T-base™

"FOR PEOPLE WHO ARE GOING PLACES"

T-base

The Traveling Database Manager

For your

TRS-80 Model 100/200
Olivetti M10
or
NEC PC-8201

Traveling Software, Inc.
11050 Fifth Avenue, N.E.
Seattle, WA 98125

TB-GEN-I85

COPYRIGHT NOTICE

TRADEMARKS

Welcome to T-base

The idea of a true relational database system for lap-sized computers seemed farfetched—until Traveling Software came up with T-base. Now this technological advance is yours.

Equipped with T-base, you can design the files in which you store data. No longer do you have to fit your data into files designed by others. Similarly, you may design reports—both for your computer's screen and for the printer—that tell you exactly what you want to know.

T-base lets you store data in one file and borrow it in others. It also lets you set up formulas that perform calculations based on the data you put in.

The versatility of T-base lets you develop many types of billing and report forms; create client profiles; track inventory and produce orders; build cross-reference files for products, customers, and vendors; and more.

Join me now for instructions on using T-base. In a short time, you will understand why one magazine reviewer described this program as "awesome."

Contents

Welcome to T-base *page iii*

Section 1

Getting Started

Meet the Traveling Professor 1-1
About This Book 1-2
Terms and Conventions 1-4
Prompts and Function Keys 1-7
T-base Software 1-9
What You Need to Use This Program 1-10
No More .CO File Worries 1-11
Loading T-base 1-12
Loading .DO Files from Cassette 1-14

Section 2A

Designing T-base Files

How T-base Works 2A-1
T-base Files 2A-2
Creating Screen Files 2A-3
- The Format of a Screen File 2A-3
- Field Descriptors 2A-6
- Primary Descriptors 2A-7
- Using the Primary Descriptors 2A-9
- Secondary Descriptors 2A-16
- Using the Secondary Descriptors 2A-21

T-base Memory Requirements 2A-29

Section 2B

Entering Data

Introduction 2B-1
The Basics of Data Entry 2B-3
- Table of Prompts 2B-5
- Troubleshooting 2B-6

Storing Data in the Sample Database 2B-7
VEND*S.DO File 2B-9
CUST*S.DO File 2B-14
PROD*S.DO File 2B-16
ORDR*S.DO File 2B-17

Section 3

Creating T-base Reports

Introduction 3-1
Creating a Report File 3-3
Report Definition Commands 3-5
Selecting Records in Your Database 3-14
TB-RPT.BA Memory Requirements 3-16
Exercise 1: Printing Labels 3-18
Exercise 2: Creating A Customer ID List 3-24
Exercise 3: Printing a Customer Order Report 3-29
Exercise 4: Printing a Product Order Report 3-33
Exercise 5: Redesigning a Data File 3-38

Section 4

The T-Writer Connection

Introduction 4-1
ADRS.DO File 4-2
Using the Traveling Writer 4-4

Section 5

Memory Management

Introduction 5-1
The Traveling Memory Manager 5-2
Visible/Invisible Option 5-3
Kill Option 5-4
Name Option 5-5
Menu Option 5-5
Tips for Memory Management 5-6
Saving .DO Files to Cassette 5-8

Section 6

Troubleshooting

What about I/O Errors? 6-1
Pressing the Wrong Keys 6-2
Other Problems That May Occur 6-4
General Operating Errors 6-6
Errors When Loading Screen Files 6-8
Errors When Loading Report Files 6-12

Appendix

Modifying T-base

Increasing Memory Space for String Characters A-2
Increasing the Number of Lines Displayed on Your Monitor A-4
Increasing the Complexity of Calculations A-5
Adding or Deleting Line Feeds A-7

User's License Agreement

Problem Report

Index

Section 1

Getting Started

Meet the Traveling Professor

I could introduce myself as the guru of portable software, as many have called me. This reputation may be exaggerated--but only slightly. In my computer wisdom, I have created a series of tapes explaining Traveling Software's programs. Included with your product is a cassette on one side of which is my recorded explanation of T-base. I suggest you listen to "The Traveling Professor" side of the tape before you start using the program. If I do say so, it will give you a head start on learning the program, and it's altogether painless. Then I suggest that you go on to read this instruction book and follow its suggestions ever so closely.

I enjoy mail. If you want to ask a question about any Traveling Software product (including this program), just zip off a note to:

The Traveling Professor
Traveling Software, Inc.
11050 Fifth Ave. N.E.
Seattle, WA 98125

About This Book

Getting Started, Section 1, explains things you should know before you actually begin to use Traveling Software products.

Included in this section and throughout this book are some important explanations that are set off from the rest of the book like this:

Even if you don't want to go through the whole book and follow all the steps, you will probably want to read these important explanations.

Also included here are instructions for loading T-base along with the sample database included with the program.

Designing T-base Files, Section 2A, is a step-by-step guide to designing your own T-base files. You will learn how to specify what information to record in your T-base files and how to define the relationships between the files you want to set up. Special data item types and characteristics will be explained, including "borrowed" and calculated data items.

Entering Data, Section 2B, is a step-by-step guide to entering data. You will learn the basics of data entry and the pitfalls you need to avoid.

Creating T-base Reports, Section 3, explains how to create your own custom T-base reports. The entire T-base report command structure is reviewed, including how to create summaries displayed on your computer's LCD screen as well as printed reports.

The T-Writer Connection, Section 4, suggests ways in which you can use T-base with the T-Merge feature of another Traveling Software product, T-Writer. From

T-base information, you can create special documents like personalized billing invoices and letters.

Memory Management, Section 5, describes strategies for managing the information stored in your computer. We have provided an additional program called the Traveling Memory Manager to help you with computer memory "housekeeping" tasks. Here you will also find directions for saving .DO (data) files to cassette.

Troubleshooting, Section 6, covers any problems you may have. We hope you don't have any problems with your computer or software, but when you're doing something for the first time, things can go wrong.

Terms and Conventions

I have tried my best to write this book without resorting to a lot of technical jargon, but there are a few special terms and conventions that may need explanation.

Terms

Fields. At the most specific level are the fields. Each field contains a single item of information. In setting up your T-base screens, you will be creating numerous fields to hold such information as a client's name, a vendor's address, a student's test score.

Records. Fields are grouped into records. If you plan to use T-base to monitor expenditures for projects you are managing, for example, you will create a record each time you enter data about a specific monetary or time expenditure.

Files. Records, in turn, are grouped into files. Each file is a collection of details about a particular subject—addresses, time expenditures, orders, or whatever you designate when you establish your screen files. When you look at the main system menu of your computer, what you see is the name of each file in memory, with the suffix .DO attached.

Databases. At the most general level are the databases. A database consists of two or more interrelated files. Your database might consist of a payroll file, an inventory file, and an accounting file. Through a database management program like T-base, information is made available from all these files for entering and viewing data, for performing calculations, and for producing a variety of reports.

Conventions

Use of the < Angle Brackets >. To show the keys on your keyboard, I use these symbols: < and >.

When, for example, you read this sentence:

> Press < ↑ > to move to the previous field and < ESC > to clear it. . . .

press the key on your keyboard labeled ↑ and the key labeled *ESC*.

< ENTER > Key. The key on your keyboard you will use most frequently with T-base is the key I refer to as < ENTER >.

On the TRS-80 Model 100/200 and the Olivetti M10, this key is actually labeled *ENTER*, but on the NEC PC-8201, it is marked with a bent arrow instead.

NEC users: Remember to press this key wherever in this book I say to press < ENTER >.

The Cursor and the Arrow Keys. The cursor is a mobile indicator on your computer screen. Its location is where the on-screen action takes place.

On your notebook computer, the cursor is a square with either white type on a black background or black type on a white background. The cursor will sometimes be a flashing white box.

You select the area of the screen to work in by moving the cursor to that location. And you move the cursor by means of the four < ARROW > keys on the top right of your keyboard.

For Traveling Software programs, the arrow keys have special definitions:

‹ ↑ › moves the cursor to the previous field

‹ ↓ › moves the cursor to the next field

‹ → › moves the cursor right one character within a field

‹ ← › moves the cursor left one character within a field

Input/Output. To designate what you are to enter on your keyboard or what you will see on your computer screen, I resort to a distinct typestyle.

This typestyle delineates the input/out from the rest of the text like this:

In this screen, type

```
VEND
```

and press ‹ENTER›. This message then appears on your screen:

```
Loading screen information . . . . .
```

Prompts and Function Keys

Prompts are messages from T-base that appear on the bottom line of the screen, listing the functions you can select. You activate any of these functions by pressing the appropriate function key.

Here is a line of T-base prompts that appears on Radio Shack and Olivetti computers:

```
                Fin                 New Cal End
[1]  [2]  [3]  [4]  [5]  [6]  [7]  [8]
```

Notice that some of the prompts are abbreviations of the functions. The prompt `Fin`, for example, stands for Find, `Cal` for Calculate, and so on.

By its position in this line, a prompt indicates which function key activates that function. In the above example, function key 3 activates the Find function; function key 6, the New function; etc.

In this manual, I refer to function keys as <f1>, <f2>, <f3>, and so on.

See Section 2B and the reference card at the end of this book for a complete list of the T-base functions, their prompts, and the function keys that activate them.

The correspondence between prompts and function keys varies somewhat between the NEC PC-8201 and the TRS-80 Model 100/200 and Olivetti M10.

TRS-80 Model 100/200 and Olivetti M10

Each prompt appears on your screen above one of the bracketed numbers 1 through 8. These numbers correspond to the eight function keys. To activate a command, press

the function key corresponding to the bracketed number under the prompt for that command.

For example, the Fin prompt appears on the screen over the bracketed number 3. To Find, press ‹ f3 ›.

NEC PC-8201

On the NEC PC-8201 the prompt line consists of no more than five prompts at once. Another set of T-base prompts appears for function keys 1, 2, and 5 when you press ‹ SHIFT ›.

To activate commands for the unshifted prompts, press the function key indicated by the position of the prompt on the screen. To activate commands for the shifted prompts, simultaneously press ‹ SHIFT › and the corresponding function key.

To activate commands in the sample prompt line on the previous page, press ‹ f3 › for Find, ‹ SHIFT› ‹ f1 › for New, ‹ SHIFT › ‹ f2 › for Calculate, ‹ SHIFT › ‹ f5 › for End, and so on.

T-base Software

Cassette Version. On the cassette version of T-base, three programs are stored on cassette in this order:

T-BASE.BA — The T-base data-entry and retrieval program. Provides the capability to add, delete, find, and calculate data stored in your T-base files.

TB-RPT.BA — The T-base report-printing program. Creates printed and LCD display reports by collecting and compiling data you've stored using the T-BASE.BA program.

MEMMGR.BA — The Memory Manager program. Helps you manage your computer's limited memory space efficiently.

ROM Version. On the ROM version of T-Base, both T-BASE and TB-RPT are stored on the ROM chip; MEMMGR is located on the cassette. The programs operate as described for the cassette version, above.

➧ On the ROM version of T-base, each of the two components of the program has as its suffix *TS* instead of *BA*: *T-BASE.TS* instead of *T-BASE.BA* and *TB-RPT.TS* instead of *TB-RPT.BA*.

Sample Database. Stored on cassette for both versions of the program is a sample database of four screen files.

On the cassette version, these files are stored after the programs, in this order: VEND*S.DO, CUST*S.DO, PROD*S.DO, and ORDR*S.DO.

On the ROM cassette, these files are stored on the same order, immediately after MEMMGR.BA.

What You Need To Use This Program

To use T-base you need this equipment:

- ✓ a notebook-sized computer with at least 16K memory in RAM (8K for the ROM version) although 24K or 32K memory would accommodate larger T-base files
- ✓ a cassette recorder to load the cassette version of the program and to store T-base files

To use the print feature of T-base you must have a printer, either serial or parallel.

Listed below are the approximate minimum amounts of free memory you must have in your computer when you use T-base or the Memory Manager. (These amounts are about 10% higher for NEC computers.) In Sections 2A and 3 you will find formulas for determining more exactly the memory required to run the kinds of T-base files you have set up.

Memory Requirements for the Cassette Version:

To load T-BASE.BA	7.5K
To load TB-RPT.BA	8.5K
To run T-BASE.BA	3-4K
To run TB-RPT.BA	3-4K, depending on the nature of the report
To load and run MEMMGR.BA	2.5K

Memory Requirements for the ROM Version:

To run either T-base program	4-5K
To load and run MEMMGR.BA	2.5K

No More .CO File Worries

The programs on your T-base cassette are going to make your life easier when it comes to loading them onto your computer.

If you have purchased programs from vendors other than Traveling Software, you probably have had to load a separate machine code (.CO) file in addition to the program itself.

Traveling Software has developed a proprietary technique that makes loading a separate machine code file unnecessary. You need load only the program. While it is running, the program creates its own machine code routines, which are removed from your computer's memory when you leave the program.

A further advantage: You may have more than one of Traveling Software's programs on your computer at a time. You may also have our programs on your computer with one of your programs requiring a .CO file.

Because they do without .CO files, Traveling Software programs may be used with external disk drive software and hardware.

Loading T-base

Cassette versions of T-base are packaged on the side of the cassette titled *T-base*. Before using your software, you must load it into your computer from the cassette.

Here is a step-by-step guide to loading either T-BASE.BA or TB-RPT.BA. To load the Memory Manager, type MEMMGR as the file name.

➧ **If you have the ROM version of T-base, consult your *Installation and User's Guide* to install and initialize both T-BASE and TB-RPT. To load MEMMGR.BA from cassette, follow the instructions below.**

1. Make sure the cassette player and the computer are connected correctly. Turn on the cassette player and the computer.

2. Put the cassette into the cassette player, program side up.

3. Rewind the cassette to the beginning.

4. Press the ‹ PLAY › button on the cassette player.

5. Look at the main system menu of your computer. Use the ‹ ARROW › keys to move the cursor over the word BASIC. Press ‹ ENTER ›.

6. To load T-base, type either

```
CLOAD"T-BASE" or CLOAD"TB-RPT"
```

Then press ‹ ENTER ›. The cassette player should start running. You may hear a high-pitched sound while your computer searches for the file you specified. Soon one of these messages will appear:

```
FOUND:T-BASE or FOUND:TB-RPT
```

and then

```
OK
```

7. Now type either

```
SAVE"T-BASE" or SAVE"TB-RPT"
```

and press ‹ ENTER ›. The computer will display another OK message.

8. Press ‹ f8 › on the TRS-80 Model 100/200 or Olivetti M10, or simultaneously press ‹ SHIFT › ‹ f5 › on the NEC PC-8201. The computer's main system menu should appear.

See the next page for instructions on loading the sample database.

Loading .DO Files from Cassette

Your T-base cassette includes four sample files for your practice. To load these files, follow the steps below, substituting for FILENM the file names of the samples—VEND*S.DO, CUST*S.DO, PROD*S.DO, and ORDR*S.DO.

To load from cassette the files you create with T-base, follow these instructions, substituting whatever file names you have assigned your files. For instructions on saving .DO files to cassette, see Section 5.

TRS-80 Model 100/200 and Olivetti M10. Follow these steps:

1. Connect your cassette player, rewind the cassette tape, and press the ‹ PLAY › button.

2. Enter your computer's TEXT program from the main system menu by moving the cursor over the word TEXT and pressing ‹ ENTER ›.

3. Type

```
FILENM
```

and press ‹ ENTER ›.

4. Now press ‹ f2 ›, and respond to the question Load from: by typing

```
FILENM.DO
```

Press ‹ ENTER › to start the recorder.

5. After the file has been loaded and is displayed, press ‹ f8 › to return to the main system menu.

NEC PC-8201. Follow these steps:

1. Connect the cassette player, rewind the cassette tape, and press the ‹ PLAY › button.

2. At the main system menu of your computer, press ‹ f1 › to load. This message appears:

```
Load from __
```

3. Type the file name

```
FILENM.DO
```

and press ‹ ENTER ›.

4. The computer will then ask

```
Save as __
```

Type the file name again, including the .DO suffix, and press ‹ ENTER ›.

5. The computer will then ask

```
Ready?
```

Press ‹ Y › to start the loading process.

Section 2A

Designing T-base Files

How T-base Works

What I call T-base actually consists of two programs: the basic T-base program (T-BASE.BA) and the T-base report program (TB-RPT.BA).

With T-BASE.BA you begin setting up your database system by creating a series of screen files using the TEXT program on your computer. These are like the screens you purchase with most programs; only now, you have the opportunity to create your own, to your own specifications.

Setting up a system of screen files that works for you will probably be your greatest challenge in using T-base. You must give thought to the files you want and how they will interrelate with each other. Using T-base itself, as you will see, is a fairly easy matter.

With your screens set up, you will enter data into the screens. The kind of data you enter is, of course, the kind that you stipulated in creating the screens. The information you record will be stored in a condensed form in a data file—one data file for each screen file.

Once you have entered information, you are ready to use the second program, TB-RPT.BA, to print or display on your computer screen a variety of reports showing the data in detail, in summary, or both. T-base also allows you to select and sort information into a file that can be transferred to your office or home computer using the TELCOM program built into your computer.

T-base Files

While using T-base, you create three kinds of files: screen files, report files, and data files. You create screen and report files in the TEXT program of your computer. Data files are created when you run the T-BASE.BA program.

The three kinds of files are distinguished from each other by their file names. You assign the first four characters of each file name to suit yourself. For the rest of the file name you will use one of the three conventions T-base has established to distinguish the kinds of files. Here is a quick summary of the file types ("xxxx" represents the characters you assign):

xxxx*S.DO	The screen file defines the items of information to be included in the file and their order of appearance. You create screen files using the TEXT program of your computer.
xxxx*R.DO	The report file defines the type and order of a T-base report, either printed or displayed on your screen. You create report files using the TEXT program.
xxxx*D.DO	The data file stores the data you enter when you fill in the screens and is created as you use T base.

Creating Screen Files

Before we actually begin creating screen files, we are going to take a look at their general format and five of the ten commands you will be using to instruct T-base to perform the tasks you want.

Only then will we actually undertake the creation of a screen file. If you are already familiar with database management systems, you may want to skip over this exercise and go on to the remaining commands. An exercise in setting up a screen file will show you how to use those commands.

Finally, before moving on to the easy steps involved in entering data, I will discuss the importance of conceiving of your database not as a collection of individual files but as a network of interrelated files. This section will help you when you go to set up your own database.

The Format of a Screen File

Let's look at a typical screen file:

```
8,NAME,TITLE,COMPANY,STREET,CITY,STATE,
ZIP,PHONE
Customer Name:,20,TM
Title:,20,T
Company:,25,T
Street:,15,T
City:,15,T
State:,2,T
Zip:,5,T
Phone:,14,T
```

There are two parts to a screen file: the first line, which defines the file as a whole, and the subsequent lines, each of which establishes a field.

File Description Line. The first line of a screen file is

the file description line. It begins with a number designating the number of fields in the record. The number is followed by field names for all of the fields, in the order in which the fields are to appear; there must be no spaces, commas, or quotation marks *within* field names. Each item is separated from the next by a comma.

In general, when you are writing your file description line, you can fill up to five lines on your computer's screen. Should you run over, shorten the field names.

If, however, you define more than 13 fields in the file description line, the file description line will have to be shorter than five lines, according to this equation:

Maximum number of characters = 255 - 4 (number of fields)

Field Description Lines. The other lines in a screen file are the field description lines. Each of these begins with a field label, which will appear on the screen when you are entering data. Note that the field label does not have to be identical to the field name in the first line, though a close approximation is what you should aim for. The field name should be brief and to the point; the field label may be more detailed. Thus NAME in the file description line is expanded to Customer Name in the field description line.

After the field label, you may place a colon or another kind of punctuation (except a comma) that you want to appear on the screen. Follow this with the mandatory comma. The number following the comma determines the size of the field. The Company field, for example, is represented as

```
Company:,25,T
```

and will be 25 character spaces long. Later, when you summon this file to your screen using T-base, this field will appear on your screen like this:

Company:

There is another way to set the field length. Instead of typing the number of characters, you may type a series of hyphens or any other characters except commas or numbers. You may also use the ‹ GRPH › key on your keyboard to "paint" an area for the field. (See page 2A-12 for details.)

➧ **There is a limit you must keep in mind when setting up each field description line. The total of the character spaces in the field label and the number of character spaces you assign to the field length cannot exceed 39.**

Thus, if you assigned a field length of 30 to the Customer ID, you would be able to type a field label of no more than 9 characters.

➧ **There is also a limit on the *total* number of character spaces you allot your fields when you design a screen file. The limit is expressed in this formula: (sum of all field lengths) + (number of fields) - 1 = 255 or less.**

Within that limit, for example, you could set up 12 fields, each 20 character spaces long, or 10 fields of 15 character spaces together with 15 fields of 5 character spaces.

The last item in the field description line consists of a command one-to-three characters long. This command, which I call a field descriptor, tells T-base the nature of that field--whether it contains dollar amounts or text, for example, whether a figure is to be computed, whether information is to be borrowed from another file.

Let's look more closely at these descriptors, what they accomplish, and how you will use them.

Field Descriptors

For each field you set up, you must designate the type of field it is. To do this, type one or two descriptors (up to three characters in all) in each field description line as you set up a screen file.

There are five primary types of T-base fields. Each field must be designated by one of the five primary descriptors.

There are, in addition, five secondary field types and their corresponding descriptors. These descriptors are optional. When you use one of them, type it immediately after the primary designator, without a comma.

➧ **Type all field descriptors (except, of course, the dollar sign) in capitals.**

These are the primary and secondary descriptors:

	Field Type
Primary Descriptors	
T	Text
I	Integer
$	Dollar and decimal fraction
D	Date
U	User-defined
Secondary Descriptors	
B	Borrowed
BS	Borrowed and stored
C	Calculated
CS	Calculated and stored
M	Mandatory entry

Primary Descriptors

Let's first consider the primary descriptors, then undertake an exercise using them to set up a screen file. Later I'll discuss the secondary descriptors and show you how they are used to set up more complex screen files.

T - The Text Field Descriptor

Type T to designate any field consisting of characters, like names, cities, or comments. Also type T for fields consisting of numbers like postal codes and telephone numbers. Remember, information entered into a text field will be stored by the computer without being changed by T-base. The first field of any T-base file should always be designated T.

I The Integer Field Descriptor

Type I to designate any field consisting of whole numbers that may be used by T-base in subsequent calculations.

Integer fields are either positive or negative. The default sign is positive. Enter positive numbers without a plus sign. Enter negative numbers by typing a hyphen and then the number.

Allow one character space in each integer field for the sign, whether positive or negative.

T-base allows you to enter only whole numbers in an integer field. A decimal fraction will produce a beep and will be rejected. (Any letters entered in an integer field will be converted to zeros.)

Use this descriptor to designate fields of quantities of goods sold, for example, or for inventory counts.

$ - The Dollar Field Descriptor

Type $ to designate any field consisting of dollar figures. Also type $ to designate a field in which you want to express decimals or percentages.

Identify as dollar fields, for example, any fields in which you record miles you've run and the time it took you to run them, or for test scores and grade point averages.

To record a percentage, the most obvious solution is to consider 1.00 as 100%, .58 as 58%, and so on. (There are other possibilities; more about them on page 2A-26.)

Dollar fields are either positive or negative. Since the default sign is positive, you may enter positive values without typing a plus sign. To enter a negative value, type a hyphen and then the value.

Allow at least five character spaces for each dollar field: one each for the sign, the unit position (even if zero), the decimal, the tenths position, and the hundredths position.

D - The Date Field Descriptor

Type D to designate any field consisting of a date. Enter the date without slashes or commas in the yymmdd (year, month, day) format. Make every date field six character spaces long.

T-base will not allow you to enter into a date field anything that is obviously not a correct date. In the case of an improper entry, the computer will beep and wait for a reasonable entry. This feature prevents the entry of erroneous dates like 840631 or 062784.

U - The User-Defined Field Descriptor

Type U to designate any field in which you want to define the input yourself. After typing a U and a comma, type the possible entries (usually single-character entries) and enclose them in quotes.

To set up a field indicating whether a particular account is active or inactive, for example, you could type a field line like this:

```
Active/Inactive(A/I)?:,1,U,"AaIi"
```

Later, when you begin entering data into your data file, you could type either A or a to indicate an active file, or I or i to indicate an inactive file. T-base will allow you to enter only those characters; you will hear a beep if you type anything else.

You could accomplish the same thing by setting up a yes/no option:

```
Active?:,3,U,"YESyesNO no "
```

You could respond to this question by typing any of these possibilities: YES, yes, Y, y, NO, no, N, or n. Notice that in setting up the possible entries, I made all alternatives the same length. I did this by pressing the space bar after typing NO and again after typing no.

Using the Primary Descriptors

You create a T-base screen file using the TEXT program of your computer. Once the screen file is complete and stored in memory, you call up the screen on your computer using T-base.

The screen you call up will, of course, look quite different from the screen file itself: The descriptors will have

disappeared along with the entire file description line. What you see are the field labels followed by the darkened areas, where you will enter your information.

Before creating a screen file, load the T-base program. Refer to Section 1 for any help you may need.

For our exercise in creating a screen, let's set up a file to hold the names, addresses, and other information about the customers who are buying our products. This file is a duplicate of one I included in your T-base cassette as part of a sample database. Even though that file is readily available to you, I suggest that you follow me in recreating it now; the exercise will be good for you.

On the main system screen of your computer move the cursor over TEXT and press ‹ ENTER ›. If you have an NEC PC-8201, press the key marked with the ‹ bent arrow ›.

This question appears:

```
File to edit?
```

The file name to type here must be in this format: XXXX*S. When creating your own files, you may use your imagination in substituting for XXXX any combination of characters or letters. For our customer file, type

```
CUST*S
```

and press ‹ ENTER ›. (Note that the ".DO" suffix will be furnished automatically by your computer.) On the screen that now appears, you will begin creating your screen file.

Before typing the file description line, let's consider the specific items we want to include: the customer's name, street address, city, state, Zip code, and telephone number. Let's also include fields for comments, for the date when the customer's account was opened, for a designation whether the customer's account is still active, for the

percentage discount given the customer, for the customer's credit limit, and for a code identifying the customer. (The significance of this ID code will become apparent when we set up the rest of the database.)

Some quick arithmetic shows that this file will contain 12 fields. So begin the file description line by typing 12 and a comma. Then complete the line in this way:

```
12,CUSTID,NAME,ADDRESS,CITY,STATE,ZIP,
PHONE,OPENED,ACTIVE?,CREDIT,DISPER,COM
MENTS
```

When you finish, press ‹ ENTER ›.

Note that there are no spaces between field names or within a field name, and each field name is separated from the next by a comma. You may enter the field names in uppercase, lowercase, or a combination of the two. As will become apparent later, the important thing is to be consistent from one file to the next. As you can see, my practice is to type field labels all uppercase. Note, too, that this file description line is well within the limit of five lines.

On the line after the file description, type

```
Customer ID:,6,TM
```

and press ‹ ENTER ›. Don't worry about the M at the end of this field description line; this is a secondary descriptor, which I'll explain later.

Anything you type before the first comma in a field description line will appear on the entry screen. If you want to include a comma in one of these labels, you must enclose the entire label in quotation marks. The quotation marks will not appear on the entry screen, but the comma will. If, for example, you were to type

```
"City, State:",
```

the entry screen would display

```
City, State:
```

For this Customer ID field, I have suggested a field length of six characters. Let's make sure that this field does not exceed the limit I mentioned earlier:

```
  6   field length
+12   number of characters in the field label
 18
```

Only if this total exceeded 39 would we have to shorten either the field length or the field label.

As I've mentioned, you may also establish the length of a field by typing a series of hyphens or any other characters except commas or numbers. Type as many characters as you want spaces in your field.

Using the ***‹ GRPH ›*** ***Key.*** You may also use the ‹ GRPH › key on your computer, to "paint" a darkened area similar to the field that will appear on the entry screen. This key operates differently on different computers:

TRS-80 Model 100/200:	Press ‹ SHIFT ›, ‹ GRPH ›, and ‹ C ›
Olivetti M10:	Press ‹ GRPH › and ‹ : › (colon)
NEC PC-8201:	Press ‹ GRPH › and ‹ C ›

Any of these methods will have the same effect, but to save memory and make it more convenient to set up your report screens later, I suggest that you designate the field length by typing a number representing the number of spaces.

By using the "T" descriptor and designating this as a text field, I did not exclude the possibility that in setting up

your customer ID codes, you may want to use numbers along with, or in place of, characters. Numbers can be entered in T-base text fields.

Remember: Type all field descriptors (except, of course, the dollar sign) in uppercase.

For the next six fields type the following, pressing ‹RETURN› after each descriptor:

```
Name:,20,T
Street Address:,20,T
City:,15,T
State:,2,T
Zip Code:,5,T
Telephone Number:,12,T
```

Date Field. For the field to contain the date when the customer opened an account, type

```
Date Opened (yymmdd):,6,D
```

and press ‹ENTER›.

Typing `yymmdd` will remind you when you go to enter data into your customer file that you must adhere to the year/month/day format. If you don't, the computer will issue a stern beep and refuse to accept the entry.

User-Defined Field. Now type

```
Active Account (Y/N)?:,1,U,"YyNn"
```

and press ‹ENTER›. By using the "U" descriptor and typing `YyNn`, you have instructed T-base to allow only four possible entries in this field: `Y`, `y`, `N`, or `n`. Any other entry will produce a beep and will be rejected.

You will appreciate the utility of the user-defined field when you are creating report screens. By limiting the possible

entries in a particular field, you will make it possible to sort through your records for a particular entry.

Say you wanted to select the records of only your inactive customers and send letters reminding them that you are still eager to sell them your products. You could do that if this field in your records contained a few predefined entries. You could not do it if you and the others using this file responded each time with a different answer.

Dollar Field. On the next line type

```
Credit Limit:,8,$
```

and press <ENTER>. I have designated this as a dollar field since the figures to be entered are dollar amounts. I could just as well have designated it as an integer field, since the figures to be entered as credit limits are likely to be whole numbers.

Dollar and integer fields are alike except for the capacity of the dollar field to hold decimal fractions. Numbers entered in both fields are manipulated in such a way, for example, that this entry 0627 would be edited by T-base to read 627. It is for this reason that telephone and Zip code fields should always be text and not integer or dollar fields.

Remember to allow a character space in either a dollar or integer field for the sign, whether positive or negative. For a dollar field, in addition, allow three character spaces for the decimal point and the two places to the right of the decimal point.

By making the Credit field eight character spaces long, I have allowed for a maximum credit limit of 9999.99 dollars. When you set up your own screen files, you must determine the field length according to your own requirements.

On the next line type

```
Discount %:,5,$
```

and press ‹ ENTER ›. Since this discount field is set up for percentages that will always be less than 100%, I have assigned a field length of 5, the minimum for a dollar field. This will allow for discounts of up to 99%, as unlikely as they may be.

Finally, type

```
Comments:,30,T
```

and press ‹ ENTER ›. This being the last field in our customer screen file, there is a natural tendency to forget to press ‹ ENTER › one last time. Avoid the trap; press ‹ ENTER ›.

Getting around the Field Length Limit. With 30 character spaces for comments and a field label of 9 characters, this is the longest possible field.

But what if you need still more room? Rest assured that there is a way of getting around this limit. You can create additional fields like this:

```
Comments1:,29,T
Comments2:,29,T
Comments3:,29,T
```

Now you have completed the customer screen file. Before we save it to memory, let's check to see that we haven't exceeded the limit for the total number of character spaces in our file:

```
  135    sum of field lengths in the 12 fields
+  12    number of fields in the file
-   1
  146
```

We're in good shape; this total is comfortably within the 255 limit.

To save your screen file and return to the main system screen, press ‹ f8 › on the TRS-80 Model 100/200 or the Olivetti M10 or ‹ SHIFT › ‹ f5 › on the NEC PC-8201. Before we summon this customer screen and begin entering data, let's look at the remaining descriptors that are available to you when you set up your screens.

Secondary Descriptors

The secondary descriptors are optional, but in their capabilities lies the real power of T-base. With the secondary descriptors you can

- ✓ link the files in your database so that information can be exchanged between them
- ✓ set up fields that will calculate according to formulas you establish
- ✓ store in a file information you have calculated or have borrowed from another file
- ✓ require that information be entered in any field in which it is essential that information be stored

Secondary descriptors are one- or two-character codes you type immediately after the primary descriptors, without a comma.

B - The Borrowed Field Descriptor

Type B to designate a field the data for which is to be borrowed from another file. The data may be borrowed from any of the five primary types of fields. To borrow from a dollar field, type $B, from a text field TB, and so on.

Follow the descriptor with the mandatory comma and a

three-part description of exactly where the information can be located. That description designates the file, the record, and the field from which the data is to be borrowed.

In this example

```
City:,15,TB,VEND,VENDID,CITY
```

the name of the city is to be borrowed from the VEND*D.DO file, from the record within that file which is identified by a particular VENDID, and from the field within that record which is designated by the field name CITY. When it comes to entering data, the VENDID must be entered in the file before the name of the city can be borrowed.

In this example, VENDID is the ***key field***.

➧ **Data is borrowed from another file on the basis of a key field. Only by placing key fields in your database files--and placing them *first* in those files--can you borrow information later.**

Both the screen and data files for a file from which data is to be borrowed must exist in the memory of your computer when the borrowing occurs.

It is by using borrowed fields in your database that you reap some of the greatest benefits of a database management system like T-base. Borrowing makes it possible for you to enter information in one place and recall it when you need it. More about the use of borrowed fields in setting up a database later.

BS - The Borrowed and Stored Field Descriptor

Type BS to designate a field where you want to introduce borrowed information and store it. Use the BS designator with any of the primary designators. Type TBS to borrow

and store data from a text field, IBS to borrow and store data from an integer field, and so on.

After the designator and the comma, type the name of the data file, the key field of the record, and the name of the field from which the data is to be drawn. Type these specifications just as you do those for a borrowed field.

Use the BS designator to store information in a file from which you will want to borrow that information in the future. Say you were to borrow data from file A for file B. If you stored the information in file B, you would, in effect, have made a copy of the information. Later, if you wanted to borrow the same information for file C, you could borrow from either file A or B. This could be handy if for some reason you no longer had file A in your computer's memory when you went to borrow.

Though the storing of borrowed information is sometimes unavoidable, it should be done judiciously, for the obvious reason: The more information is duplicated, the less of your computer's limited memory is available to you.

C - The Calculated Field Descriptor

Type C to designate a field in which you want T-base to calculate a figure from an algebraic formula you provide. Use this descriptor with either an I or a $ primary descriptor. Type IC or $C followed by a comma.

In calculated fields you may add, subtract, multiply, or divide. You may perform these operations one at a time or in any combination within a single formula. You indicate these operations by typing different symbols, or operators:

Add	+
Subtract	- (hyphen)
Multiply	* (asterisk)
Divide	/

On both sides of an operator, you place a value: something plus something, something times something, and so on.

The values you type on either side of an operator may be

- ✓ constants like .05 or 350
- ✓ other calculations, as in .05 times the total of net plus tax
- ✓ or items taken from previous fields within the same file, as in gross minus discount

Take values from other fields within the same file by typing the name of the field containing the value. You may take values from other files, but first you must have borrowed that value in a preceding field of your current file.

Enclose your formula in parentheses and type it without spaces immediately after `IC,` or `$C,`. If your formula contains only one operation—addition, subtraction, multiplication, or division—there will be only one set of parentheses. In this example, the formula computes the gross sale for a particular order:

*Gross:,10,$C,(QUANTITY*PRICE)*

Here, *QUANTITY* represents the name of the earlier field in the same file in which you have entered the quantity of the product ordered by a customer. And *PRICE* represents the name of the earlier field in which the unit price of the ordered product was recorded; this value may well have been borrowed from another file in which you have already stored the price for that product.

More complex formulas contain more sets of parentheses. There is one pair of parentheses for each operator, as in this example:

*((QUANTITY*PRICE)-((QUANTITY*PRICE)*DISCOUNT))*

Note that there are four operators and therefore four sets of parentheses (four beginning and four ending).

There is this limit to the complexity of each formula: The sum of the number of operators and the number of values on both sides of the operators must not exceed 12. To get around this limit see the Appendix.

CS - The Calculated and Stored Field Descriptor

Type CS to produce a calculated figure you want to store. Use this descriptor with either dollar or integer fields. Type $CS or ICS followed by a comma.

Set up formulas with the CS descriptor exactly as you do with the C descriptor.

Use the CS descriptor for calculations that will be borrowed from other files.

M - The Mandatory Field Descriptor

Type M to designate fields the user must not skip over when entering data. Use this descriptor with any of the five primary descriptors except the user-defined (U) descriptor. (Since the user-defined field is already mandatory, using an M descriptor with it would be redundant.)

Type DM, $M, and so on. Do not use it with any other secondary descriptors.

In any mandatory field, the user must enter some kind of information. If the user tries to skip to the next field

without an entry by pressing <ENTER>, the computer will beep and the cursor won't budge. It will stay put until an entry is made.

Make key fields mandatory. Without an entry in each key field, T-base does not know how to distinguish one record in a file from another. Also make mandatory any field from which information is to be borrowed by another file.

Using the Secondary Descriptors

To understand more about the use of the secondary descriptors, let's create another screen file. This is the order screen file—ORDR*S.DO—which I set up for our sample database. The file is designed to enter the orders our customers place for our products.

Here is how the ORDR*S.DO screen looks:

```
13,CUSTID,PRODID,NAME,DATE,VENDNAME,QTY,
PRICE,GROSS,DISPER,DISAMT,TAX,TOTAL,COMM
ENTS
Customer ID:,6,TM
Product ID:,6,TM
Customer Name:,20,TB,CUST,CUSTID,NAME
Date:,6,D
Vendor Name:,20,TB,PROD,PRODID,VENDNAME
Quantity:,5,IM
Unit Price:,6,$B,PROD,PRODID,PRICE
Gross:,10,$C,(QTY*PRICE)
Discount %:,5,$B,CUST,CUSTID,DISPER
Discount Amount:,10,$C,(GROSS*DISPER)
Tax:,9,$C,((GROSS-DISAMT)*.047)
Total:,11,$C,((GROSS-DISAMT)+TAX)
Comments:,25,T
```

Key Field. To create this file on your computer, enter TEXT and identify as the file to be edited ORDR*S.

Press ‹ ENTER › and for the first line type

```
13,CUSTID,PRODID,NAME,DATE,VENDNAME,QTY,
PRICE,GROSS,DISPER,DISAMT,TAX,TOTAL,COMM
MENTS
```

Press ‹ ENTER › and designate the first field by typing

```
Customer ID:,6,TM
```

and press ‹ ENTER ›.

This field is like the first field in our customer screen file. Since it is to serve as a link—a *key field*—with the customer file, the field is exactly the same length in both files. This uniformity assures us that like information can be entered in both files. Also, since the field is a key field, it has been designated mandatory.

➧ **Place key fields at the beginning of any screen files from which you will borrow information. Also, designate all key fields as text fields even if you plan to enter numbers.**

When we go to use this file, the customer ID will identify in just six characters the customer placing this order. Simply by typing the ID for the customer, we will have access to all the information about that customer that will have been stored in the customer file.

Now type

```
Product ID:,6,TM
```

and press ‹ ENTER ›.

This field will be used like the first, but to identify the

product instead of the customer. The product ID will link the order file to the product file, another part of our four-part database. Into the product file will go such information as the unit price, the product name, and the vendor. Because this field is a key field, it is designated as mandatory.

Borrowed Field. Type

```
Customer Name:,20,TB,CUST,CUSTID,NAME
```

and press ‹ ENTER ›.

Here is the first field in which we are to borrow information. When we use the ORDR*S file to enter information about an order, this field will be filled in automatically with the customer's name. The name will be drawn from the customer file. Notice how I've told T-base to search the customer file for the name? I typed CUST, short for the customer data file (CUST*D).

Once in the CUST*D file, T-base looks for the record in which the CUSTID field is exactly as specified in the first field of the current screen file. When it finds that record, it goes down the list of fields until it finds the NAME field, and voila! Within a short time, you're viewing the name on your screen.

Note that the field length here is exactly as specified for the CUSTID field in the CUST*S file.

Type

```
Date:,6,D
```

and press ‹ ENTER ›.

This field will be used to enter the date of each order.

Type

```
Vendor Name:,20,TB,PROD,PRODID,VENDNAME
```

and press ‹ ENTER ›.

Like the Customer Name field above, this field draws a name from another file on the basis of information supplied at the outset. Into this field will be drawn the name of the vendor that sells the product identified by the product ID in the second field of this file.

Type

```
Quantity:,5,IM
```

and press ‹ ENTER ›.

In determining how long to make an integer field like this one showing the quantity of the product ordered, you must rely on your own experience. By making this field 5 character spaces long, I have allowed for orders of up to 9999. (Remember, always allow one digit for the plus or minus sign even when you expect your entries always to be positive.) Obviously, for businesses in which order quantities are significantly larger or smaller, the field length would have to be adjusted.

Type

```
Unit Price:,6,$B,PROD,PRODID,PRICE
```

and press ‹ ENTER ›.

This line directs the unit price to be borrowed from the PROD*D file on the basis of the key field PRODID. Remember that you can borrow an item of information only from a file in which that information is stored. Since we are merely borrowing the unit price and not storing it, we could not then borrow the unit price from here for another file.

I designated a field length of six character spaces here because the field from which the information is to be borrowed in the PROD*D file is six character spaces long.

By assigning six character spaces in the first place, I was allowing for prices as high as $99.99. (Remember that the decimal and the plus or minus sign each occupy a space.) While creating your own screens, make the field length of a dollar field suit your needs.

Calculated Field. Type

```
Gross:,10,$C,(QTY*PRICE)
```

and press ‹ ENTER ›.

Here, in our first calculated field, we are stipulating that the quantity entered in one of the earlier fields will be multiplied by the unit price, from the previous field, to yield the gross amount. Notice that I have enclosed the formula in a set of parentheses and indicated the multiplication by typing an asterisk between the values, without spaces.

I have allowed 10 character spaces for this calculation. I determined this only after multiplying the largest figure allowable in both fields—9,999 in quantity and $99.99 in unit price. Since $999800.01 is the largest possible product of these maximums, I knew that 10 character spaces (allowing up to $999999.99) would accommodate every possibility.

Type

```
Discount %:,5,$B,CUST,CUSTID,DISPER
```

and press ‹ ENTER ›.

Here we are again borrowing from the CUST*D.DO file, this time to get the discount percentage we normally allot a

particular customer. Notice that I have allowed five character spaces for this field—exactly the number I allotted the field in setting up the CUST*S.DO file.

You will soon discover that in entering data into this file, you will have the chance to override this discount percentage, substituting a zero or another number.

Type

```
Discount Amount:,10,$C,(GROSS*DISPER)
```

and press ‹ ENTER ›.

My calculations of the largest possible gross and the largest possible discount percentage told me to allot 10 character spaces for this calculation of the discount amount.

Using the $ Field for Percentages. Let me digress a moment here to show another aspect of the versatility of T-base. Let's assume for a moment that the discount percentage you allotted your customers was not 15% or 20% or any other figure that would fit into the 0.00 restrictions of the dollar field. Let's say that you normally allot fractions of percents—like 3.5%. Into the dollar field of your customer file you would enter this figure as **0.35**. Since this is ten times the actual percentage rate, you must divide by 10 when you compute your discount amount. Your formula, then, would be either (GROSS*(DISPER/10)) or ((GROSS*DISPER)/10).

Setting Up Formulas. Type

```
Tax:,9,$C,((GROSS-DISAMT)*.047)
```

and press ‹ ENTER ›.

This formula directs that the discount amount be subtracted from the gross and that figure multiplied by the tax rate of 4.7%. Notice that there are two operations—subtraction

and multiplication--and therefore two sets of parentheses.

I have set up the tax computation using three formulas. I did so because it is likely in setting up reports later that there will be a need for summaries of gross sales and discounts. For the moment, though, let's consider how we would set up this calculation in a single formula. This example will show you how to proceed when you are working with complex formulas.

On a piece of paper start at the most specific level and list the constants and variables in terms of which you must write your T-base formula. In the case at hand, these are QTY (the quantity ordered), PRICE (the unit price), DISPER (the discount percentage allotted the customer), and the tax rate (.047). All of these except the constant (.047) must be either entered into the file or placed there by borrowing before they may be used in the formula.

Next write your formula in its most general terms:

TAX = (Net.047).*

Now to break down Net:

Net = (Gross-Discount Amount).

Plugging this into your original formula, you get

TAX = ((Gross Discount Amount).047).*

Now to express Gross in terms of QTY and PRICE:

*Gross = (QTY*PRICE).*

Substituting this equivalent in the previous equation, you get

*TAX = (((QTY*PRICE)-Discount Amount)*0.47).*

The formula for Discount Amount is

*Discount Amount = (Gross*DISPER).*

By substituting the formula for Gross--(QTY*PRICE)--in the previous formula, you get

*Discount Amount = ((QTY*PRICE)*DISPER).*

Finally, we derive our T-base formula by substituting in our earlier formula the equivalent of Discount Amount:

*TAX = (((QTY*PRICE)-((QTY*PRICE)*DISPER))*0.47)*

It is by proceeding step by step like this that you build your T-base formulas.

Let's apply to this formula the test by which you determine if any of your formulas are too complex:

```
   5     the number of operators
+  6     the number of values
  11
```

It turns out that this formula, as complex as it is, falls under the limit of 12. Should you ever exceed this limit, you have a choice of two remedies:

- ✓ break up the formula so that its component operations appear in more than one field
- ✓ go into the T-base program and increase the limit (see the Appendix for details)

Now for the next field in the order file type

```
Total:,11,$C,((GROSS-DISAMT)+TAX)
```

and press ‹ ENTER ›.

Here in the last calculated field of our order file we instruct T-base to calculate the total amount the customer owes.

For the last field type

```
Comments:,25,T
```

and press ‹ ENTER ›. Then to save your file, press ‹ f8 › on the TRS or the Olivetti computer or ‹ SHIFT › and ‹ f5 › on the NEC.

T-base Memory Requirements

Before using T-base, you should know what to have loaded on your computer while using the program and how much free memory you need.

Which Files to Have in Memory. Whenever you are using TBASE.BA, you should have these files in your computer's memory:

- ✓ the screen file you are using to enter, review, update, or delete data
- ✓ the corresponding data file (Note that this file is created by T-BASE.BA the first time you enter data using a particular screen file.)
- ✓ any data file from which information is to be borrowed
- ✓ the screen file for each data file from which information is to be borrowed

Number of Files in Memory. Because of the constraints of your computer, you can borrow data from no more than eight data files. This means that you cannot have loaded onto your computer any more than nine data files (and their corresponding screen files) at one time.

Free Memory. The amount of free memory you must have in your computer to use T-BASE.BA depends in part on how you set up your screen files.

In general, T-BASE.BA occupies little enough memory (about 6.5K for the cassette version, about 30 bytes for the ROM version) to allow you considerable room to create and use a database.

Now to determine more exactly the memory requirements for a particular T-base screen file. To begin with, you must have at least 2,100 free bytes for operating purposes.

It is by proceeding step by step like this that you build your T-base formulas.

Let's apply to this formula the test by which you determine if any of your formulas are too complex:

```
   5     the number of operators
+  6     the number of values
  11
```

It turns out that this formula, as complex as it is, falls under the limit of 12. Should you ever exceed this limit, you have a choice of two remedies:

- ✓ break up the formula so that its component operations appear in more than one field
- ✓ go into the T-base program and increase the limit (see the Appendix for details)

Now for the next field in the order file type

```
Total:,11,$C,((GROSS-DISAMT)+TAX)
```

and press ‹ ENTER ›.

Here in the last calculated field of our order file we instruct T-base to calculate the total amount the customer owes.

For the last field type

```
Comments:,25,T
```

and press ‹ ENTER ›. Then to save your file, press ‹ f8 › on the TRS or the Olivetti computer or ‹ SHIFT › and ‹ f5 › on the NEC.

T-base Memory Requirements

Before using T-base, you should know what to have loaded on your computer while using the program and how much free memory you need.

Which Files to Have in Memory. Whenever you are using TBASE.BA, you should have these files in your computer's memory:

- ✓ the screen file you are using to enter, review, update, or delete data
- ✓ the corresponding data file (Note that this file is created by T-BASE.BA the first time you enter data using a particular screen file.)
- ✓ any data file from which information is to be borrowed
- ✓ the screen file for each data file from which information is to be borrowed

Number of Files in Memory. Because of the constraints of your computer, you can borrow data from no more than eight data files. This means that you cannot have loaded onto your computer any more than nine data files (and their corresponding screen files) at one time.

Free Memory. The amount of free memory you must have in your computer to use T-BASE.BA depends in part on how you set up your screen files.

In general, T-BASE.BA occupies little enough memory (about 6.5K for the cassette version, about 30 bytes for the ROM version) to allow you considerable room to create and use a database.

Now to determine more exactly the memory requirements for a particular T-base screen file. To begin with, you must have at least 2,100 free bytes for operating purposes.

(If you alter line 9 of your program to increase the string space as explained in the Appendix, add the amount of that increase to 2,100.)

To these 2,100 bytes, you must add calculations of additional bytes based on these factors:

> Calculation size (CS)—This is 12, unless you have altered the program to accommodate more complex formulas in calculated fields.
>
> Number of data fields (FN)—Use the number at the beginning of the file description line.

Now to calculate the maximum memory requirements for a given data file, perform these calculations:

Maximum memory = 2,100 + 8(CS) + 4(CS)(FN) + 36(FN)

The total tells you in bytes the maximum amount of free memory you should have in your computer to use a particular screen file though you may well get by with less.

If you are using the ROM version of T-base, you should add 800 bytes to your calculations to determine the maximum memory you need.

Section 2B

Entering Data

Introduction

You are about to discover how easy it is to enter data using T-base. You'll also learn how to review, update, and delete that information. Reading the next four pages will give you the basic facts you need to use the ‹ ARROW › keys, the function keys, and a few other keys to perform these operations.

If you have been using your computer for some time, you may well find in this overview enough information to launch you on your way to data entry.

For more detailed information, I have also included a section in which I go through the steps of entering data through the sample screen files I included on the cassette with your T-base programs.

These files compose a sample database I created for you.

To take part in the data entry exercise, you must load the sample screen files into your computer. They are stored on your cassette after the programs and in this order: VEND*S.DO, CUST*S.DO, PROD*S.DO, and ORDR*S.DO.

If you followed my step-by-step guide to using the descriptors in Section 2A, you're already familiar with two of those screen files—the customer file (CUST*S.DO) and the order file (ORDR*S.DO). Those of you with these files in your computer will want to use them in the exercises in this section. For the data entry exercises, then, you'll only have to load from cassette these files: VEND*S.DO and PROD*S.DO.

Even if you choose to skip over the step-by-step instructions for entering data, I suggest that you load these sample files into your computer and enter some information. Then when it comes time to prepare reports, you can do so without first having to set up a database of your own. For instructions on loading these sample files, see "Loading Files from Cassette" in Section 5.

The Basics of Data Entry

Now for the basics of filling in your T-base screens.

After each field label (Customer ID, Product ID, and so forth) there is a black background for you to fill in. This is the field you set up in your screen file. If you use up all the space in the field and fill in the field with the right kind of information, the cursor will automatically jump to the next field. If you don't use up all the available space, press ‹ ENTER › or the ‹ ↵ › key when you complete your entry.

If you hear a beep, you know your entry is unacceptable or you have tried to skip over a mandatory or user-defined field without making an entry. If you hear a beep, give an entry the program will accept.

Use the ‹ ↑ › and ‹ ↓ › keys to move from one field to another. Use the ‹ ↑ › key to move to the previous field and make changes you've typed there. Use the ‹ ↓ › key to move to the next field once you've finished with a particular field without using up the available space.

Use the ‹ → › and ‹ ← › keys to move forward and backward within a field.

To erase the contents of a field you are working in, press the ‹ ESC › key on the Radio Shack or NEC computer or the ‹ CTRL › key and ‹ 0 › on the Olivetti. The cursor moves to the beginning of the field, allowing you to make a new entry.

In date fields, the current date automatically appears. You may accept this default setting by pressing ‹ ENTER › or the ‹ ↓ › key, or you may specify another date by typing over the default; if you have entered the date to the satisfaction of T-base, the cursor moves to the next field.

To have the current date appear as a default, you must have your computer set to the current date. When it comes time to print reports with T-base, it will also help if you have set the time. Check your computer manual for help.

In key fields (those you use to borrow information from one file for another or to sort your records), be consistent in using uppercase and lowercase letters: T-base does not view SMITH in the same light as Smith or smith. Also, for ease of use, avoid entering your key field values with a space before or after the values: Typing ‹ SPACE › and SMITH is not the same as typing SMITH.

Your other major T-base tools are the function keys.

On the next page is a table of the functions I have assigned to those keys and the corresponding prompts that will appear on your screen.

Prompt	Function Key TRS-80/ Olivetti	Function Key NEC	Function
Sav	f1	f1	Saves into computer memory whatever data you have just typed
Del	f2	f2	Deletes from computer memory the record currently on the screen
Fin	f3	f3	Directs the computer to find the record you specify (by filling in a key field); displays that record on your screen
Pre	f4	f4	Displays the previous record (according to the order the computer stores records)
Nex	f5	f5	Displays the next record (according to the order your computer stores records)
New	f6	< SHIFT > f1	Clears the screen without saving the contents to memory
Cal	f7	< SHIFT > f2	Recalculates for you all the calculated fields in a file in case any of the values in the formulas change
End	f8	< SHIFT > f5	Gets you out of T-base without first saving data

Troubleshooting

It's likely that the first few T-base screens you set up will contain an error or two: a missing comma, perhaps, a field that is too long, a file description line that does not fit the field description lines below it.

Mistakes you make in creating a screen file will not be detected until you go to load it using the T-BASE.BA program. The nature of the error will be indicated by a message appearing on your screen. Note the error number and refer to Section 6 for a solution.

As with so many things, practice with T-base makes perfect.

Storing Data in the Sample Database

By following this exercise in entering data into a sample database, you will not only learn the nuts and bolts of data entry but also see how a relational database works.

The sample database I've included with your product was set up to handle customer orders for a variety of products, which, in turn, are purchased from a vendor. The database consists of these four files:

VEND*S.DO — The vendor screen file is designed to store information about the company selling us the products at wholesale.

CUST*S.DO — The customer history screen file is used to store such information about each customer as address and telephone number, credit limit, and the discount rate usually given that customer.

PROD*S.DO — The product screen file is used to store information about the products themselves, including their unit prices. Information about the vendor of each product is borrowed from the vendor file.

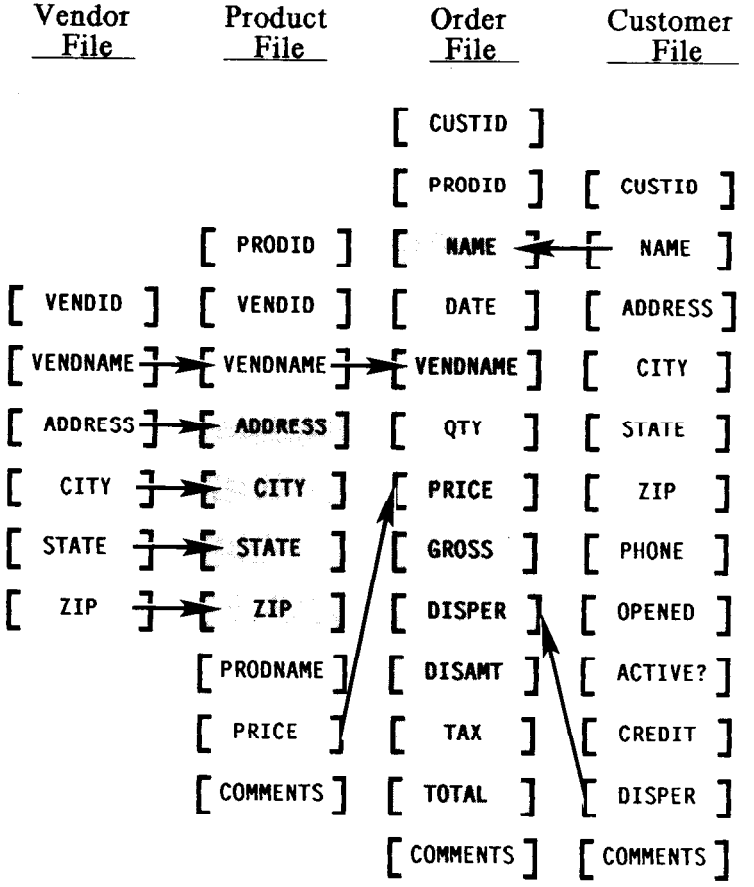
ORDR*S.DO — The order file is designed to hold information about each order. It borrows information from the customer and product files; that information is used to compute such quantities as the discount amount, the tax, and the total sale.

On the next page you'll find a diagram illustrating how the sample database works.

The data files illustrated are those created by the above screen files. The fields within those files are designated by field names from the first line of each screen file. The

arrows show how information is transferred from one file to another. The shaded fields are those in which data is not stored in the computer's memory; information for these fields is borrowed from other files.

Sample Database



VEND*S.DO File

Now to store information using the VEND*S.DO file.

Remember that in using the VEND*S.DO to enter information, you will be creating records that will be stored in the file named VEND*D.DO. (The **D.DO* suffix indicates a T-base data file.)

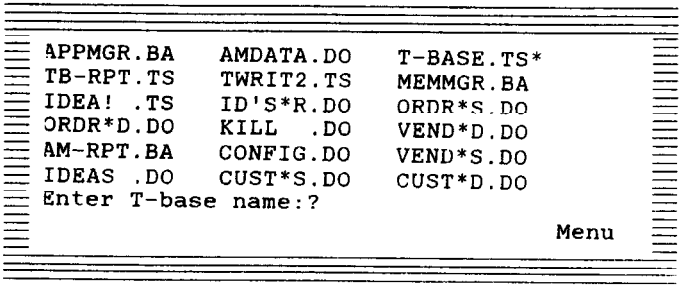
Order to Entering Data. We're going to start with the vendor file because in the hierarchy of files within this database, the VEND*S.DO file is at the most basic level: It borrows no information from another file.

When it comes time for you to store information in your own T-base files, I advise you to follow a similar procedure. Start with the file or files that stand by themselves, needing no information from elsewhere in your database. Move on to the next level, the file or files that draw from the basic level. Continue in this way till you have stored information in all the files of your database.

Note that T-base does not prevent you from entering data in a file set up to borrow information that does not yet exist in another file. T-base merely flashes a message reminding you of that fact, and you may continue by supplying the missing information. Later, of course, you will have to go to the lower-level file and enter the information where it belongs.

To begin storing information using the VEND*S.DO screen, make sure you have loaded VEND*S.DO and T-BASE.BA from your T-base cassette. Then on the main system screen of your computer place the cursor over T-BASE.BA and press ‹ ENTER ›.

After the T-base title screen you will see a screen similar to this:



At the top of this file-selection screen you see listed all the programs and files stored in your computer. There is also this instruction:

```
Enter T-base name:?
```

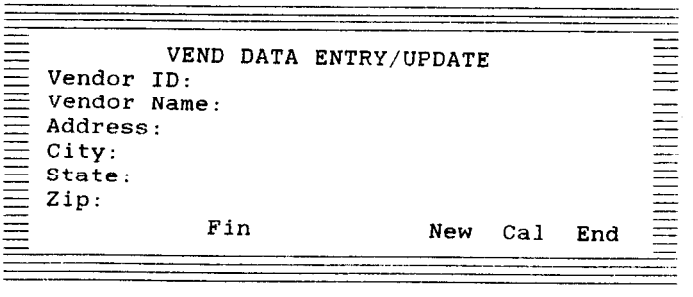
The cursor is blinking where you are to tell T-base which screen file you want to call up. In ***capital letters*** type

```
VEND
```

and press ‹ ENTER ›. (Note that you do not have to type the `*S.DO` suffix.) This message appears momentarily:

```
Loading screen information . . . . .
```

and then you see the vendor screen itself:



If you are calling up the vendor screen file you created yourself, you should not be discouraged if you see instead of

the above screen an error message. To correct any error you may have made, refer to Section 6. Then join me for the rest of this exercise.

Once the vendor screen is before you, notice that **VEND** appears at the top of the screen, reminding you of the file you are working in. Notice, too, some of the T-base prompts have appeared at the bottom of the screen. I'll talk about them once we have entered some information.

Key Field. The cursor is blinking in the first field, Vendor ID. Just to see what happens, try skipping this field by pressing ‹ ENTER ›. Hear the beep? It tells you that this is a mandatory field. You must enter something before moving on.

Following my own advice, I made this field mandatory because it is a key field, which links this file to others in the database. I've allowed six character spaces for the vendor ID code. In your key fields use codes that make sense to you. You may use letters, numbers, or a combination of the two. Just remember when typing codes in your key fields, it is best that you don't press the space bar at all.

Type a vendor ID of your choice. Once you have filled in the field, the cursor moves automatically to the next field.

➧ **For the sake of keeping your records in proper order, it is best to use all the spaces you have allotted to a key field when entering numbers.**

When you enter numbers in a key field, it is best to use zeros to fill in the spaces for those numbers that do not take up all the allotted spaces. Those "extra" zeros should *precede* the numbers.

Say you have allotted three spaces for a key field. To enter *1*, type **001**. To enter *10*, type **010**. To enter *100*, type **100**, and so on.

Now type a vendor name. In the future, T-base will link

the vendor ID and the vendor name you just typed. To retrieve information about this vendor, you need type only the vendor's ID.

Notice that you cannot type a comma. T-base does not allow you to type commas when you are entering information.

Save. Go ahead and fill out the rest of the screen. When you reach the end and type a Zip code, the cursor automatically returns to the beginning of the first field. To save your record, respond to the Sav prompt, which has appeared at the bottom of the screen. Press ‹f1›. The screen clears and the cursor waits in the first field for another entry. Go ahead and make a few more entries. Remember to press the Save function key each time you complete a record.

Remember, too, to make a list of the ID codes you use here and in the other files of the database. You will need to type them in the future exactly as you typed them in the first place. Later, you can use the T-base report-printing program to print a handy list of these codes and the vendors, products, and customers to which they refer.

Now let's review the other prompts that appear at one time or another while you are storing information in your T-base data files.

Find. The Fin (for Find) prompt is often available when you are working in a file into which you have entered records. The Find function is a handy means of locating entries you've already made. Just fill in the first field with one of the vendor IDs you've already entered, and press ‹f3›. T-base then summons to the screen the complete record that goes with that vendor ID.

The Find function is useful any time you want to revise a record or review its contents.

Delete. You may also delete a record from your computer's memory. Notice the Del (for Delete) prompt that

appears when you find a record? Use Delete to erase the record and clear the screen for another entry. For Delete, press ‹ f2 ›.

Previous and Next. To peruse your records, you may use the Previous and Next functions. Their prompts are Pre and Nex, respectively. These prompts appear whenever you have called up a record using the Find function.

For Previous, press ‹ f4 ›. For Next, press ‹ f5 ›.

Use the Previous function to find the previous record, and the Next function to find the next record. Note that *previous* and *next* refer not to the order in which you entered your records but to the order in which they were stored by your computer.

In storing your records, your computer places them in an alphanumeric sequence, according to the first field. If you are using letters for the first field, your records will be stored in alphabetical order, capital letters before lowercase. If you are using numbers, the records will be stored in ascending numerical order (see page 2B-11 for details). If you are using a combination of letters and numbers, you must remember that the computer orders numbers before letters.

If you simply want to peruse your records by summoning them to the screen one at a time, you may start with a fresh entry screen and press the Find function key. This will summon to the screen the first record in your file. Then use the Next function key to proceed through your records. If you want to backtrack, press the Previous function key.

New. The New function allows you to clear the screen of a record you have found and to prepare for a new entry. To activate New, press ‹ f6 › on the Radio Shack or Olivetti or ‹ SHIFT › and ‹ f1 › on the NEC.

Go ahead and use the function keys to search your records.

When you are acquainted with the process, use the End

function to get out of the VEND screen and return you to the file-selection screen.

CUST*S.DO File

On your T-base file-selection screen type

```
CUST
```

and press ‹ ENTER ›, and this screen appears:

```
          CUST DATA ENTRY/UPDATE
Customer ID:
Name:
Street Address:
City:
State:
Zip Code:
              Fin              New  Cal  End
```

Go ahead and fill in the fields on the screen. Notice that as soon as you have typed a Zip code, the screen scrolls up to reveal another field—the Telephone Number field.

I allowed 12 spaces in this text field—just enough room to type the area code and the customary dashes.

Date Field. As soon as you fill the telephone field with a number, you see the Date Opened field. The cursor is blinking at the start of the field, but there is already a date there. This is the current date. You may accept it by pressing ‹ ENTER › or ‹ ↵ ›, or you may type a new date over the current date.

Remember to type dates in the yymmdd format, two digits each for the year, the month, and the date. Remember, too, that the current date will not appear as a default unless your computer is set to the current date.

User-Defined Field. The Active Account field is user-defined. I have allowed for only four possible entries: Y, y, N, and n. Type any other character, and you will hear a beep. You will also hear a beep if you try to bypass this field without making an entry.

Dollar Field. Once you have typed an acceptable entry, the cursor moves to the Credit field. This is a dollar field for which I have allowed eight character spaces. Remember that one of those spaces is occupied by the plus or minus sign, one by the decimal, and two by the cents. That leaves four spaces for the whole-dollar figures.

Type a whole-dollar amount of no more than four digits and press ‹ ENTER ›. T-base records that amount and adds the decimal and zeros for cents.

To replace that entry, press ‹ ← › to return to the Credit field. Then press ‹ ESC › on the TRS-80 Model 100/200 or the NEC PC-8201 or ‹ CTRL › and ‹ @ › on the Olivetti M10. Now type an amount that includes cents. Be sure to include the decimal.

If you exceed the space limitation, the computer will beep and this will appear in the field:

```
0.00
```

To enter the amount you want, press ‹ ESC › (or ‹ CTRL › and ‹ @ ›) and type the figure.

If you type neither a plus nor a minus sign, the entry is recorded as a positive number. To enter a negative number, press the hyphen key before typing the number.

The Discount % field is a dollar field with five spaces. To record a discount rate of 45%, for example, type

```
.45
```

and press ‹ ENTER ›.

Type comments in the last field, press ‹ ENTER ›, and save the record by pressing ‹ f1 ›.

Before going on to the PROD file, enter a few more records in the CUST file. Then press the End function key to return to the T-base file-selection screen.

PROD*S.DO File

On the file-selection screen type

```
PROD
```

and press ‹ ENTER ›. This screen appears:

```
          PROD DATA ENTRY/UPDATE
Product ID:
Vendor ID:
Vendor Name:
Street Address:
City:
State:
              Fin              New  Cal  End
```

Out of the 10 fields in this file, only five call for information to be entered. The remaining fields will borrow information you have entered in the vendor file.

In the first field type a product ID no longer than six characters. Press ‹ ENTER › or the ‹ ↵ › key if you finish without using all the spaces.

In the next field type a vendor ID you entered in the vendor file. Press ‹ ENTER › or the ‹ ↵ › key if needed.

Borrowed Fields. Soon after the cursor moves to a borrowed field, T-base summons to the screen information borrowed from the appropriate file. Here the Vendor Name field is filled in with the name of the vendor that

corresponds to the vendor ID you just typed. To accept this information and move to the next field, press ‹ ENTER › or ‹ ↵ ›.

You are not bound to accept borrowed information. Once it appears on the screen, you may change it by pressing ‹ ESC › on the TRS-80 Model 100/200 or the NEC PC-8201 or ‹ CTRL › and ‹ Ø › on the Olivetti M10. The field clears, allowing you to type something else.

Pressing ‹ ENTER › or ‹ ↵ › will produce information from your vendor file in the next four fields. Press ‹ ENTER › four times; then fill in the last two fields, and save your record. Repeat this process until you have created and saved a few records. Then press the End function key.

ORDR*S.DO File

On the T-base file-selection screen type

```
ORDR
```

and press ‹ ENTER›. This screen appears:

```
          ORDR DATA ENTRY/UPDATE
Customer ID:
Product ID:
Customer Name:
Date:
Vendor Name:
Quantity:
              Fin              New  Cal  End
```

Among the 13 fields in this file are four that borrow information from elsewhere in the database and five that perform calculations. This is the screen I used as an example in explaining the secondary descriptors earlier in Section 2A.

Begin entering your order information by typing first one of

your customer IDs and then one of your product IDs. When you reach the Customer Name field, T-base fills in the appropriate information for you.

In the Date field, either accept the current date that appears or type another date.

Then in the Vendor Name field you see the name of the vendor who sells you the product you just specified in the second field by typing the product ID.

More about Borrowing. Let's review how the vendor's name got here in the order file:

- ✓ In the vendor file you placed a vendor ID for each vendor.
- ✓ In the product file, you entered a vendor ID identifying the vendor of each product.
- ✓ Then the product file borrowed the vendor's name from the vendor file on the basis of the vendor ID *and stored the name*.
- ✓ Finally, the order file borrowed the name stored in the product file.

➧ **Remember: T-base cannot borrow any information from a file unless it is stored there.**

Press ‹ ENTER › to move to the Quantity field, where you may type a whole number of four digits or less. Press ‹ ENTER › and the unit price appears; this is the price you entered for this product in the product file.

Press ‹ ENTER › and you see already calculated for you the gross amount (the product of the unit price times the quantity). Press ‹ ENTER ›.

In the Discount field you now see the discount rate you entered for this customer in your customer file. If you want to change it, press ‹ ESC › and type another amount, or

simply press ‹ ESC › and ‹ ENTER › if you want no discount.

In the Discount Amount field you see the product of the discount amount and the discount rate and in the Tax field the tax computed on the basis of a 4.7% rate.

In the Total field, T-base calculates the total price to the customer.

Calculate. Before saving this record, let's see how the Calculate function works. Pressing ‹ ↑ ›, move back to the Unit Price field, press ‹ ESC ›, and enter a different price. Press ‹ ENTER › and then activate the Calculate function. Press ‹ f7 › on the TRS-80 Model 100/200 or the Olivetti M10 or ‹ SHIFT › ‹ f2 › on the NEC PC-8201. Within a second or two, all the subsequent calculations are revised automatically on the basis of the new value for unit price.

Be sure to save this record by pressing ‹ f1 ›. Store several more records, including a few for the same customer.

More about Find. With a few order records stored for a customer, explore the flexibility of the Find function.

After pressing the New function key, enter just the customer ID, press ‹ f3 ›, and you will find the first of that customer's orders. (By *first*, of course, I mean the first one in the alphanumeric sequence in which they are stored.)

If you want to be more precise and review the order a customer placed for a particular product, enter the customer ID and the product ID; then press ‹ f3 ›. Now you will see the customer's order for that product. The more information you type before pressing the Find function key, the more specific T-base will be in its search.

Now that you have stored information in our sample database, you are likely eager to produce reports. Please turn to the next section for details.

Section 3

Creating T-base Reports

Introduction

Here in Section 3, I will discuss the way you go about using the information in your database to create reports both on your computer screen and on the printed page.

The T-base report-printing program—TB-RPT.BA—gives you considerable flexibility in designing reports from your T-base files. The secret of that flexibility lies in your ability to draw information from several data files to produce a single report.

What you produce with TB-RPT.BA may be as basic as mailing labels or as complex as multi-column reports with subtotals and grand totals.

This program will produce figures computed from formulas you create for data entry and storage. It will also allow you to select the records in your database you want to cover.

Rest assured that by creating your screen files and setting up your database, you have accomplished the most challenging part of adapting T-base to your needs. Now, by designing your reports, you will reap the rewards of your efforts.

In the following pages you will find a quick overview of the steps in creating report files and a handy reference section explaining the 13 report definition commands you use in setting up these files.

You will also learn how to select certain records in your data file by setting a range of values in one or more fields of that file. You have the chance to select records once you have completed your report file and are preparing to produce reports.

Reading those pages may be enough to get you started on your own. Using a report file to produce reports is a simple matter—particularly once you know how to use the record-selection screen.

Should you want more detailed information, read on. In the remainder of this section, I provide exercises in creating reports using the sample database included on your T-base cassette. I encourage you to follow those exercises on your own computer as you read. If you haven't done so already, load the four sample screen files. Refer to Section 1 for instructions. Once you've entered data using those screen files, you'll be ready to undertake the exercises.

Creating a Report File

To produce T-base reports, you need to load the TB-RPT.BA file from your cassette into your computer. Load TB-RPT.BA just as you did T-BASE.BA. Refer to Section 1 for a reminder of the procedure.

Now let's see what's involved in creating a report file.

The steps in designing a T-base report file are similar to those you followed in designing a screen file.

1. Create a file using the TEXT program. Name the file xxxx*R, where xxxx indicates the characters you assign to the file and *R designates this as a report file. You may use up to four characters to name a file.

2. On the blank screen of your computer, type a series of lines, each one beginning with a report definition command. These predefined, two- or three-character commands instruct T-base to perform certain functions. There is one command, for example, that places a heading at the top of your report; another indicates in what columns designated items of information are to be placed.

3. Follow each of these commands with additional information that particularizes the more general information contained in the command. The heading command, for example, is followed by the words you want to appear as the heading. The command placing an item of information in a certain column is followed by a number designating where that column is to begin.

Before you prepare a report of your own, it is important that you print a copy of your screen files for reference.

Then sketch on a piece of paper how you want the report to look. Consider these matters:

- ✓ which data file the information will come from
- ✓ where the information will be placed in the report
- ✓ what columns you want to set up and with what labels (headings)
- ✓ which columns are to be totaled
- ✓ what order your records must be in to produce the report you want

Report Definition Commands

Here is a brief explanation of each of the 13 report definition commands.

The order in which I have listed the definition commands here—and on the Quick Reference Card at the end of this book—is the order in which they must appear in your report file.

As noted below, three of the report definition commands are required under almost all circumstances; the others are optional, depending on what you intend to have your report file accomplish.

DB Command

Function: Designates the data file in the database from which your information is to be drawn. This is always a required command.

Format: `DB,xxxx`

Here xxxx represents the four characters you assigned to this file when you set up its screen file. Specifying CUST, for example, will cause T-base to draw data from the CUST*D.DO file.

Note that designating a single data file does not mean that you are limited to drawing information from that file. Here's where the true power of the borrowed fields in your database becomes apparent: By drawing information from a data file which, in turn, borrows information from other data files, you are enlarging the scope of information from which you may create your report.

SO Command

Function: Sorts your xxxx*D.DO file and rearranges it as you direct, without returning the file to its original form.

Format: `SO,FIELD2,FIELD1,*NEW,etc.`

Here `FIELD2,FIELD1,*NEW,etc.` specifies that Field 2 is to become Field 1, Field 1 is to become Field 2, a new field is to be Field 3, and so on.

Use the SO command to redesign a data file. You may do so by deleting existing fields, by adding new ones, by changing the order of fields, or by any combination of these.

- ✓ To delete a field, simply omit its name when typing the SO line.
- ✓ To add a field, type `*NEW` at the appropriate place in the SO line.
- ✓ To change the order of fields, type the new order in the SO line.

➧ **You may include as many or as few of your original fields as you want, but since the data file will be permanently altered (with any unspecified fields omitted), be sure that you include all the fields you may need in the future.**

There are four steps in redesigning a data file:

1. Set up a report file using the SO command to specify the fields and the order of the fields.

2. Run TB-RPT.BA with the report file you have set up for the new data file.

3. Rename the new file, giving it a name other than the XXXX*D.DO file name T-base assigns it.

4. Update the screen file: Change the file description line to indicate the correct number and order of fields, and add, delete, revise, or reorder the field description lines as needed. (Remember especially to check borrowed and calculated fields for possible changes.)

See Exercise 5 for more information.

SR Command

Function: Sorts your xxxx*D.DO file and rearranges it as you direct; then returns it to its original form once the report is completed.

Format: `SR,FIELD2,FIELD3,etc.`

Here `FIELD2,FIELD3` specifies that Field 2 is to become Field 1, Field 3 is to become Field 2, etc. Fields not included with this command will follow in their original order.

You do not have to specify all the fields you want to draw from, as you must with the SO command. Specify only the fields you want at or near the beginning of the file.

Use the SR command for reports that require an order of records in the data file which differs from the order in which you set them up in the screen file for that data file.

See Exercise 4 for more information.

PL Command

Function: Sets the page length of your report.

Format: `PL,nn`

Here `nn` is the number of lines.

Default: 66 lines, the number of lines on the standard 8 1/2 by 11-inch sheet. If this is your preference, do not type a PL command at all. For more information, see Exercise 1.

PW Command

Function: Sets the width of the report in character spaces.

Format: `PW,nn`

Here nn is the number of character spaces between the right and left margins.

Default: 80 character spaces, a suitable setting for the standard page. If you want this page width, you do not need to type a PW command.

For reports to appear on the screen of your portable computer, set the page width at 40.

OUT Command

Function: Directs output as either a report or a data file to one of several destinations:

- ✓ to your computer screen
- ✓ to a CRT monitor
- ✓ to cassette for storage
- ✓ to a printer through either a parallel or serial port
- ✓ to the modem port for telephone transmission
- ✓ to the memory of your computer
- ✓ to a disk drive

Format: OUT,FILE,destination:
or
OUT,REPORT,destination:

Here FILE directs the information to be sent as a data file (without headings, columns, etc.) and REPORT directs that the complete report (with headings, columns, etc.) be sent. For destination type any of these possibilities:

LCD:	To direct output to your computer's screen
CRT:	To direct output to a CRT monitor (if available to your computer)
CAS:filename	To store output in cassette (be sure to include .DO suffix in file name)
LPT:	To send output to a line printer through the parallel port
COM:xxxxxx	To send output to printer through the RS-232C port (for xxxxxx, type appropriate communication parameters; consult your computer's manual)
MDM:xxxxxx	To send output through modem port (for xxxxxx, type appropriate communication parameters)
RAM:filename	To store output in your computer's memory (be sure to include .DO suffix in file name)
0:filename	To store output on disk

Default: REPORT,LPT:. To produce printed reports using the parallel port, you do not have to use the OUT command. For more information about the OUT command, see Exercise 2.

HE Command

Function: Determines the heading to appear at the top of each page of the report.

Format: HE,Report Heading

Here Report Heading is the heading you want to appear.

The heading will be centered between the margins you set using the PW command, or within 80 character spaces if you accept the default for page width.

You may produce headings of up to 10 lines. To produce a second line, start on the line immediately below the first HE command, and repeat the HE command, followed by the words you want to print. For subsequent lines, repeat the procedure. Then to skip a line between those lines of heading and the body of the report, type HE, and press ‹ENTER›.

For more information, see Exercise 2.

CO Command

Function: Determines the position on the page where the columns are to begin, thereby setting the widths of the columns. This is a required command whenever you print a report; it is not required when you are using either the SO or SR command only to redesign a data file.

Format: CO,nn,nn,nn,nn,nn

Here nn,nn,nn,nn,nn represents the beginnings of five columns.

You may designate as many as 20 different columns, but the total of their widths usually must not exceed the width you set for the page.

Before setting the column starts, you should first determine the labels that are to appear at the tops of the columns and the detail items that are to appear below the labels. (See the CL and DE commands below.) Knowing the length of the labels and the detail items tells you how wide to make the columns. See Exercise 2 for a detailed explanation of computing your CO line.

CL Command

Function: Determines the labels that are to appear at the top of each column.

Format: `CL,Label1,Label2,etc.`

Here `Label1,Label2` indicates the words that are to appear at the top of columns one and two, respectively.

You may designate as many as five lines of labels. This allows you to use column labels of more than one line. To produce column labels like these

```
Customer    Customer
Name        ID
```

type two lines using the CL command:

```
CL,Customer,Customer
CL,Name,ID
```

Note: T-base underlines all column labels.

For details about column labels with multiple lines, see Exercise 3.

DE Command

Function: Designates the names of the fields in the data file from which data is to be taken and placed under the specified column labels in the report. This is a required command whenever you print a report; it is not required when you are using the SO or SR commands only to redesign your data files.

Format: DE,FIELD3,FIELD2,etc.

Here FIELD3,FIELD2 indicates the names of fields three and two, from which you want to draw data. Note that these are the field names (the names you typed in the first line of your screen file) and not the field labels, which appear on your screen when you enter data. For more information, see Exercise 1.

ST Command

Function: Directs that a subtotal is to be computed using data from designated fields in the data file.

Format: ST,BREAKFIELD,FIELD2,FIELD3,etc.

Here BREAKFIELD indicates the field that tells T-Base it should not proceed further without computing a subtotal and FIELD2,FIELD3 indicates the fields in the data file to be subtotaled.

You may use as a breakfield the field with the client's name, for example. Each time the client's name changes, T-base calculates a new subtotal. The fields to be subtotaled must be either dollar or integer fields.

A breakfield must appear in a file description line before the fields to be subtotaled.

For more information, see Exercise 3.

GT Command

Function: Stipulates a grand total.

Format: `GT,FIELD1,FIELD2,etc.`

Here `FIELD1,FIELD2` indicates the names of the fields in the data file to be totaled. These should be either dollar or integer fields.

For more information, see Exercise 3.

FP Command

Function: Forces a new page for any part of the report that follows.

Format: `FP,FIELDNAME`

Here `FIELDNAME` indicates the name of the field that tells T-Base to leave the present page and begin on the next. As T-base goes through records to produce a report, it will begin a new page each time it finds a different value in the field typed after the FP command.

For more information see Exercises 1 and 4.

Selecting Records in Your Database

While using the T-base report program, you have the opportunity to choose which records in your database you want to include in a report.

You select records by designating a range of values—either alphabetical or numerical—within one or more fields of your data file.

The opportunity for this choice comes after you have completed your report file and have begun using TB-RPT.BA to produce a report. Once you have typed the name of the report file and TB-RPT.BA has loaded that file, you will see the record selection screen:

```
Enter any field selection ranges.
e.g.

Field =>? DATE
Low value =>? 840101
High value =>? 840329

Field =>?
```

The cursor is waiting for you to type this information:

- ✓ the name of the field in the data file you want to limit
- ✓ the starting and ending values for the information to be included

In the example on the screen, the records are to be selected on the basis of date: Only those dated from January 1, 1984, to March 29, 1984, would be included in the report.

To select a range of records, first type a field name in the data file you are using to produce the report. Type this name exactly as you typed it when you set up the screen file for this data file. Note that the field name does not have to

appear in the report file at all.

In the example on the screen, DATE indicates the field in the data file to be used for selecting the records.

Press ‹ ENTER › and this question appears:

```
Low value =>?
```

Here you type the information that tells T-base where to begin selecting information.

In the example on the screen, 840101 directs that no records before January 1, 1984, would be included in the report.

Press ‹ ENTER › and this question appears:

```
High value =>?
```

Here you type the information that tells T-base where to stop selecting information.

In the example on the screen, 840329 directs that no records later than March 29, 1984, would be included in the report.

Press ‹ ENTER ›, and you have the chance to limit even further the records for your report by selecting another field and limiting its values.

If you want no further selection, press ‹ ENTER › when this question reappears:

```
Field =>?
```

Record selection is optional. If you want to include in your report all the records in your data file, simply press ‹ ENTER › at the first appearance of the record selection screen.

For further examples of the use of this feature, see Exercises 1 and 2.

TB-RPT.BA Memory Requirements

Before you use the T-base report program, you should be aware of certain considerations having to do with what's on your computer when you use the program.

Number of Files in Memory. Because of the constraints of your computer, you cannot produce a report that draws from more than seven data files. That means you can have on your computer while producing reports a total of eight interrelated data files, including the one you designate with DB.

Which Files To Have in Memory. For each T-base report, you must have these files in your computer's memory when you produce the report:

- ✓ the data file you type after the DB command in your report file
- ✓ the screen file corresponding to that data file (i.e., the screen file with the same first four characters in its name)
- ✓ any data file from which information is to be borrowed
- ✓ the screen file for each data file from which information is to be borrowed

Free Memory. The amount of free memory you must have in your computer to use TB-RPT.BA depends in part on how you have set up your screen and report files. I will give you a formula by which you can estimate from those files the maximum memory requirements to operate TB-RPT.BA. First, some general considerations.

The cassette versions of T-BASE.BA and TB-RPT.BA occupy relatively little space in your computer's memory—about 6.5K for T-BASE.BA and 7.5K for TB-RPT.BA (somewhat more on the NEC). You may have both of them in your computer if your database is small enough or the memory of your computer is large enough.

If you incur an out-of-memory error (#7) while operating TB-RPT.BA on the cassette version, the first step is to delete T-BASE.BA from memory. If you still incur error #7 or if you have the ROM version, unload to cassette then delete any files in your database (both screen and data) that you do not need for the report at hand.

Now for a detailed examination of TB-RPT.BA memory requirements. To begin with, you must have a minimum of 3,000 free bytes for operating purposes. (If you alter the program to increase the string space, add the amount of that increase to 3,000.)

To these 3,000 bytes, you must add calculations of additional bytes based on these considerations:

- ✓ Calculation size (CS)—This is 12, unless you have altered the program to accommodate more complex formulas in calculated fields.
- ✓ Number of report columns (CN)—Count the number of column starts you placed in the CO line of the report file.
- ✓ Number of data fields (FN)—Use the number at the beginning of the file description line of the data file you specified while typing the DB line of your report file.

Now to figure the minimum memory requirements for a given report, perform these calculations:

Minimum memory = 3,000 + 8(CS) + 4(CS)(FN) +
52 (FN) + 21(CN) + 8(CN)(CN)

The total tells you in bytes the minimum amount of free memory you should have in your computer to produce a particular report.

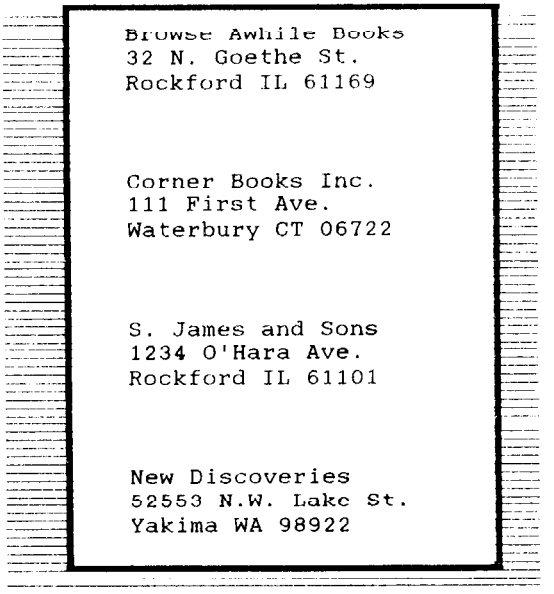
➧ **For the ROM version of T-base, add 800 bytes to this equation.**

Exercise 1: Printing Labels

In this exercise you will

- ✓ proceed step by step in creating, saving, and using a report file to produce mailing labels
- ✓ use the T-base record selection screen to select certain records (those of the inactive customers)
- ✓ use the CO command to arrange information in columns on the page
- ✓ use the PL and FP commands to fit the report into a certain format

The labels will be printed out like this:



Creating the Labels Report File

To set up a label report file, have the sample screen files loaded onto your computer from your T-base cassette along with data files you created using those screen files. Then follow these steps:

1. On the main system screen of your computer place the cursor over TEXT, and press ‹ ENTER ›.

2. In response to this question

```
File to edit?
```

type

```
LABL*R
```

and press ‹ ENTER ›. You have just named this report file LABL*R.DO; the .DO suffix will be added by your computer.

3. On the blank screen that appears, begin creating your LABL*R.DO file by typing

```
DB,CUST
```

Press ‹ ENTER ›.

By typing this, you are telling T-base to draw information from the CUST*D.DO file.

4. ***PL Command***. Type

```
PL,6
```

and press ‹ ENTER ›.

Using the PL command tells T-base how long to make each page of your report. Not using a PL command tells T-base to make the page 66 lines long—the standard length for a sheet of paper 8-1/2 by 11 inches long.

A page length of 6 lines is just right for most mailing labels. Others may require a line or two more.

5. *CO Command*. Type

```
CO,1,1,1,2,3
```

and press < ENTER >.

It is by using the CO command that you determine where the information to be drawn from your database is to be placed on the screen or the printed page.

By following that command with 1,1,1, you are specifying that the first three data items of this report—name, street address, and city—are to be printed flush left, one above the next. The reason: T-base advances a line each time it reaches a column start that is not more than the previous column start.

Typing 2,3 tells T-base to add the last two data items on line with the previous data item—city—and with one character space between each item.

Note: This is a special application of the CO command. Its more common procedure is to arrange data items in columns. For a detailed explanation of setting up a CO line for columns see Exercise 2.

6. *DE Command*. Type

```
DE,NAME,ADDRESS,CITY,STATE,ZIP
```

and press < ENTER >.

Using the DE command tells T-base from which fields in the data file it is to select information and in what order to place them it the columns of your report.

For the first field name after the DE command, type the name of the field from which you want to draw information for the first column. Then type the field name for the

second column, and so on.

Type the field names exactly as you entered them in the file description line when you set up your screen file.

7. ***FP Command***. Type

```
FP,NAME
```

and press ‹ ENTER ›.

The FP command tells T-base where to begin a new page. Typing NAME tells T-base that as it searches the records in the customer file, it must begin a new page each time it encounters a new name.

For more about the FP command, see Exercise 4.

8. To save this file, press ‹ f8 › on the TRS-80 Model 100/200 or the Olivetti M10, or ‹ SHIFT › and ‹ f5 › on the NEC PC-8201.

Printing Labels

1. On the main system screen place the cursor over TB-RPT.BA, and press ‹ ENTER ›. A screen similar to this one now appears:

```
T-BASE.TS    TB-RPT.TS*   TWRIT2.TS
IDEA! .TS    CUST*D.DO    ORDR*D.DO
VEND*S.DO    CUST*S.DO    PROD*S.DO
ORDR*S.DO    LABL*R.DO    VEND*D.DO
ID'S*R.DO    CUST*R.DO    PROD*D.DO
PROD*R.DO
Enter Report name:?
                                  Menu
```

2. Below the list of the files on your computer you see this message:

```
Enter report name:?
```

Type in capital letters

```
LABL
```

and press ‹ ENTER ›. Note that you do not have to supply the *R.DO suffix.

3. This message appears briefly:

```
Loading report information. . . .
```

and then you see the record selection screen—unless you have made an error in setting up your report file. If you see an error message instead of the record selection screen, refer to Section 6, "Troubleshooting," for the solution to your problem. Correct the problem and repeat the above steps.

4. ***Selecting Records***. This question appears at the bottom of the record selection screen:

```
Field =>?
```

Type

```
ACTIVE?
```

and press ‹ ENTER ›.

Now we are telling T-base to search our records on the basis of the yes/no entries in the ACTIVE? field of our customer file.

5. For the low value, type

```
N
```

and press ‹ ENTER ›.

6. For the high value, type

```
N
```

and press ‹ ENTER › twice, once to finish that particular selection and once to pass up a second selection.

By specifying only those records with N entries in the Active? field, we have, of course, eliminated those with Y entries.

7. This message now appears on your screen:

```
Ready printer,
then press any key to continue
```

Make sure that your printer is ready. When you press any key on your keyboard, this message appears:

```
Printing. . . .
```

As soon as the message disappears, the report is complete, and you'll have mailing labels ready for letters to your customers with inactive accounts.

Exercise 2: Creating a Customer ID List

In this exercise you will

- ✓ produce a handy reference list of the customer IDs you set up while entering data into the sample database
- ✓ use the OUT command to make your list appear on your computer's screen
- ✓ place a heading at the top of the list and provide for blank lines between the heading and the list
- ✓ use the CO, CL, and DE commands to set up columns of information
- ✓ learn how to set up the column beginnings in your CO line
- ✓ select certain records (those of customers added since the first of the year) by using the record selection screen

The list will appear on the screen like this:

```
Customer Name          Customer ID
---------------------- ----------------
Browse Awhile Books    AWHILE
Corner Books Inc.      CORNER
S. James and Sons      JAMES
New Discoveries        NEW
```

Creating the ID Report File

To set up the customer ID report file, follow these steps:

1. On the main system screen of your computer, place

the cursor over TEXT and press <ENTER>.

2. As the file to edit, type

```
ID'S*R
```

and press <ENTER>. You have just assigned your report file a name.

3. On the blank screen that now appears, begin your report file by typing

```
DB,CUST
```

Press <ENTER>. This entry tells T-base to take information from the CUST*D.DO file for this report.

4. ***Page Width for Screen Reports***. Type

```
PW,39
```

and press <ENTER>.

To display a report on your computer's screen, you must use the PW command and set a width no greater than 39 character spaces.

5. ***Out Command***. Type

```
OUT,REPORT,LCD:
```

and press <ENTER>.

Use the OUT command only if you choose to direct the output of your report file to any destination other than a printer, through the parallel port.

We specify that this is to be a report, not a file. Were we to designate a file, the ID information would appear on your screen without being formatted in columns, and there would be no report heading or column labels.

To make this report appear on the computer's screen, we use the OUT command and type the destination as LCD:.

6. ***Setting a Heading and Skipping Lines.*** Now type these four lines, pressing ‹ ENTER › after each line:

```
HE,CUSTOMER ID'S
HE,For New Customers This Year
HE,
HE,
```

These lines instruct T-base to place at the top of the report the heading *CUSTOMER ID'S* on one line and *For New Customers This Year* on the next. The heading is to be followed by two blank lines.

In certain circumstances, typing a comma and following it with either an ‹ ENTER › or another comma, tells T-base that nothing is to be printed at that point. With the HE command, the result is a blank line. With the CL command, the result is a blank area in a line of column labels.

7. ***Setting up the CO Line.*** Type these lines, pressing ‹ ENTER › after each:

```
CO,1,22
CL,Customer Name,Customer ID
DE,NAME,CUSTID
```

Even though the CO command must precede the CL and DE commands, it is important in setting up a report screen that you know exactly what you want to put in each column ***before*** you type the CO line, specifying the beginning of each column. Without this information, you may

- ✓ make your columns too narrow, thereby producing a report with jumbled columns
- ✓ make your columns too wide, thereby limiting the amount of information in your report.

Remember: No T-base report can contain more than one CO

command. This limits you to placing your columns of information within the page width you have set.

To compute the numbers for your CO line, follow these steps:

First type your CL line; then count and record the number of characters in each label.

Type your DE line. Then refer to the file in your database you are using for the report you are creating, and note the field length you gave to each of these fields.

For each column compare the label in your report file with the field length in your screen file. Take the longer of each and list these column widths as CW1 for the first column, CW2 for the second column, and so on.

Then apply this formula:

CO,1,+(CW1 + 1),+(CW2 + 1),+(CW3 + 1),etc.

This formula places the beginning of the first column in the first character space. (To begin farther to the right, alter the formula to read CO,6. . . etc.)

For the beginning of the second column, add to the beginning of the first column the width of column 1 (CW1). Then, to leave a space between the columns, add 1. (To increase the space between columns, alter the formula to read (CW1 + 2) or whatever you prefer.)

For the beginning of the third column, add to the beginning of the second column the figure for CW2 plus 1. Continue this for as many columns as you have.

Finally, to ensure that your columns do not exceed the page width you set for your report, add to the beginning of the last column the column width of that column. The total should not exceed the page width.

One final hint: Allow eight spaces for each date column in

your report. Dates appear in a report with slashes, in this format: 06/27/85.

8. To save this file, press ‹ f8 › on the TRS-80 Model 100/200 or the Olivetti M10, or ‹ SHIFT › and ‹ f5 › on the NEC PC-8201.

Displaying the ID Report

The steps to displaying a report on your screen are like those for producing a printed report, except, of course, you have no printer to worry about.

Go ahead and follow the steps outlined in Exercise 1 for printing labels, substituting for LABL the file name ID'S.

When you reach the record selection screen, choose those customers who opened accounts since the beginning of the year. Type as the field to limit

```
OPENED
```

and press ‹ ENTER ›. This is the name of the field for the date when each customer's account was opened.

For the low value, type

```
840101
```

or the date of the first day of the current year. Press ‹ ENTER ›.

For the high value, type the current date in the same format. Then press ‹ ENTER › twice.

Once the report begins to appear, it will scroll upward from the bottom of your screen. To stop it at any point press ‹ PAUSE › on the TRS-80 Model 100/200 or the Olivetti M10 or ‹ CTRL › and ‹ S › on the NEC PC-8201. Press ‹ PAUSE › again on the TRS or Olivetti computer, or press ‹ CTRL › and ‹ Q › on the NEC, and the report will resume.

Exercise 3: Printing a Customer Order Report

In this exercise, you will

- ✓ print a report with subtotals and grand totals
- ✓ use the CO and CL commands to produce column labels of more than one line

The customer order report will show the quantity of product each customer ordered, the gross dollar amount, the discount, and the total amount owed by each customer. For each product ordered by a customer, there will be subtotals of the quantity and the amount due.

There will also be subtotals of the gross, discount, and amount due for all the products ordered by each customer. At the end of the report there will be a grand total of the gross, discount, and amount due. Here is a sample report:

08/16/85 CUSTOMER ORDER REPORT Pg: 1

Customer ID	Product ID	Quantity	Gross	Discount	Total
JAMES	RHYMES	32	511.68	40.93	492.87
		32			492.87
			511.68	40.93	492.87
NEW	EASY	5	64.75	9.71	57.62
		5			57.62
	RHYMES	17	271.83	40.77	241.91
		17			241.91
			336.58	50.48	299.53
			848.26	91.41	792.40

Creating the Customer Order Report

1. On the main system screen of your computer, place the cursor over TEXT and press ‹ ENTER ›.

2. Type as the file to edit

```
CUST*R
```

and press ‹ ENTER ›.

3. Begin creating the CUST*R.DO file by typing

```
DB,ORDR
```

Press ‹ ENTER ›. The information from this report is to come from the ORDR*D.DO file in our database. As you may remember, there are several calculated fields in this file. We will be using the formulas in those calculated fields to produce this report.

4. Type

```
PL,25
```

and press ‹ ENTER ›. Try this page length or some other of your choice.

5. Type

```
PW,60
```

and press ‹ ENTER ›. Be sure that the page width of your report allows room for the columns you set up in your CO line.

6. Type the next two lines, pressing ‹ ENTER › after each:

```
HE,CUSTOMER ORDER REPORT
HE,
```

When you print your report, you will notice that the

heading *CUSTOMER ORDER REPORT* appears at the top of each page of your report, along with the page number and the date the report is printed.

7. ***Multiple Lines of Column Labels***. Type the next four lines and press ‹ ENTER › after each:

```
CO,1,10,18,27,38,49
CL,Customer,Product,,,,
CL,ID,ID,Quantity,Gross,Discount,Total
DE,CUSTID,PRODID,QTY,GROSS,DISAMT,TOTAL
```

Notice that there are two CL lines. Look back at the sample customer order report at the beginning of this exercise to see the effect of this entry: There are two lines for the column labels. This is one way for you to fit more information into the single CO line allotted you by T-base. Longer labels can be split between lines. You may use as many as five lines for each label. You may also abbreviate your column labels.

Notice, too, that only the first and second column labels have any words in the first line. The blank spaces for the rest of the columns in the first line are provided by the string of commas in the first CO line.

Hint: You should always have exactly the same number of commas in your CO, CL, and DE lines.

8. ***Producing Subtotals***. Type

```
ST,PRODID,QTY,TOTAL
```

and press ‹ ENTER ›.

After an ST command, typing PRODID tells T-base that each time it encounters a different product ID in a file, one or more subtotals are to be computed.

Following that information with QTY,TOTAL tells T-base that subtotals should be computed for the quantity of the

products sold and the total sales. If you want, you could also include GROSS and DISCOUNT.

9. Type

```
ST,CUSTID,GROSS,DISAMT,TOTAL
```

and press ‹ ENTER ›.

This line directs T-base to produce three subtotals each time it encounters a different customer ID: one for the gross amount of the sale, another for the discount, and a third for the total amount of the sale.

10. ***Producing Grand Totals***. Type

```
GT,GROSS,DISAMT,TOTAL
```

and press ‹ ENTER ›.

Typing a GT command will produce grand totals for whichever fields you designate after the command. These grand totals appear at the end of the report, one set of grand totals for each report.

11. To save your CUST*R.DO file, press ‹ f8 › on the Radio Shack or Olivetti computer or ‹ SHIFT › and ‹ f5 › on the NEC.

Printing the Customer Order Report

To print the customer order report, follow the steps in Exercise 1 for printing labels, substituting for LABL the file name CUST.

When T-base gives you the chance to select among the records of your customers, you may want to limit your report to those orders placed in the last month.

Exercise 4: Printing a Product Order Report

In this exercise you will

- ✓ use the SR command to produce a report requiring a different arrangement of the records in your data file
- ✓ use the FP command to break up your report in a certain way

We will take information from our order file to produce a report showing the orders not by customer, as in Exercise 3, but by product.

Since the order file is arranged by customer IDs, we will have to use the SR command to rearrange the records in that file by product IDs.

A page of the product order report will look like this:

08/16/85 Pg: 1

PRODUCT ORDER REPORT

Product ID	Quantity	Gross	Discount	Total
RHYMES	15	239.85	59.96	188.34
	35	559.65	139.91	439.46
	15	239.85	35.97	213.46
	32	511.68	40.93	492.87
	5	79.95	6.39	77.01
	17	271.83	40.77	241.91
	10	159.90	23.98	142.30
	129	2062.71	347.91	1795.35
		2062.71	347.91	1795.35

Creating the Product Order Report File

1. On the main system screen of your computer place the cursor over TEXT, and press ‹ ENTER ›.

2. Type

```
PROD*R
```

and press ‹ ENTER ›. You have just named this report file.

3. To begin creating your PROD*R.DO file, type

```
DB,ORDR
```

and press ‹ ENTER ›. As in Exercise 3, we are going to take information from the ORDR*D.DO file.

4. ***SR Command***. Type

```
SR,PRODID
```

and press ‹ ENTER ›. You must use the SR or SO command each time you require that records in your database be rearranged.

In Exercise 3, we did not need to rearrange the records of the ORDR*D.DO file, because the arrangement of the report matched the order of the records: Both the report and the records were arranged first by customer and then by product.

Now, however, our product order report is to show orders first by product and then by individual orders.

Arranging the records in the ORDR*D.DO file first by customer and second by product was established at the beginning of the ORDR*S.DO file description line:

```
13,CUSTID,PRODID,etc.
```

This file description line produced records that begin with

the customer ID. The records are stored in the computer according to their customer IDs either alphabetically or in ascending numerical order, depending on the IDs. For this report we want to rearrange the order this way:

```
13,PRODID,CUSTID,etc.
```

To accomplish that, we must use either SO—for a permanent rearrangement—or SR—for a temporary rearrangement. I chose SR in this case because I wanted the ORDR*D.DO file to be returned to its original form after the report was printed.

The field name you type after an SR command places that field first; a second field name places that field second; and so on. Remember: With the SO command, you must list all the fields you want to appear in the new file. With the SR command, you need list only the field name or names you want to move to the beginning of the file.

The SR command is useful for a variety of purposes. You may use it with mailing labels, for example. Typing SR,ZIP will arrange the labels in an order that will lend itself to presorting.

5. Type these lines; press ‹ ENTER › after each:

```
PW,51
HE,PRODUCT ORDER REPORT
HE,
CO,1,9,18,29,40
CL,Product,,,,
CL,ID,Quantity,Gross,Discount,Total
DE,PRODID,QTY,GROSS,DISAMT,TOTAL
ST,PRODID,QTY,GROSS,DISAMT,TOTAL
GT,GROSS,DISAMT,TOTAL
```

6. ***FP Command***. Finally, type

```
FP,PRODID
```

and press ‹ ENTER ›. With this instruction, T-base will

group the product orders so that the orders for each product will appear on a page by themselves.

7. Save this file by pressing ‹ f8 › on the TRS-80 Model 100/200 or the Olivetti M10, or ‹ SHIFT › and ‹ f5 › on the NEC PC-8201.

Printing the Product Order Report

Print this report as you did the labels in Exercise 1.

Since this report includes the SR command, however, you will see two screens you did not see before.

After you have told the Reporter which report file you want to use and have finished with the record selection screen, you will see this message:

```
Sorting. . . . .
```

This message will remain on the screen as long as the records in the data file are being reordered according to the SR command. When the sorting is done, the message will disappear, and you will see this message:

```
Printing. . . . .
```

Once the report is completed, this message appears:

```
Resorting. . . . .
```

Once the resorting is done, the message disappears and you are returned to the main system screen.

It is important that you do not interfere with T-base during the sort or resort process. Do not press ‹ BREAK › on the TRS or Olivetti computer, or ‹ STOP › on the NEC computer. Also, do not press either of these keys *between* sort and resort.

If you inadvertently hit ‹ BREAK › or ‹ STOP ›, type

```
CONT
```

and press ‹ ENTER › before typing anything else.

Using the SO or SR command in a report screen gives T-base more to do in the printing process. The result is that the printing process takes more time than usual.

Exercise 5: Redesigning a Data File

In this exercise you will

- ✓ create a report file using the SO command to redesign a data file, eliminating fields, adding a new field, rearranging other fields
- ✓ run the report file with TB-RPT.BA to reconstruct the data file
- ✓ give the reconstructed data file a name
- ✓ alter the original screen file for that data file to reflect the changes

There will doubtlessly come a time when you will want to alter one or more files in a database. You may want to remove fields you no longer want, add others you did not consider at the outset, or rearrange existing fields. The SO command allows you to do all this.

For this exercise, let's redesign the sample product file.

Reorganizing the PROD*D.DO File. The PROD*D.DO file was organized in the PROD*S.DO file like this:

```
PRODID,VENDID,VENDNAME,ADDRESS,CITY,
STATE,ZIP,PRODNAME,PRICE,COMMENTS
```

For this exercise, let's redesign the file like this:

```
PRODID,VENDID,PRODNAME,PRICE,STATUS,
VENDNAME
```

1. To begin redesigning a data file, place the cursor on the main system screen over TEXT and press ‹ ENTER ›.

2. Type as the file to edit

```
TEMP*R
```

and press ‹ ENTER ›. The file name TEMP (short for temporary) will remind you to delete this file once you are through reorganizing the data file.

3. Begin creating TEMP*R.DO by typing

```
DB,PROD
```

Press ‹ ENTER ›. You have identified the data file you want to reorganize.

4. Type

```
SO,PRODID,VENDID,PRODNAME,PRICE,*NEW,VENDNAME
```

Press ‹ ENTER ›. This instruction tells T-base to omit from the records in this file the vendor's address, city, state, and Zip code. It also places a new field (STATUS) between the vendor's name and the unit price. We will specify the nature of this new field later. Type *NEW for each field you want to add to a data file. (You may type *NEW for up to 10 new fields you want to add.) To delete existing fields, simply omit them from the SO line. To rearrange existing fields, type them in a different order in the SO line.

5. To save your TEMP*R.DO file, press ‹ f8 › on the Radio Shack or Olivetti computer or ‹ SHIFT › and ‹ f5 › on the NEC.

6. To reorganize the files within the PROD*D.DO file, run TB-RPT.BA, specifying TEMP*R.DO as the report to be entered.

Unless you want to select only certain records within the PROD*D.DO file, pass up the chance to select records.

7. Follow the remaining steps for printing a report, but don't worry about attaching a printer. This process is carried on entirely within your computer.

8. When the sorting process is done, you will be returned to the main system screen, where you will now see this file:

```
XXXX*D.DO
```

Rename this file PROD*D.DO. Refer to Section 5 for help.

9. On the main system screen, enter BASIC and type

```
KILL "TEMP*R.DO
```

and press ‹ENTER›. This does away with the report screen now that it is no longer needed.

*Updating the PROD*S.DO File*. Now that the product data file is reorganized, you must update the PROD*S.DO file to reflect the changes you just made.

Depending on how extensive the changes are, you may either delete the original screen file and create a new one, or you may go into the screen file and revise it. Either way, this is how the PROD*S.DO file should now appear:

```
6,PRODID,VENDID,PRODNAME,PRICE,STATUS,
VENDNAME
Product ID:,6,TM
Vendor ID:,6,TM
Product Name:,25,T
Unit Price:,6,$
Product Status (B/S/D):,1,U,"BbSsDd"
Vendor Name:,20,TBS,VEND,VENDID,VENDNAME
```

The new field (STATUS) was added to allow you to indicate whether a product is back-ordered (B), in stock (S), or discontinued (D).

Once you have saved the revised screen file, use T-BASE.BA to update the records in the PROD*D.DO file by entering information for each product in the STATUS field.

Section 4

The T-Writer Connection

Introduction

Now that you are aware of the capabilities that T-base adds to your small portable computer, I'd like to tell you about the connection between T-base and another Traveling Software program, the Traveling Writer (or T-Writer)—and how you can use these two programs together to considerable advantage.

When using T-base with the Traveling Writer, you can take information from your T-base files and insert it into letters and reports you create using the Traveling Writer.

The power of the Traveling Writer lies in its ability to let you create a form letter or report that can be customized by the insertion of information peculiar to each reader. To achieve this, you type some simple commands into the document when you create it. Then when the Traveling Writer prints the document, it replaces these commands with the pertinent information.

The information the Traveling Writer inserts into form letters and reports comes from a file called ADRS.DO.

ADRS.DO File

Here I'm going to describe how to create an ADRS.DO file from the sample database I included on your T-base cassette. Using the Traveling Writer and information in that data base, I want to send a letter to each of my customers with an active account.

First, I save to cassette the ADRS.DO file in my computer.

To create a new ADRS.DO file, I start with the customer file (CUST*D.DO).

Here is a list of the information now in the CUST*D.DO file. The information I want in the new ADRS.DO file is in italics:

customer ID
name
street address
city
state
Zip
telephone
date opened
account active or inactive
credit limit
discount
comments

This is the order in which I will place the information in the ADRS.DO file:

name
telephone
street address
state
city
Zip

There are two ways to create the ADRS.DO file using information from the CUST*D.DO file. Both require the use of the TB-RPT.BA program:

- ✓ create a new file, using the OUT command
- ✓ rearrange the CUST*D.DO file using the SO command

Making a New File. Making a new file is the preferred method because it leaves the CUST*D.DO intact. Its only drawback is that it requires more free memory in the computer.

To take information from the CUST*D.DO file and yet retain the file, I create this temporary T-base report file:

```
DB,CUST
OUT,FILE,RAM:ADRS.DO
CO,1,2,3,4,5,6
DE,NAME,PHONE,ADDRESS,STATE,CITY,ZIP
```

I then run this file with TB-RPT.BA and select the records of customers with active accounts. When TB-RPT.BA is through, I will have in my computer an ADRS.DO file ready to be used with the Traveling Writer in producing letters to the customers I have just selected.

Rearranging the CUST*D.DO File. By rearranging the CUST*D.DO file, I will lose such information as the credit limit, comments, and discount rate. To prevent this loss, I must make a copy of CUST*D.DO or save it to cassette before creating an ADRS.DO file.

Then to make the CUST*D.DO file into an ADRS.DO file, I create and save this temporary T-base report file:

```
DB,CUST
SO,NAME,PHONE,ADDRESS,STATE,CITY,ZIP
```

I now run TB-RPT.BA with this file. When the record selection screen appears, I select the records of the customers with active accounts.

When TB-RPT.BA is through, my system screen shows the resulting file as XXXX*D.DO, which I rename as ADRS.DO.

Using the Traveling Writer

I am now ready to create my form letter. I do so in the TEXT program of my computer.

While typing the letter, I enter a Traveling Writer command wherever I want the corresponding information from the ADRS.DO file to appear in the printed letters.

These are the commands and the fields in the ADRS.DO file from which they draw information:

Traveling Writer Commands	ADRS.DO Fields
.NAM	name
.TEL	telephone
.ADD	street address
.ST	state
.EX0	city
.EX1	Zip

Note: There are eight more fields in the ADRS.DO file into which I may place information I want to appear in my letters.

Finally, I load the Traveling Writer into my computer and print the letters to my customers.

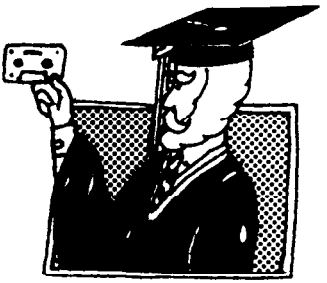
I may also include with each letter a T-base report I've run off listing each customer's order in detail and in summary.

Section 5

Memory Management

Introduction

Because the memory of your notebook computer is doing double duty as both a sort of disk drive and computer memory, I have devoted an entire section to managing this precious resource.



I have even included with T-base another program, The Traveling Memory Manager, to help you with this task. Here in Section 5, I will first discuss how to use the Memory Manager program. After sharing with you some helpful tips for managing your computer's memory while you're traveling, I'll show you how to save information to cassette tape.

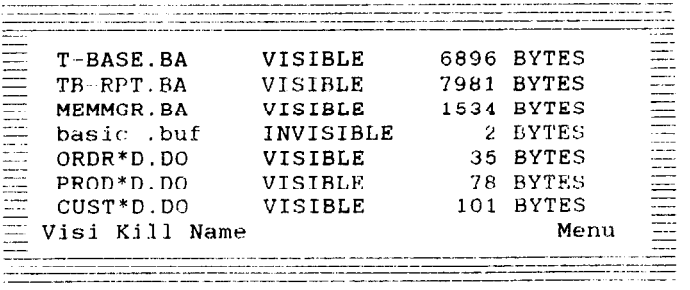
For loading information back into your computer, see "Loading .DO Files from Cassette" in Section 1.

The Traveling Memory Manager

The Traveling Memory Manager allows you to perform a variety of housekeeping tasks with the information stored in your computer. You may

- ✓ display by their titles all the files stored in memory
- ✓ determine the amount of computer memory space (in bytes) occupied by each file and the total space you have left to use
- ✓ protect the information stored in your files
- ✓ delete files you no longer need and manage the memory space of your computer more efficiently
- ✓ rename your files

On the main system menu, position the cursor over **MEMMGR.BA**. Press ‹ ENTER ›. After the Memory Manager title screen, this screen appears:



Listed here are the files in memory and the number of bytes each occupies. If you have more files than can be listed on a single screen, press ‹ ↓ › to scroll the screen up, and the titles of the remaining files will be displayed one at a time.

Just beyond the last of your files, is the "Bytes Free" entry, showing the memory currently available to use.

Now look at the prompts appearing at the bottom of your screen: Visi, Kill, Name, and Menu. Let's take a look at these options.

Visible/Invisible Option

Beside each file title notice the word VISIBLE. Position the cursor over T-BASE.BA. (You can only move up or down on this screen.) Press <f1>.

Notice how VISIBLE has changed to INVISIBLE? Press <f1> a second time, and the file becomes VISIBLE again.

Had you returned to the main system menu by pressing <f8> on the Radio Shack or Olivetti, or <SHIFT><f5> on the NEC, while T-base was invisible, you would not have seen the program listed there.

It would not have been available to you again unless you had returned to the Memory Manager screen, positioned the cursor over T-BASE.BA and pressed <f1>. Then the file would have been visible both here and on the main system menu. By removing the file title from the main system menu, you can protect the file from accidental changes and deletions.

You may already be wondering what would happen if you made the Memory Manager program itself invisible, so that you couldn't reach it from the main system menu. For the sake of convenience, we suggest that you always keep the Memory Manager visible, but if you choose to make it invisible, fear not; there *is* a way to retrieve it: On the main system menu, position the cursor over BASIC and press <ENTER>. Type

```
LOAD "MEMMGR"
```

Press <ENTER> and type

```
RUN
```

Once you press the ‹ ENTER › key, you're back in the Memory Manager program and can make it visible by pressing ‹ f1 › when the cursor is over MEMMGR.BA.

Kill Option

The Kill option is ominously but appropriately named. You should use it with care because it makes files disappear—forever! Rest assured, however, because you cannot kill this program or any other program that appears on the system screen with a title ending in .BA. The Kill option applies only to files you have created, those with a .DO suffix, and to machine-language files, those with a .CO suffix.

TRS-80 Model 100/200 and Olivetti M10. To Kill a file, position the cursor over its title on the Memory Manager screen. Press ‹ f2 ›. The computer now repeats the title and, just to make sure you mean business, asks:

```
SURE?
```

Type Y for Yes or N for No, and press ‹ ENTER ›.

NEC PC-8201. Your computer has a built-in Kill function, and you can use it on either the main system menu or the Memory Manager screen. To use the Memory Manager program, see the instructions for the TRS-80 Model 100/200 and Olivetti M10 above. Otherwise, position the cursor in the main system menu over the name of the file you want to kill.

Press the ‹ SHIFT › key to display the Kill prompt. Now, press ‹ f4 ›. The computer will display this message:

```
KILL filnam.DO Sure?_
```

Type Y for yes or N for no. If you type Y, the file will be deleted from the computer's memory.

Name Option

TRS-80 Model 100/200 and Olivetti M10. Use the Name option to rename a file. On the Memory Manager screen, position the cursor over the file name that you want to change. Press <f3>. The computer will repeat the file name at the bottom of the screen and ask:

```
NAME filnam.DO AS = >?
```

Type in any name you want, up to six characters, and press <ENTER>. If you decide your file name is fine as it is, press <ENTER> without typing anything. The Memory Manager will then keep your original file name.

NEC PC-8201. Your computer has a built-in Rename option. You have the choice of using this option or the Memory Manager to rename your files. To use the Memory Manager, see the instructions for the TRS-80 Model 100/200 and Olivetti M10, above.

To use your computer's Rename option, start in the main system menu, and place the cursor over the file name that you want to change. Press <f3>, and the computer will display this message:

```
NAME filnam.DO as __
```

Type a file name, up to six characters, and press <ENTER>.

To keep your original file name, press <ENTER> without typing anything.

Menu Option

The Menu option returns you to the main system menu. Press <f8> on the TRS-80 Model 100/200 or the Olivetti M10; on the NEC PC-8201, press <SHIFT> <f5>.

Tips for Memory Management

Saving your T-base files to cassette tape is a means of conserving the limited memory in your computer. I will tell you how to do that in the pages ahead. Right now, though, let me share with you a few tips from my experiences traveling with my notebook computer.

Use T-backup. Something I never leave home without is T-backup, a Traveling Software product that lets me make backup copies of all my files in BASIC, TEXT, and machine code. This inexpensive program makes it easier to make backup copies and restore them to my computer. Even better, it determines whether the backup copies are good. At about 2.0K (2.2K on NEC computers), it is small enough to keep on your computer for use whenever you want it.

Carry a Microcassette Player. The standard cassette tape players I have tried have been too bulky to fit conveniently into my luggage; so while on the road I am now using a small microcassette recorder.

I've found, for instance, that the Olympus Datacassette Model C100 works well with both the Olivetti and NEC computers, but if you have a TRS-80 Model 100/200, you may have to make some minor adjustments to your cassette cable.

Use Information Services. Another technique I recommend for extending the memory capacity of your computer is to send and receive your files and programs by phone through one of the national information services like Compuserve, The Source, MCI Mail, or ITT.

By using the modem built into your computer (or an external modem if you have an NEC) and the TELCOM program, you can store your files and programs under your own private account. For a low monthly charge, you can gain access to those programs and files from almost anywhere in the country simply by making a local phone call, any time of day or night.

I use these services often, especially when I have been on the road long enough to have generated a number of long documents (usually using another of my programs, the Traveling Writer) and I need to make room in my computer.

Use an Acoustic Coupler Modem. One more tip: You might want to consider buying an acoustic coupler for your modem. Many commercial phones in hotel rooms and phone booths lack that little clip connector necessary for a direct connection to your modem. You can use the acoustic coupler with most phones. (Some designer phones may be a problem.)

I myself have used many an airport phone booth to call into my information service and catch up on my electronic mail messages.

Saving .DO Files to Cassette

Unlike computers that use floppy disk drives, your notebook computer uses its memory in place of a disk drive.

In other words, all your files and programs "live" inside the computer and occupy a portion of memory. Thus, for each memory bank you may have between 5K and 29K available on your TRS-80 Model 100/200 or your Olivetti M10, or between 12K and 28K on your NEC PC-8201, depending on how much memory you have installed in your computer.

It is therefore important to manage this space efficiently. One way to do this is to get in the habit of loading and unloading files to cassette tape. "Loading .DO Files from Cassette" in Section 1 describes loading.

Protecting your data files is another reason to make backup copies on a regular basis. These copies act as insurance against the loss of valuable information in case something happens to the data files in your computer.

The following describes how to save your T-base data files to cassette tape. However, since the T-base cassette contains two copies of both programs, you don't need to save either program to cassette.

TRS-80 Model 100/200 and Olivetti M10. If you have one of these computers, follow these steps:

1. Connect your cassette player to your computer, and press the ‹ RECORD › and ‹ PLAY › buttons. Check your volume setting. A volume setting of 4 through 7, and a tone setting of 7 through 10 are good standards. If you're using a cassette recorder intended for data storage use, check its manual for standards.

If you're using a cassette with a leader at the beginning of the tape, be sure you've advanced the tape past the leader. The leader will not record data. If you do not advance the tape past the leader, your copy will be incomplete.

2. On the main system menu, position the cursor over

the name of the file you created with T-base, and press ‹ ENTER ›.

3. The contents of the file will now appear on the screen. Before doing anything else, press ‹ f3 ›. Now type

```
FILENM.DO
```

and press ‹ ENTER ›. The cassette player will record a copy of your file on cassette tape.

4. When the cassette player has stopped running, press ‹ f8 › to return to the main system menu.

That's it. You have just successfully created a cassette tape copy of one of your T-base .DO files.

NEC PC-8201. Your NEC PC-8201 computer has a built-in SAVE option. To use it follow these steps:

1. Connect your cassette player to your computer, and press the ‹ RECORD › and ‹ PLAY › buttons. Check your volume setting. See the recommendations above under step 1.

If you're using a cassette with a leader at the beginning of the tape, be sure you've advanced the tape past the leader. The leader will not record data. If you do not advance the tape past the leader, your copy will be incomplete.

2. On the main system menu, position the cursor over the name of one of your T-base data files and press ‹ f2 › to activate the Save function. The computer will display this message at the bottom of the screen:

```
SAVE filnam.DO as __
```

You may save the file under another name simply by typing in a new name and pressing ‹ ENTER ›. If you want to save the file under its original name, just press ‹ ENTER › without typing in the file name.

3. The computer will display this message:

```
Ready?_
```

Type Y; then press ‹ ENTER ›. If you type N, the messages at the bottom of the screen will be erased.

The cassette player will record a copy of your file onto cassette tape. That's it! You have just successfully created a cassette tape copy of one of your T-base .DO files.

Delete Original File. For whichever computer you own, it is important to note that although you have just made a cassette copy of your .DO file, the file still exists inside your computer.

To free memory space, delete the original file. Use the Kill option of the Memory Manager, described earlier in this section. Since you've made a copy of your file for backup purposes, it is safe to go ahead and delete the file.

You may find that following these steps for one or two files is not too time-consuming, but for several files, it can be. With T-backup, from Traveling Software, you can speed the process.

T-backup lets you back up all your BASIC, TEXT, and machine code files at one fell swoop. Then, before deleting your files from memory, you can use T-backup to verify that the backup copies are good. For more information, see a local dealer, or contact Traveling Software.

Section 6

Troubleshooting

What about I/O Errors?

If you are having difficulty loading your software and files from cassette tape, it is likely you are suffering from a bad case of I/O (input/output) errors. Don't despair. There's a cure!

Volume, Tone Settings. The reading and recording of computer information on cassette tape is subject to narrower tolerances than a normal voice recording. It is necessary, then, to have your cassette player adjusted to a setting your computer can understand.

The two adjustments that can be made are your volume and tone settings. I have found that a volume setting of about 4 through 7 is effective. The tone setting should be towards the higher setting, such as 7 through 10.

Special Cassette Recorders. If a few attempts at various settings fail to do the trick, it may be that your particular cassette player has a real aversion to talking to computers. If this is the case, I recommend that you go ahead and purchase a recorder designed to be used with computers—recorders such as the Radio Shack CCR-81 or CCR-82 or the NEC PC-6082 or PC-8281.

Pressing the Wrong Keys

While using T-Base or the Memory Manager, you may suddenly find yourself back in the BASIC program of your computer, or the system may lock up. You arrived in this predicament by pressing a key that puts the program into a tailspin.

These are the keys to avoid while in either program:

TRS 80 Model 100/200 and Olivetti M10	NEC PC-8201
< PASTE >, < LABEL >, < PRINT >, < PAUSE >, < SHIFT > and < BREAK >, < CTRL > and < C >, < RESET >, < CTRL > and < S >	< INS >, < STOP >, < RESET > < SHIFT > and < PAST >, < CTRL > and < C >, < CTRL > and < S >

Back to BASIC. If you are suddenly taken out of a program and returned to BASIC, you run the danger of destroying some of the program's coding or losing several hundred bytes of the RAM memory in your computer.

Before pressing any other keys, type

```
GOTO 20
```

This enables you to exit the program without damaging the program or losing any RAM.

System Lockup. When the system locks up, you remain in the program, but it does not respond to normal commands.

If this happens, try these corrections in the order listed:

1. Press < f8 > several times to end the program. If you have an NEC PC-8201, simultaneously press < SHIFT > < f5 >.

2. Press ‹ SHIFT › and ‹ BREAK › simultaneously if you have a TRS-80 Model 100/200 or an Olivetti M10. If you have an NEC PC-8201, press ‹ STOP ›.

Then type

```
GOTO 20
```

Press ‹ ENTER ›, and you'll return to the main system menu.

3. If all else fails, press the ‹ RESET › button on the back of your computer.

Other Problems That May Occur

Traveling Software programs have gone through extensive testing to ensure the highest degree of reliability. It is unlikely that a problem will arise because of the software itself, but factors outside of the software may affect its operation.

The most common problem is running out of memory space in your computer.

Traveling Software programs have built-in, error-trapping routines to collect the occurrence of an error and display a message referring you to this section of the manual. In case you haven't encountered such a message already, it looks like this:

```
T-base ERROR No. 7
HAS OCCURRED IN LINE 2

PLEASE REFER TO THE
TROUBLESHOOTING SECTION OF YOUR MANUAL.

Press any key to continue
```

The errors that you may encounter have been divided into three categories. The first category, General Operating Errors (numbered 1 through 58), can occur when you are using either T-BASE.BA or TB-RPT.BA. For a fuller description of these errors, refer to the BASIC error codes contained on page 217 of the TRS-80 Model 100 manual, page 85 of the Model 200 BASIC Reference Guide, page B-1 of the Olivetti M10 Operations Guide, or page A2-1 of the appendix in the NEC reference manual.

The second and third categories of errors are errors that Traveling Software has defined specifically for T-BASE.BA and TB-RPT.BA. They may occur when you try to load screen or report files.

Most errors you will encounter are syntax-related errors that occur because you have not followed the guidelines for setting up your screen or report files, as laid out in Sections 2A and 3. Even an out-of-place comma will cause an error.

T-base will not detect any errors in syntax or format in your screen files until you load them to begin entering data; it won't detect such errors in your report files until you load them to create reports.

T-base detects one error at a time. Even after you have corrected an error, you may get another error message when you try to load the file again. Don't get discouraged. The problems are easy to detect; you'll know what to look for after designing one or two screen and report files.

To use the following list of errors, determine first whether to look under

- ✓ "General Operating Errors," page 6-6
- ✓ "Errors When Loading Screen Files," page 6-8, or
- ✓ "Errors When Loading Report Files," page 6-12

Then, within the appropriate category, locate the error number that has appeared on your screen, and make the suggested correction.

General Operating Errors

#2 Syntax (SN)

Cause: This error refers to poor syntax. The program has been altered in your computer's memory, in one of these ways: (1) With the cassette version of the program, a bad transmission from the cassette tape has gone undetected. (2) With the ROM version, there is a problem with the ROM chip. (3) You have entered the program by inadvertently pressing the ‹ SHIFT › and ‹ BREAK › keys while the program was running (either cassette or ROM version).

Solution: For the cassette version, return to the main system screen, enter BASIC, and type

```
KILL "T-BASE.BA
      or
KILL "TB-RPT.BA
```

and press ‹ ENTER ›. Refer to Section 1 for instructions on reloading the program from cassette.

For the ROM version, follow the instructions in the *Installation and User's Guide* for removing the ROM chip; then reinstall and reinitialize it. If this fails, contact your dealer or Traveling Software for a replacement.

#5 Illegal Function Call (FC)

Cause: You have exceeded a T-base limit. In setting up a screen file, you may, for example, have assigned a total of more than 39 character spaces to a particular field description line (see page 2A-5).

Solution: Review your screen files and correct the values; refer to Section 2A for a review of the limits you face when creating a screen file.

#6 Overflow (OV)

Cause: You have entered either E or D between the numbers in a dollar or integer field.

Solution: Return to the main system screen, enter T-base again, and reload the screen file. Resume entering data. Note: Any information you entered in the last screen or since you last pressed ‹ f1 › (Save), is not saved into computer memory.

#7 Out of Memory (OM)

Cause: This error occurs when there is not enough memory space available in your computer to run the program.

Solution: To correct this problem, you must delete or move some of your existing files to cassette tape. Please refer to Section 5 for procedures on managing your computer's memory. Refer to Sections 2A and 3 for formulas to calculate how much memory you need to operate T-BASE.BA and TB-RPT.BA, respectively.

#8 Undefined Line (UL)

Cause: This error message refers to an undefined program line.

The reasons for this error and the methods to correct it are identical to those of error #2.

Errors When Loading Screen Files

#5 Illegal Function Call (FC)

See page 6-6.

#14 Out of String Space (OS)

Cause: Your computer has used up all the available storage space reserved for string characters.

Solution: For the cassette version, refer to the Appendix, page A-1, for instructions on solving this problem. For the ROM version, refer to the *Installation and User's Guide*.

#52 File Not Found (FF)

Cause: T-base cannot find the data file you specified, because you have misspelled the name of the data file or you have specified a data file that is not loaded onto your notebook computer or does not exist. This error can also occur if you try to borrow a value from a field in a record that is located in a data file T-base cannot find.

Solution: Return to the main system screen and verify that the data file is loaded onto your computer. If that is not the problem, enter the screen file and verify that you have correctly spelled the name of the data file, using capital and lowercase letters as originally typed.

#54 Input Past End of File (EF)

Cause: You have not followed formatting guidelines. The number of fields in the file description line does not equal the number of fields described, as in this sample screen file:

```
3,NAME,ID,CITY
Name:,5,T
ID:,5,T
```

Notice that the file description line stipulates three fields but that only two fields were then defined.

However, this does not work in reverse. T-base does not consider it an error if you designate 4 fields and describe 5. This is because T-base expects, and therefore only looks for, four fields.

This error can also occur if you have neglected to press ‹ ENTER › after typing the last line of your screen file when you created it in TEXT.

Solution: Return to the main system screen and enter the screen file you were loading. Verify that you have described as many fields as you designated in the file description line. And also verify that you pressed ‹ ENTER › after the last field description line. Look for the end-of-file marker directly beneath the last line of the text to indicate that you have pressed ‹ ENTER ›.

#57 Menu Full (FL)

Cause: You tried to load a screen file while there were no available slots on the main system screen.

Solution: To create more space, you must delete at least one file from computer memory, remembering to save it to cassette if you do not have a current copy. Refer to Section 5 for instructions.

#70 Illegal Data Type Specification

This error occurs because a data type descriptor was not found in its proper location. There are three possible causes.

Cause 1—Incorrect syntax: This happens because a comma resides where it is not welcome, or is missing in action. Commas have special functions in most computer programs, and T-base is no exception. Field names and labels ***must*** be separated by commas. Spaces will not do: Field names or labels separated by a space will give you this error.

A comma at the end of either the file description line or the field description lines will also give you this error.

Solution 1: Return to the main system screen and enter the screen file. Check those commas! Verify that no comma is out of place.

Cause 2—Invalid Format: If in the first line (the file description), the designated number of fields does not equal the number of field names, this error will also be created. If the field names are greater or less than the designated number of fields, this error will occur.

Solution 2: Return to the main system screen, enter the screen file, and verify that the number of fields equals the number of field names.

Cause 3—Invalid Format: A final cause of this error is that you have entered an invalid code for a primary descriptor. The valid codes are T, I, $, D, or U.

Solution 3: Return to the main system screen and enter the screen file and verify that all the primary descriptor codes are correct and in uppercase.

#71 Illegal B, BS, C, CS, or M Designation

Cause: You have not followed formatting guidelines and have entered an invalid code for a secondary descriptor. The valid codes are B, BS, C, CS, or M. It may also occur if M (mandatory field) is used with a secondary descriptor (CM or BSM, for example).

Solution: Return to the main system screen and enter the screen file. Verify that you have typed in only valid codes for the secondary descriptors. And also verify that M is used only with a primary descriptor.

#72 Illegal Number of Fields Specified

Cause: The file description line does not begin with a number that T-base considers legal. T-base considers it illegal if the number is missing, is zero, or is negative.

Solution: Return to the main system screen and enter the screen file you were trying to load. Check the file description line and verify that you entered a number that will appease T-base.

#73 Illegal Field Calculation

Cause: You have not followed formatting guidelines. The sum of the number of operators and the number of values in a single formula cannot exceed 12, unless you alter T-base to allow more complex formulas.

Solution: Return to the main system screen and enter the screen file and break the calculation into two or three smaller formulas. Or refer to the Appendix or the ROM *Installation and User's Guide* for instructions on altering T-base.

#74 Field Referenced But Does Not Exist

Cause: T-base cannot locate the field you have specified. (Probably you have only misspelled the field name.)

Solution: Return to the main system screen and enter the screen file. Verify that the field names are correctly spelled.

Errors When Loading Report Files

#5 Illegal Function Call (FC)

Cause: This error occurs if you try to place a field of information under a column that is too small or you exceed some other T-base limit.

Solution: Return to the main system screen and enter the report file you were trying to load. Verify that the columns you have established have enough character spaces and that other limits have not been exceeded. See Section 3 for instructions on computing a CO line.

#9 Bad Subscript (BS)

Cause: You have used the CL command to set up more than the limit of five lines of column labels.

Solution: Redesign your report so that there are no more than five lines of labels.

#14 Out of String Space (OS)

Cause: Your computer has used up all the available storage space reserved for string characters.

Solution: For the cassette version, refer to the Appendix, page A-1, for instructions on solving this problem. For the ROM version, refer to the *Installation and User's Guide*.

#52 File Not Found (FF)

Cause: T-base cannot find the data file you specified, because you have misspelled the name of the data file or you have specified a data file that is not loaded onto your notebook computer or does not exist.

Solution: Return to the main system screen, and verify that the data file you designated is loaded onto your computer. If that is not the problem, enter the report file and on the first line verify that you have correctly spelled the name of the data file.

#54 Input Past End of File (EF)

Cause: You have neglected to press ‹ ENTER › after typing the last line of your report file when you created it in TEXT.

Solution: Return to the main system screen and enter the report file you were trying to load. Verify that you pressed ‹ ENTER ›. Look for an end-of-file marker directly beneath the last line of the file to indicate you have pressed ‹ ENTER ›.

#57 Menu Full (FL)

Cause: There were no available file slots on the main system screen.

When you use SO or SR, TB-RPT.BA needs an empty file slot to sort the data.

Solution: To create more space, you must delete at least one file from computer memory, remembering to save it to cassette if you don't have a current copy. Refer to Section 5 for instructions.

#74 Field Referenced but Does Not Exist

Cause: TB-RPT.BA cannot locate the field you have specified for the DE, SO, SR, ST, GT, or FP command.

Solution: Return to the main system screen and enter the report file. Locate the lines that contain those six commands and check the field names for spelling.

#75 Illegal Record Type Description

This error may occur for two reasons.

Cause 1: TB-RPT.BA cannot recognize the report definition commands. This may happen for the following reasons: (1) You typed an invalid command. (2) You have not entered a comma directly after the command. (3) The commands are out of order. (Please note that any command except DB—and, usually, CO and DE—can be omitted from the report definition file. However, the commands you use must follow the order indicated in Section 3 and on the Quick Reference Card.)

Solution 1: Return to the main system screen and enter the report file you were trying to load. Verify that you have used only valid commands and have inserted a comma directly after the command. Make sure the commands are in the proper order.

Cause 2: You have used either CL or DE without an accompanying CO. When you include CL or DE in your report definition file, you must also use CO.

Solution 2: From the main system screen, enter the report file you were trying to load. Verify that there is a CO for each CL or DE command.

#76 Multiple Data File Definitions

Cause: You have specified more than one data file in your report definition file. You may enter only one DB command in your report definition.

Solution: Return to the main system screen and enter the report file you were trying to load. Remove the extra DB command.

#77 Illegal Sort Record

Cause: You have placed more than one sort command (SO or SR) in your report file, or you have misspelled a field name used in connection with either of these commands.

Solution: Return to the main system screen and enter the report file you were trying to load. Check to see that you have only one SO or SR command, and correct any misspelled field names that follow either SO or SR.

#78 Illegal OUT Command

Cause: You have used an invalid OUT command code.

Solution: Return to the main system screen and enter the report file you were trying to load. Locate the line that contains the OUT code and correct the code.

Refer to Section 3 for a list of valid codes.

Appendix: Modifying T-base

Earlier, in Sections 2B and 3, I noted instances where you may find that a minor change here or there in the T-BASE.BA or the TB-RPT.BA program could work to your advantage. With these changes you can

- ✓ increase the memory space T-base reserves to store string characters
- ✓ allow for a full-screen display on an external monitor
- ✓ increase the complexity of your T-base formulas
- ✓ change the line-feed command sent to the printer with each carriage return

Making these changes on the cassette version of T-base requires that you enter the program and alter it to your specifications.

➧ **Making these changes on the ROM version requires that you alter the CONFIG.DO file, located on the ROM chip. Refer to the *Installation and User's Guide* for instructions.**

Any changes made to the CONFIG.DO file will remain intact until the file is deleted or further modified.

Any changes to the cassette version will have to be redone each time the program is loaded back into the computer unless the revised version is copied beforehand.

Changes to the cassette version should be made carefully, without altering the program in any other way. But if you find that either program no longer works properly after a change, simply re-enter that program and check that you made the change correctly. If the program still does not

operate properly, simply delete it from your computer, reload the program from your cassette, and try again.

Increasing the Memory Space for String Characters

This change increases the space that the programs reserve to store string characters. Keep in mind that by increasing this space you're also increasing the amount of free memory you must have in your computer to operate the programs.

This change can be made to both T-BASE.BA and TB-RPT.BA.

Changing T-BASE.BA. Follow these steps:

1. On the main system screen, place the cursor over BASIC and press ‹ ENTER ›.

2. On the screen that appears, type

```
load "T-BASE
```

Press ‹ ENTER ›, and the screen will display OK.

3. Type

```
edit9
```

and press ‹ ENTER ›. The screen will display line number 9 of the T-BASE.BA program. The line begins thus:

```
9 Clear1500: . . .
```

4. Move the cursor over 1500 and type 1750, 2000, etc. Increase by increments of 250, to 2500.

5. If you have a TRS-80 Model 100/200 or an Olivetti

M10, press ‹ f8 › once to end the edit session and again to return to the main system screen.

If you have an NEC PC-8201, press ‹ SHIFT › ‹ f5 › once to end the edit session and again to return to the main system screen.

Changing TB-RPT.BA. Follow these steps:

1. On the main system screen, place the cursor over BASIC and press ‹ ENTER ›.

2. On the screen that appears, type

```
load "TB-RPT
```

and press ‹ ENTER ›.

3. The screen will display OK. Type

```
edit9
```

and press ‹ ENTER ›. The screen will display line number 9 of the TB-RPT.BA program. The line begins thus:

```
9 Clear1500: . . .
```

4. Move the cursor over 1500 and type 1750, 2000, etc. Proceed by increments of 250, to 2500.

5. If you have a TRS-80 Model 100/200 or an Olivetti M10, press ‹ f8 › once to end the edit session and again to return to the main system screen.

If you have an NEC PC-8201, press ‹ SHIFT › ‹ f5 › once to end the edit session and again to return to the main system screen.

Increasing the Number of Lines Displayed on Your Monitor

T-base was written for notebook-sized computers. The screens on these computers display only 8 or 16 lines at a time. However, if you have an external monitor (one not built into your computer), you may want to change the program so that the number of lines displayed equals the number of lines on your monitor.

Note: This change concerns only your screen files. You may adjust the appearance of your report files on your monitor merely by using the appropriate PW and PL commands.

Follow these steps:

1. On the main system screen, place the cursor over BASIC and press ‹ ENTER ›.

2. On the screen that appears, type

```
load "T-BASE
```

and press ‹ ENTER ›.

3. The screen will display OK. Type

```
edit10
```

Press ‹ ENTER ›. The screen will display line number 10 of the T-BASE.BA program:

```
10 SS=8:CS=12
```

4. Move the cursor to SS=8.

Type in the number of lines you would like to display. What you type in will depend on the size of your monitor.

Refer to the owner's manual for your particular monitor for its specific size.

5. If you have a TRS-80 Model 100/200 or an Olivetti M10, press ‹ f8 › once to end the edit session and again to return to the main system screen.

If you have an NEC PC-8201, press ‹ SHIFT › ‹ f5 › once to end the edit session and again to recall the main system screen.

Increasing the Complexity of Calculations

If you decide to make this change, you must change both T-BASE.BA and TB-RPT.BA.

Changing T-BASE.BA. Follow these steps:

1. On the main system screen, place the cursor over BASIC and press ‹ ENTER ›.

2. On the screen that appears, type

```
load "T-BASE
```

and press ‹ ENTER ›.

3. The screen will display OK. Type

```
edit10
```

and press ‹ ENTER ›. The screen will display line number 10 of the T-BASE.BA program:

```
10 SS=8:CS=12
```

4. To increase the complexity of the calculations, move the cursor to CS=12 and in place of 12 type in the number you want.

5. If you have a TRS-80 Model 100/200 or an Olivetti M10, press ‹ f8 › once to end the edit session and again to return to the main system screen.

If you have an NEC PC-8201, press ‹ SHIFT › ‹ f5 › once to end the edit session and again to return to the main system screen.

Changing TB-RPT.BA. Follow these steps:

1. On the main system screen, place the cursor over BASIC, and press ‹ ENTER ›.

2. On the screen that appears, type

```
load "TB-RPT
```

and press ‹ ENTER ›.

3. The screen will display OK. Type

```
edit10
```

and press ‹ ENTER ›. The screen will display line number 10 of the TB-RPT.BA program. It begins thus:

```
10 CS=12: . . .
```

4. Move the cursor over 12 and in its place type the same number you typed in line 10 of T-BASE.BA.

5. If you have a TRS-80 Model 100/200 or an Olivetti M10, press ‹ f8 › once to end the edit session and again to return to the main system screen.

If you have an NEC PC-8201, press ‹ SHIFT › ‹ f5 › once to end the edit session and again to return to the main system screen.

You can increase the complexity of calculations to whatever you want, but remember that as the complexity increases and you enter more values and operators, you also increase the requirement for free memory space.

Adding or Deleting Line Feeds

Whether you want to change the line-feed command T-base sends to the printer with each return depends on your make of computer and printer.

With the TRS-80 Model 100/200 or the Olivetti M10, you may find that your printer prints your T-base reports on a single line. If so, you will want to *add* line feeds.

With the NEC PC-8201, you may find that your printer prints your T-base reports with too much space between lines. If so, you will want to *delete* line feeds.

To add or delete line feeds, follow these steps:

1. On the main system screen, place the cursor over BASIC, and press ‹ ENTER ›.

2. On the screen that appears, type

```
load "TB-RPT
```

and press ‹ ENTER ›.

3. The screen will display OK. Type

```
edit10
```

and press ‹ ENTER ›. The screen will display line number 10 of the TB-RPT.BA program.

On the **TRS-80 Model 100/200** and the **Olivetti M10**, line 10 appears like this:

```
10 CS=12:CR$=CHR$(13)
```

On the **NEC PC-8201**, line 10 appears like this:

```
10 CS=12:CR$=CHR$(13)+CHR$(10)
```

4. **TRS-80 Model 100/200 or Olivetti M10:** To add a line-feed command to each carriage return, move the cursor to the end of the line and type:

```
+CHR$(10)
```

NEC PC-8201: To delete a line-feed command from each carriage return, move the cursor to the end of the line and delete these characters:

```
+CHR$(10)
```

5. If you have a TRS-80 Model 100/200 or an Olivetti M10, press ‹ f8 › once to end the edit session and again to return to the main system screen.

If you have an NEC PC-8201, press ‹ SHIFT › ‹ f5 › once to end the edit session and again to return to the main system screen.

Traveling Software License Agreement

Cassette or Disk Version: As stated on the cover of the package, by opening this package you have agreed to the terms of this license agreement. The terms of the agreement summarized on the package cover are here stated in detail. The return of an unopened package entitles you to a refund of your money. There will be no refunds for products that have been opened or in which there are missing components.

ROM Version: This program is sold on the condition that the purchaser agrees to the following license. Read this agreement carefully. If you do not agree to the terms of this agreement, return the entire package, in its original condition, to a dealer or to Traveling Software within the time period specified in the guarantee enclosed with this package.

1. **License:** You have the nonexclusive right to use the enclosed program. This program can only be used on a single computer. You may physically transfer the program from one computer to another provided that the program is used on only one computer at a time. You may not electronically transfer the documentation to others. You may not modify or translate the program or related documentation without the prior written consent of Traveling Software, except as provided in this manual.

You may not use, copy, modify, or transfer the program or documentation, or any copy except as expressly provided in this agreement.

2. **Backup and Transfer:** You may not make copies of a ROM version of this program for any reason; you may make copies of a cassette or disk version of this program solely for backup purposes. You must reproduce and include the copyright notice on any backup copy. You may transfer and license the product to another party if the other party agrees to the terms and conditions of this agreement and completes and returns a Registration Card to Traveling Software. If you transfer the program, you must at the same time transfer the documentation and all backup copies or transfer the documentation and destroy all backup copies.

3. **Copyright:** The program and its related documentation are copyrighted. You may not copy the program or its documentation except as for backup purposes and to load the program into the computer as part of executing the program. All other copies of the program and its documentation are in violation of this agreement.

4. **Term:** This license is effective until terminated. You may terminate it by destroying the program and documentation and all copies thereof. This license will also terminate if you fail to comply with any term or condition of this agreement. You agree upon such termination to destroy all copies of the program and documentation.

5. **Limited Warranty:** The program is provided "as is," without warranty of any kind. You assume the entire risk as to the results and performance of the

program. Should the program prove defective, you (and not Traveling Software or its representatives) assume the entire cost of all necessary servicing, repair, or correction. Further, Traveling Software does not warrant, guarantee, or make any representations regarding how reliable or how current, or otherwise; and you rely on the program and results solely at your own risk.

Traveling Software does warrant to the original licensee that the media--cassette(s), disk(s), or ROM chip(s)--on which the program is recorded be free from defect in materials and workmanship under normal use and service for a period of ninety (90) days from the date of delivery as evidenced by a copy of your receipt. Traveling Software's entire liability and your exclusive remedy shall be the replacement of the media not meeting Traveling Software's limited warranty and which is returned to Traveling Software with a copy of your receipt. If failure of the media has resulted from accident, abuse, or misapplication of the product, Traveling Software shall have no responsibility to replace the media under this limited warranty. The above is the only warranty of any kind, either expressed or implied, including but not limited to the implied warranties of merchantability and fitness for a particular purpose that is made by Traveling Software on this Traveling Software product. This warranty gives you specific legal rights and you may also have other rights that vary from state to state.

Neither Traveling Software nor anyone else who has been involved in the creation, production, or delivery of this program shall be liable for any direct, indirect, consequential, or incidental damages arising out of the use, the results of use, or inability to use such product even if Traveling Software has been advised of the possibility of such damages or claim. Since some states do not allow the exclusion or limitation of liability for consequential or incidental damages, the above limitation may not apply to you.

6. **Update Policy**: In order to obtain updates of the program, the licensee and persons to whom the program is transferred in accordance with this agreement must complete and return the attached Registration Card to Traveling Software. If this Registration Card has not been received by Traveling Software, Traveling Software is under no obligation to make available to you any updates.

7. **Miscellaneous**: This license agreement shall be governed by the laws of the state of Washington and shall inure to the benefit of Traveling Software, Inc., its successors, administrators, heirs, and assigns.

8. **Acknowledgment**: You acknowledge that you have read this agreement, understand it, and agree to be bound by its terms and conditions. You also agree that this agreement is the complete and exclusive statement of agreement between the parties and supersedes all proposals or prior agreements, verbal or written, and any other communications between the parties relating to the subject matter of this agreement.

Should you have any questions concerning this agreement, please contact in writing Traveling Software, Inc., Customer Sales and Service, 11050 Fifth Avenue NE, Seattle, WA 98125.

Software/Documentation Problem Report

Use this form to tell the Traveling Professor about any software bugs, documentation errors, or other problems—and any suggestions you may have.

Name_____

Street_____

City_____State_____Zip _____

Phone_____Date_____

Nature of Problem

☐ Software ☐ Documentation

Software Description

Traveling Software Product_____

Version_____Lot Number _____

Serial Number_____

Other Software Used_____

Hardware Description

Manufacturer_____Model_____Memory_____K

Peripherals _____

_____

Describe below the problem in enough detail to allow our technicians to reconstruct it. Include any diagnosis and suggestions you may have. **Give error and line number.** Attach a program listing if available. (Consult your computer manual for instructions on printing a program listing.)

Error Number_____Line Number_____

For Traveling Software Use Only:

Technician _____

Date Received_____

Date Resolved_____

Action Taken:

Index

ADRS.DO file, creating from T-base file, 4-2
Alphanumeric order. *See* Records, order to storage of.
Angle brackets, 1-5
Arrow keys, 1-5

B (borrowed) descriptor, 2A-16. *See also* Borrowed field.
Beep, 2A-7, 2A-8, 2A-9, 2A-13, 2A-21, 2B-3, 2B-11, 2B-15
Book overview, 1-2
Borrowed and stored field
  entering data in, 2B-18
  setting up, 2A-17, 2A-24
Borrowed field
  entering data in, 2B-4, 2B-16, 2B-18
  memory considerations with, 2A-29
  setting up, 2A-16, 2A-19, 2A-20, 2A-21, 2A-23, 2A-24
BS (borrowed and stored) descriptor, 2A-17. *See also* Borrowed and stored field.

C (calculated) descriptor, 2A-18. *See also* Calculated field.
Cal prompt, 2B-5. *See also* Calculate function.
Calculate function, 2B-19
Calculated and stored field
  setting up, 2A-20, 2A-24
Calculated field
  entering data in, 2B-5, 2B-18, 2B-19
  memory considerations with, 2A-30
  setting up, 2A-18, 2A-25, 2A-26
Calculations, increasing complexity of, A-5
Cassette recorder, volume and tone settings for, 6-1
CL (column label) command, 3-11, 3-31
CO (column) command, 3-10, 3-20, 3-26, 3-31
.CO files, conflict with, 1-11
Column labels. *See* CL (column label) command.
Columns. *See* CO (column) command.
CONFIG.DO file, A-1
CS (calculated and stored) descriptor, 2A-20. *See also* Calculated and stored field.
Cursor, 1-5
CUST*S.DO file, 2B-7, 2B-14
Customer screen file. *See* CUST*S.DO file.

D (date) descriptor, 2A-8. *See also* Date field.
Data entry. *See* Entering data.
Data files. *See also* .DO files.
  redesigning, 3-6, 3-38
  updating, 3-40
Database defined, 1-4
Date field
  entering data in, 2B-3, 2B-14, 2B-18
  setting up, 2A-8, 2A-13, 2A-23
DB (database) command, 3-5
DE (detail) command, 3-12, 3-20
Del prompt, 2B-5. *See also* Delete function.
Delete function, 2B-12
Descriptors. *See* Field descriptors; and individual descriptor entries.
Displaying screen reports, 3-28
.DO files. *See also* Data files.
  loading from cassette, 1-14
  saving to cassette, 5-8
Dollar ($) descriptor, 2A-8. *See also* Dollar field.
Dollar field
  entering data in, 2B-15
  setting up, 2A-8, 2A-14, 2A-16, 2A-20, 2A-26

End prompt, 2B-5
ENTER key, 1-5
Entering data, 2B-3
  order to, 2B-9
Error messages, 6-4
  errors when loading report files, 6-12
  errors when loading screen files, 6-8
  general operating errors, 6-6
  #2, 6-6
  #5, 6-6, 6-12
  #6, 6-7
  #7, 6-7
  #8, 6-7
  #9, 6-12
  #14, 6-8, 6-12
  #52, 6-8, 6-12
  #54, 6-8, 6-13
  #57, 6-9, 6-13
  #70, 6-9
  #71, 6-10
  #72, 6-11
  #73, 6-11
  #74, 6-11, 6-13
  #75, 6-14
  #76, 6-14

Error messages *(continued)*
#77, 6-15
#78, 6-15

Field defined, 1-4. *See also* Borrowed field; Calculated field; Date field; Dollar field; Integer field; Mandatory field; Text field; User-defined field.
Field description line, 2A-4
maximum length of, 2A-5, 2A-12, 2A-15
Field descriptors, 2A-6
File description line, 2A-3
maximum length of, 2A-4
File
defined, 1-4
kinds of T-base files, 2A-2
Fin prompt, 2B-5. *See also* Find function.
Find function, 2B-12
Forced page. *See* FP (forced page) command.
Formulas, setting up, 2A-19, 2A-26
FP (forced page) command, 3-13, 3-21, 3-35
Function keys, 1-7. *See also* Sav prompt; Del prompt; Fin prompt; Pre prompt; Nex prompt; New prompt; Cal prompt; End prompt.
table of, 2B-5

Grand totals. *See* GT (grand total) command.
GRPH key, use of, 2A-12
GT (grand total) command, 3-13, 3-32

HE (heading) command, 3-10, 3-26
Headings. *See* HE (heading) command.

I (integer) descriptor, 2A-7. *See also* Integer field.
Input/output, special typestyle for, 1-6
Installing and initializing T-base (ROM version), 1-12
Integer field, 2A-7, 2A-14, 2A-20, 2A-24
I/O errors, 6-1

Key field, 2A-17, 2A-21, 2A-22, 2B-4, 2B-11
Kill option, 5-4

Limits
to character spaces in screen file, 2A-5
to field description line, 2A-5, 2A-12, 2A-15
to file description line, 2A-4
Line feeds, adding or deleting, A-7
Lines displayed on monitor, increasing number of, A-4
Loading .DO files from cassette, 1-14

Loading T-base (cassette version), 1-12

M (mandatory) descriptor, 2A-20. *See also* Mandatory field.
Mandatory field
  entering data in, 2B-3, 2B-11
  setting up, 2A-20, 2A-22
Manual overview, 1-2
MEMMGR.BA. *See* Memory Manager.
Memory management, tips for, 5-6
Memory Manager, 5-1
  kill option, 5-4
  loading, 1-12
  menu option, 5-5
  name option, 5-5
  starting, 5-3
  visible/invisible option, 5-3
Memory requirements, 1-10
  for borrowed fields, 2A-29
  for calculated fields, 2A-30
  to run T-BASE.BA, 2A-29
  to run TB-RPT.BA, 3-16
Memory space, increasing, A-2
Menu option, 5-5
Modifying T-base, A-1
  adding or deleting line feeds, A-7
  increasing complexity of calculations, A-5
  increasing memory space, A-2
  increasing number of lines displayed on monitor, A-4

Name option, 5-5
New function, 2B-13
New prompt, 2B-5. *See also* New function.
Nex prompt, 2B-5. *See also* Next function.
Next function, 2B-13

Order of records. *See* Records, order to storage of; SO (sort only command; SR (sort and resort) command.
Order screen file. *See* ORDR*S.DO file.
ORDR*S.DO file, 2B-7, 2B-17
OUT (output) command, 3-8, 3-25
  to create new data file, 4-3
Output, destination of. *See* OUT (output) command.

Page length. *See* PL (page length) command.
Page width. *See also* PW (page width) command.
  for screen reports, 3-8, 3-25
Percentages in dollar fields, 2A-26
PL (page length) command, 3-7, 3-19

Pre prompt, 2B-5. *See also* Previous function.
Previous function, 2B-13
Primary descriptors, 2A-7
  use of, 2A-9
Printing reports, 3-14, 3-21, 3-36
PROD*S.DO file, 2B-7, 2B-16
Product screen file. *See* PROD*S.DO file.
Program changes. *See* Modifying T-base.
Prompts, 1-7
  table of, 2B-5
PW (page width) command, 3-8

Record selection for reports, 3-15
Records
  defined, 1-4
  order to storage of, 2B-13, 3-14, 3-35
Report definition commands. *See also individual commands*
  order to, 3-5
  required, 3-5
Report file
  report definition commands, 3-5
  steps to create, 3-3, 3-19, 3-24, 3-29, 3-33, 3-38

Sample database, 1-9. *See also* CUST*S.DO file; ORDR*S.DO file; PROD*S.DO file; VEND*S.DO file.
  diagram of, 2B-8
  loading from cassette, 1-14
  storing data in, 2B-7
Sav prompt, 2B-5. *See also* Save function.
Save function, 2B-12
Saving .DO files to cassette, 5-8
Screen files 2A-1
  creating, 2A-3
  field description line, 2A-4
  file description line, 2A-3
  format of, 2A-3
Secondary descriptors, 2A-16
  use of, 2A-21
Selecting records for reports, 3-14
  high value, 3-15
  low value, 3-15
SO (sort only) command, 3-6
  to rearrange data file, 4-3
Software
  cassette version, 1-9
  ROM version, 1-9
Sorting records. *See* SO (sort only) command; SR (sort and resort command).

SR (sort and resort) command, 3-7, 3-34
ST (subtotal) command, 3-12, 3-31
Storing records. *See* Records, order to storage of; Save function.
Subtotals. *See* ST (subtotal) command.
System lockup, 6-2

T (text) descriptor, 2A-7. *See also* Text field.
T-BASE.BA
  loading, 1-12
  memory requirements for, 1-10, 2A-29
  modifying, A-1
  starting, 2B-9
TBASE.TS, 1-9. *See also* T-BASE.BA.
TB-RPT.BA
  loading, 1-12
  memory requirements for, 1-10, 3-16
  modifying, A-1
  starting, 3-14
TB-RPT.TS, 1-9. *See also* TB-RPT.BA.
Terms, 1-4
Text field, setting up, 2A-7, 2A-12, 2A-14, 2A-16, 2A-17, 2A-22
Tone setting for cassette recorder, 6-1
Traveling Professor, 1-1
Traveling Writer, use with T-base, 4-1
Troubleshooting, 2B-6, Section 6
Tutorial tape, 1-1

U (user-defined) descriptor, 2A-9. *See also* User-defined field.
User-defined field
  entering data in, 2B-3, 2B-15
  setting up, 2A-9, 2A-13, 2A-20

VEND*S.DO file, 2B-7, 2B-9
Vendor screen file. *See* VEND*S.DO file.
Volume setting for cassette recorder, 6-1

DETACH YOUR QUICK REFERENCE CARD AND CARRY IT WITH YOU

FUNCTION KEY PROMPTS

Prompt (function)	TRS. Olivetti	NEC
Sav (Save)	F1	f1
Del (Delete)	F2	f2
Fin (Find)	F3	f3
Pre (Previous)	F4	f4
Nex (Next)	F5	f5
New	F6	<SHIFT> f1
Cal (Calculate)	F7	<SHIFT> f2
End	F8	<SHIFT> f5

T-base™

THE TRAVELING DATABASE MANAGER™

Quick Reference Card

Traveling Software, Inc.
11050 Fifth Ave. N.E.
Seattle, WA 98125

SCREEN DEFINITION DESCRIPTORS

Primary Descriptors

Text	T
Integer	I
Dollar and decimal fraction	S
Date	D
User-defined	U

Secondary Descriptors

Borrowed	B
Borrowed and stored	BS
Calculated	C
Calculated and stored	CS
Mandatory	M

REPORT DEFINITION COMMANDS

Database name	**DB**,xxxx
Sort	**SO**,FIELD2,FIELD1, etc.
Sort and resort	**SR**,FIELD2,FIELD3, etc.
Page length	**PL**,nn
Page width	**PW**,nn
Redirected output	**OUT**,FILE(or**REPORT**), destination:
Heading	**HE**,Report Heading
Column position	**CO**,nn,nn,nn,etc.
Column label	**CL**,Label 1,Label 2,etc.
Source of detail data item	**DE**,FIELD3,FIELD2, etc.
Subtotal	**ST**,BREAKFIELD, FIELD2,FIELD3, etc.
Grand total	**GT**,FIELD1,FIELD2, etc.
Forced page break	**FP**,BREAKFIELD

TRAVELING SOFTWARE, INC. • Seattle, Washington