RETRIEVAL		
		F2	REGISTER		
		F3	DELETE		
		F4	EXECUTE		
F2	SORT	F1	SORT		
		F2	REGISTER		
		F3	DELETE		
		F4	EXECUTE		
F1	PRINTOUT	F1	70	F1	NOT RULED
		F2	6E	F2	RULED (V)
		F3	GO	F3	RULED (V,H)
F2	REGISTER				
F3	DELETE				
F4	EXECUTE				
F1	INPUT				
F2	OUTPUT				
F1	READ ROLL				
F2	REGISTER				
F3	DELETE				
F4	EXECUTE				
F7	PRINTOUT	F1	NON STOP		
		F2	STOP		
F8	CD FILE				
F9	READ ROLL				
F10	TABLE DEF.				



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