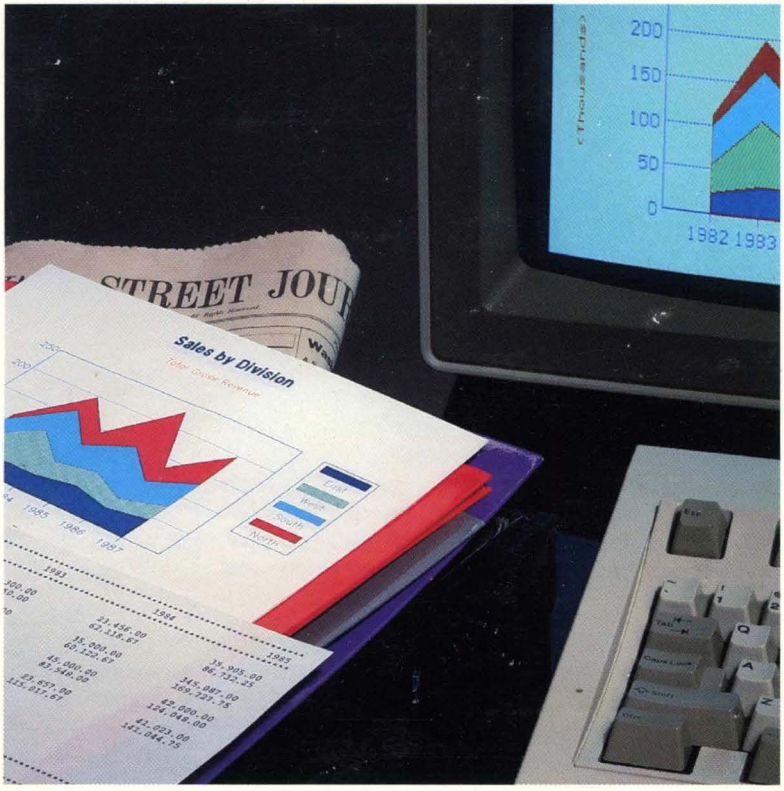
QUATTRO™

Getting Started With Quattro



QUATTRO™: THE PROFESSIONAL SPREADSHEET

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I N T R O D U C T I O N

The information in this book is designed to get you started with Quattro. It tells you what you need to do to get Quattro up and running, and introduces you to Quattro's features. It includes an easy-to-follow tutorial that will give you immediate hands-on experience with the program.

This *Getting Started* book accompanies the main Quattro documentation: *The User's Guide*, which contains detailed "how-to" information about every aspect of Quattro, and *The Reference Guide*, which contains simplified explanations and procedures for each major Quattro operation, as well as information on each of Quattro's @functions and macro commands.

Who Should Use This Book?

This book is essential to both experienced and inexperienced spreadsheet users.

If you're new to spreadsheet programs, you should read through this book in its entirety. The tutorial in the last chapter will give you a step-by-step introduction to Quattro, as well as spreadsheets in general.

If you're an experienced spreadsheet user, install the program using the instructions in Chapter 2 of this book, "Before You Begin." You can skim through the rest of the book as you see fit, paying special attention to the section "Quattro for 1-2-3 Users."

Once you've read this book, you'll know how to

- get Quattro up and running
- use Quattro menus and get on-screen help
- create and print a basic accounting spreadsheet
- build, save, and print a customized Quattro graph
- use simple macros
- save your data and exit Quattro

Inside This Book

Here's what you'll find in this book:

Chapter 1, "Welcome to Quattro," describes the contents of your Quattro package and the hardware required to run Quattro. It also introduces you to some of Quattro's basic features.

Chapter 2, "Before You Begin," tells you how to copy Quattro onto your hard disk, or onto back-up floppy disks.

Chapter 3, "Quattro for the Beginning Spreadsheet User," offers basic information about spreadsheets, graphs, and databases. It tells you how to use Quattro menus and get context-sensitive help, and how to start and exit Quattro.

Chapter 4, "Quattro for Lotus 1-2-3 Users," describes the differences between Quattro and its major competitor, Lotus 1-2-3. It tells you how to instruct Lotus to accept Lotus-compatible commands if you prefer, and how to use macros in relation to 1-2-3 and Quattro.

Chapter 5, "A Tutorial," takes you step by step through the essential Quattro features, from moving around the spreadsheet to building macros. When you've completed the tutorial, you'll have a solid foundation for using Quattro.

Where Do I Go From Here?

Once you feel comfortable with the material presented in this book, you have a couple of options. If you're an experienced spreadsheet user, or if you plan to begin with a simple Quattro spreadsheet, you can go ahead and experiment with the program. You can refer to information in the *Quattro User's Guide* and *Quattro Reference Guide* for assistance.

If you want to learn more about the features presented here, or if you're interested in stretching the program to its full potential, we suggest you move on to the *Quattro User's Guide* for more in-depth practice with the program. And, of course, the *Quattro Reference Guide* provides quick, easily digestible information about every aspect of Quattro.

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Scotts Valley, CA
95066, USA

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- computer make and model number
- operating system and version number

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C H A P T E R

1

Welcome to Quattro

Welcome to the world of Quattro. The Quattro spreadsheet is designed to make your working life easier. It can minimize the amount of time you spend keeping records, balancing books, and drawing graphs, and give you more time to focus on the future. Its automatic features can help you make connections between different areas, uncover weak points, and predict future trends.

The Quattro program includes numerous special features that make data entry and analysis easier than ever:

- **Pop-up menus.** All Quattro commands can be accessed through pop-up menus that temporarily overlay what you're doing. Simply press the slash key (/) to display the first in a tree of menus. To select a command from a menu, highlight it by using the arrow keys and press *Enter*, or simply enter the first letter of your selection.
- **On-line help.** From anywhere within Quattro, you can press *F1* to display a *help screen* describing the current area and your options within it. Press **Ctrl-Break** and you're instantly returned to the spreadsheet.
- **Shortcuts.** You can assign any Quattro menu command to a *Ctrl* key sequence to cut down on keystrokes.
- **Choice lists.** The NAMES key, *F3*, lets you display a list of existing block names. You can also display a list of @functions and their syntax (*Alt-F3*), or macros (*Shift-F3*). Selecting an item from a list automatically enters it in the input line.
- **Pointing.** Specify areas in the spreadsheet by using the arrow keys to *point them out*. The cell block you point out is automatically entered on the command line.

- **Sorting.** You can arrange and rearrange data in your spreadsheet in alphabetical or numerical order.
- **Searching.** You can automatically search through your spreadsheet for specific cells or records. You can also copy or delete records that meet specified conditions, for example, all records with a value greater than 1000 in the Profit field. You can also automatically replace all instances of one value with another value ("search and replace").
- **Importing files.** Files created with several other spreadsheet and database programs (Lotus 1-2-3, dBASE, Paradox, and Symphony) are compatible with Quattro. Quattro translates the files automatically when you retrieve them. You can also import ASCII or text files into a Quattro spreadsheet.
- **Macros.** You can create an unlimited number of macros for use with your spreadsheet. With macros, you can enter often-used data or commands with just a few keystrokes. Macro Record mode records your steps automatically as a macro. You can also use Quattro's extended set of macro commands to build customized program applications.
- **Functions.** Quattro includes ninety-nine built-in formulas, called *functions*, that let you perform mathematical tasks with ease. For example, the @SUM function lets you add the values contained in a range of cells.
- **Flexible Menus.** The Menu Builder program extension lets you rewrite or reorganize any of Quattro's menus. You can also load other preset menus such as one that accepts Lotus-compatible command names.

This booklet introduces most of the features listed here. Details on these and other Quattro functions are covered in the *Quattro User's Guide* and *Quattro Reference Guide.*

C H A P T E R

2

Before You Begin

Quattro requires very little or no installation. However, before you begin working with Quattro, there are a few things you need to do first:

- Check the contents of your Quattro package, including your program disks.
- Make sure you have the correct equipment for running the program.
- Ready the README.DOC file on your Help Disk.
- Format work disks for storing your work (if you're using a floppy-drive system).
- Make back-up copies of your Quattro disks or copy the disks onto your hard disk.
- If you're using a floppy-drive system, install Quattro for use with floppy drives, and copy the DOS Command file to your System Disk so you can access DOS from within Quattro.

This chapter discusses each of these requirements. It describes the procedures required to get ready to run Quattro from both a hard disk and a floppy-drive system. Follow the procedures appropriate for the system you're using. When you're finished, you'll be ready to go to work with Quattro.

The Quattro Package

Your complete Quattro package includes the following:

- three Quattro manuals, including this one
- three Quattro disks, labeled System Disk, Resource Disk, and Help Disk
- function-key templates designed to fit over and label the function keys on your keyboard

Before you go further, check to make sure you have everything listed here. If anything is missing, take the entire package back to where you bought it, or contact Borland (see page 3).

Necessary Equipment

Quattro runs on any IBM or compatible computer. It requires only

- a minimum of 512K bytes of system memory (RAM)
- the DOS operating system, version 2.0 or later

If you want to display graphs, you also need a computer graphics card (either color or monochrome). You can still build and print graphs without one, however.

Quattro automatically detects the type of screen you're using and acts accordingly. If you're using a non-standard screen display (such as a black and white monitor with a color graphics card), you will need to specify this with the **D**efaults **H**ardware **S**creen command (see Chapter 5 of the *Quattro User's Guide*).

You can use any type of printer for printing spreadsheets. Quattro assumes you're using a parallel printer attached to your computer's first parallel port. If not, you need to specify your printer's setup with the **D**efault **H**ardware **T**ext Printer command (see Chapter 5 of the *Quattro User's Guide*).

To print graphs, you must have a graphics printer and must first specify the type of graphics printer you're using with the **G**raph **P**rint **P**rinters command (see Chapter 8 of the *Quattro User's Guide*).

The Quattro Disks

There are three disks included in your Quattro package: the Quattro System Disk, the Resource Disk, and the Help Disk.

The System Disk contains the Quattro program, including the following files:

Q.EXE	main Quattro program
Q2.OVL	program overlay file
Q4.OVL	program overlay file
Q123.BAT	batch file to load 123.RSC menu tree and defaults
QF.BAT	batch file to set directories for use with floppy-drive system

The Resource Disk contains driver files that tell Quattro specific information about your computer:

Q1.OVL	program overlay file
Q2.OVL	program overlay file
Q3.OVL	program overlay file
Q4.OVL	program overlay file
QUATTRO.DEF	Quattro defaults file
123.DEF	defaults file for Lotus-compatibility
*.TRN	several files used to translate files
*.BGI	several files used to print graphs
*.CHR	several files used to display graph titles in different fonts

The Help disk contains the help information displayed in Quattro and a sample Quattro file used in the tutorial in Chapter 4 of this book:

QUATTRO.HLP	Help screens displayed with *F1*
SAMPLE.WKQ	Sample spreadsheet for tutorial in Chapter 5
README.COM	program file used to read README.DOC
README.DOC	latest information on Quattro
DEMO.WKQ	sample spreadsheet used for demonstration
NOVICE.RSC	alternative menu tree
TRANS.QAI	Transcript add-in
MENUBLDR.QAI	Menu Builder add-in
HARD.BAT	batch file used to reset Quattro for hard disk
FLOPPY.BAT	batch file used to set Quattro for floppy system
Q123.DEF	defaults file loaded with Q123.BAT
QF123.DEF	defaults file loaded with QF123.BAT if you have a floppy system
QH123.BAT	batch file loaded with Q123.BAT if you have a hard disk
QF123.BAT	batch file loaded with Q123.BAT if you have a floppy system

Remember that floppy disks are sensitive and must be handled with care. Otherwise, you risk losing the information stored on them. Keep them

away from direct sunlight and magnetic fields. Do not touch the exposed disk surface, bend them, or attach paper clips to them. When not in use, the disks should be stored in their envelopes.

Reading the README File

Any last-minute changes or additions to the Quattro program are documented in a file on the Help Disk called README.DOC. You should review this file carefully before working with Quattro and make note of any changes.

To display the README.DOC file one screenful at a time, simply type

```
README
```

on the DOS command line and press *Enter*.

You can also print this file with the DOS PRINT command.

Using a Hard Disk

To run Quattro from a hard disk, simply copy the files to your hard disk. Because there are many files on these disks, you may want to put them in a separate directory. In the following procedure, you will create a directory called QUATTRO off the root directory, then copy your Quattro files into it. (For more information on directories, see Appendix B, "A DOS Primer," in the *Quattro User's Guide*.)

1. Type `CD C:\` and press *Enter* to go to the root directory.
2. Type `MD QUATTRO` and press *Enter* to create a new directory called QUATTRO.
3. Move into the new directory by typing `CD QUATTRO` and pressing *Enter*.
4. Insert the Quattro System Disk in Drive A and type `COPY A:*.*` *Enter*.
5. Replace the System Disk with the Resource Disk and repeat the COPY command.
6. Replace the Resource Disk with the Help Disk and repeat the COPY command.

Note: If you're using a hard disk, you can access your help files more quickly by specifying Instant as the Help Access Method default setting (see Chapter 5 of the *Quattro User's Guide*).

Using a Floppy-Drive System

If you're using a floppy-drive system (with no hard disk), you need to do the following before working with Quattro:

- Format a few blank disks
- Back up your Quattro disks
- Copy the COMMAND.COM file from DOS to your System Disk
- Install Quattro for floppy-drive use

Note: This and other Quattro manuals assume that your floppy-drive system has two disk drives.

Formatting Your Work Disks

To make backup copies of your Quattro disks, you need three blank work disks. You'll also need a few extra disks to save the work you do with Quattro. Before a new disk can be used for storage, it must be formatted.

To format a floppy disk:

1. Put your DOS disk in Drive A and turn the computer on. Your screen displays A>.
2. Type `FORMAT B:` and press *Enter*. The system prompts you to insert a disk in Drive B.
3. Insert a new disk in Drive B and press any key.
4. When formatting is finished, the system asks if you want to format another disk. If you do, press *Y* and insert another new disk. If you don't, press *N*, and the A> prompt reappears.

Note: If you're using Quattro and find that the disk you're working with is full, you don't need to exit Quattro (and lose your work) to format a new disk. The **OS** (Operating System) command on the File menu (*/FO*) lets you access DOS without erasing your spreadsheet; it is only temporarily removed from the screen. Just type `Exit` and press *Enter* when you're finished using DOS commands and your spreadsheet will return intact. (See Chapter 1 of the *Quattro User's Guide* for details.)

Backing Up Your Quattro Disks

Before you work with Quattro, you need to make copies of each of the Quattro disks. You can then work with the copies and save the originals for

backup. The original disks then remain intact and can be recopied should anything happen to the copies.

To copy your Quattro disks, you need three blank, formatted floppy disks.

To make backup copies of the Quattro disks:

1. With DOS loaded, type `A:` and press *Enter* to activate Drive A.
2. Insert the Quattro System Disk in Drive A and a blank, formatted disk in Drive B.
3. Type `COPY *.* B:` and press *Enter*. This copies all the files on the disk in Drive A to the disk in Drive B. The files are displayed as copied. When finished, the system redisplays the A> prompt.
4. Insert the Quattro Resource Disk in Drive A and a blank, formatted disk in Drive B.
5. Type `COPY *.* B:` and press *Enter*. The Resource Disk is copied onto the blank disk.
6. Now insert the Help Disk in Drive A and another blank, formatted disk in Drive B.
7. Type `COPY *.* B:` and press *Enter*. The Help Disk is then copied onto the blank disk.
8. When the A> prompt returns, remove both disks. Store the original disks in a safe place as backups and work with the copies.

Copying COMMAND.COM

After you've copied your Quattro disks, you can add the COMMAND.COM file on your DOS disk to the copy of your Quattro Help Disk. This lets you access DOS from within Quattro.

To copy COMMAND.COM onto your Help Disk:

1. Insert your DOS disk in Drive A.
2. Insert the copy you made of the Quattro Help Disk in Drive B.
3. If the A> prompt is not displayed, type `A:` and press *Enter*.
4. Type `COPY COMMAND.COM B:` and press *Enter*. The Command file is copied to the Help Disk in Drive B.

When you access DOS with the **OS** command, be sure you have the Help Disk in Drive B.

If you don't have COMMAND.COM on your Help Disk, you'll need to insert your DOS disk in Drive B before you can use the **OS** command (*/FO*).

And each time you exit the program, you will receive a message asking you to insert your DOS disk in the current drive.

Installing Quattro for a Floppy-Drive System

The first time you use Quattro on a floppy-drive system, you need to install Quattro for floppy-drive use:

1. Put the Quattro Help Disk in Drive A.
2. Put the Quattro System Disk in Drive B.
3. Make sure the DOS prompt is A>. (If not, type `A:` and press *Enter.*)
4. Type `FLOPPY` and press *Enter.* Quattro prompts you to replace the System Disk with the Resource Disk.
5. Remove the System Disk from Drive B and insert the Resource Disk in its place. Quattro prompts you to remove the floppy disks.
6. Remove both disks from the disk drives.

The FLOPPY commands initiates a batch file that sets your default directories appropriately for a floppy-drive system. You can then load Quattro correctly (see Chapter 3) with the `QF` command.

Once you've installed Quattro for a floppy-drive system, you shouldn't have to do it again. If you should switch to a hard disk system, however, you'll need to set up Quattro for running from a hard disk before copying the files to your hard disk.

To install Quattro for a hard disk system (after installing it for floppy-drive use):

1. Put the Quattro Help Disk in Drive A.
2. Put the Quattro System Disk in Drive B.
3. Make sure you're logged on to Drive A. (If not, type `A:` and press *Enter.*)
4. Type `HARD` and press *Enter.*
5. When prompted, replace the System Disk in Drive B with the Resource Disk.
6. When prompted, remove both disks.

You can then copy the Quattro disks safely onto your hard disk.

C H A P T E R

3

Quattro for the Beginning Spreadsheet User

Quattro uses a *spreadsheet*, or rectangular grid, to collect and calculate data. You type the information you want to keep track of into the spreadsheet. You can then use Quattro's myriad features to work on that data—figure totals, calculate formulas, sort information, and so on.

You can use a spreadsheet to record numeric information, such as monthly sales figures or income and expenses. You can also use it as a database manager, to keep track of customer information, for example, or employee records.

Quattro also includes an advanced graphics program, which lets you translate the figures in your spreadsheet into effective visual graphics.

Quattro's extensive features make it a well-rounded program. It acts as an electronic spreadsheet, a database manager, and a business graphics program all in one.

What Is a Spreadsheet?

A spreadsheet is an electronic version of an accountant's ledger book. You use it to record figures and other information. Of course, because Quattro is a computer program, it has a great many advantages over an old-fashioned ledger, just a few of which are

- **Spreadsheet Size.** What you see on the screen is actually only a fraction of the entire spreadsheet. You can scroll the spreadsheet, use the Quattro

GOTO key (*F5*), or even open a second "window" to display different areas.

- **Automatic Calculation**. You can enter formulas in the spreadsheet to automatically calculate values, for example, to total figures in a column or to calculate the average in a range of entries.
- **Easy Editing**. It's simple to change a Quattro spreadsheet. Other entries that are affected by the change are automatically updated.
- **Instant Graphs**. You can instantly create and print graphs (up to 10 different kinds) to help analyze your spreadsheet data.

The spreadsheet shown in Figure 3.1 tracks monthly business expenses for a small company. Formulas entered in the last row total monthly figures.

	A	B	C	D	E
1		JANUARY	FEBRUARY	MARCH	APRIL
2					
3	Advertising	$652	$833	$599	$734
4	Car expenses	$456	$305	$522	$478
5	Postage	$68	$59	$73	$79
6	Insurance	$379	$379	$379	$379
7	Cleaning	$80	$80	$80	$80
8	Office Rent	$750	$750	$750	$750
9	Utilities	$164	$145	$121	$103
10	Office Supplies	$173	$76	$119	$64
11	Travel	$842	598	$366	$711
12	Entertainment	$109	156	$364	$258
13	Telephone	$159	$194	$209	$187
14	Printing	$407	$0	$85	$255
15					
16	TOTAL	$4,339	$3,575	$3,667	$4,078
17					
18					
19					
20					

A1: READY

12-Oct-87 03:44 PM

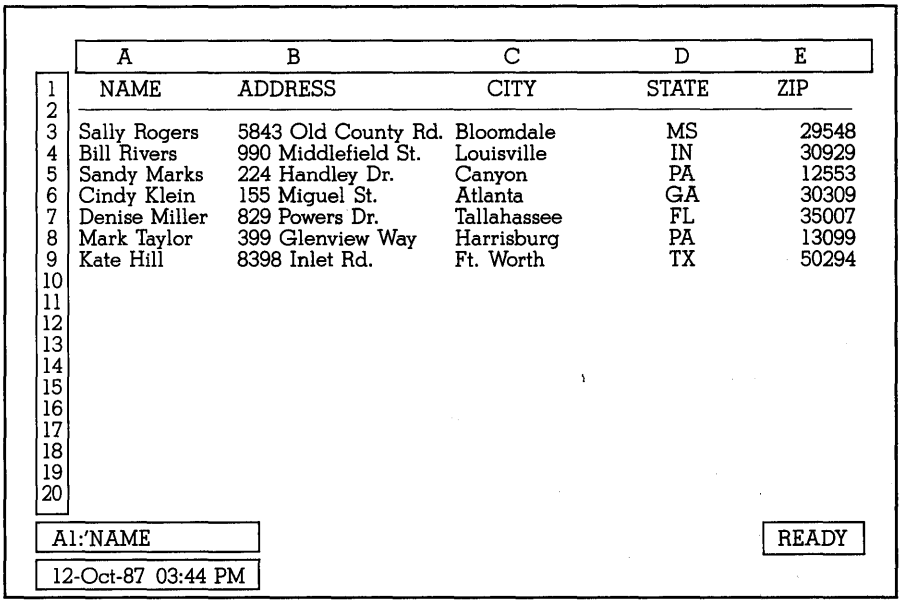
Figure 3.1: A Sample Spreadsheet

What Is a Database?

In Quattro, a database is any part of your spreadsheet in which information is stored in database format. In this format, information is divided into rows, called *records*. Each column, or *field*, contains a category of data, defined by column headings, called *field names*.

Figure 3.2 shows an address database entered in a Quattro spreadsheet. Each row of information is an individual record, containing one name and

address. The field names at the top of the spreadsheet identify the different types of information: Name, Address, City, State, and Zip.



	A	B	C	D	E
1	NAME	ADDRESS	CITY	STATE	ZIP
2					
3	Sally Rogers	5843 Old County Rd.	Bloomdale	MS	29548
4	Bill Rivers	990 Middlefield St.	Louisville	IN	30929
5	Sandy Marks	224 Handley Dr.	Canyon	PA	12553
6	Cindy Klein	155 Miguel St.	Atlanta	GA	30309
7	Denise Miller	829 Powers Dr.	Tallahassee	FL	35007
8	Mark Taylor	399 Glenview Way	Harrisburg	PA	13099
9	Kate Hill	8398 Inlet Rd.	Ft. Worth	TX	50294
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

Figure 3.2: A Sample Database

Quattro includes special commands for use with database information. With them, you can sort the records of your database and search for records that meet specified conditions.

What Is a Graph?

Sometimes a visual representation of data is more effective than words and numbers in presenting information. With Quattro, you can use the information stored in a spreadsheet to create up to 10 types of data graphs:

- Bar graphs (standard, stacked, three-dimensional, and rotated)
- Line graphs
- Pie charts
- XY graphs
- Area charts
- Marker graphs and combined lines and markers

You can print the graphs immediately, or store them for future reference.

Figure 3.3 shows a bar graph charting yearly sales for each region over five years.

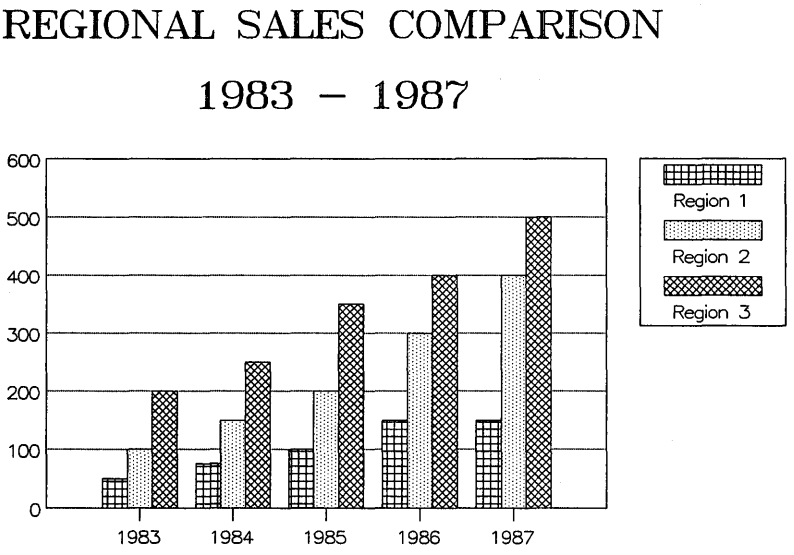


Figure 3.3: A Sample Bar Graph

Loading Quattro

In order to work with Quattro, you have to load it into your computer's memory. This displays the spreadsheet on the screen and lets you use all of Quattro's features.

To load Quattro from a hard disk, simply go to the directory that contains your Quattro files (for example, type `CD \QUATTRO`, then press *Enter*), then type `Q` and press *Enter*.

To load Quattro from a floppy-drive system:

1. Place the Quattro System Disk in Drive A and the Resource Disk in Drive B. If your screen does not show the A> prompt, type `A:` and press *Enter*.
2. Type `QF` and press *Enter*.
3. Remove the Quattro System Disk from Drive A and move the Resource Disk from Drive B to Drive A. In Drive B, put the Help Disk (if you

want to access on-screen help) or a data disk for storing and retrieving your spreadsheets.

With Quattro loaded and a blank spreadsheet displayed, you're ready to begin working with the program.

Note: If you have a floppy-drive system, be sure to always use the QF command (instead of Q) to load Quattro.

Entering Information in the Spreadsheet

With the blank spreadsheet on the screen, the first thing you'll want to do is begin filling in your data. The spreadsheet is divided into hundreds of rectangles, called *cells*. Each cell can contain a separate value.

To enter information in a cell, use the direction keys on the right side of your keyboard to move the highlighted *cell selector* around the spreadsheet. Move the selector to the cell in which you want to enter data, then type the information. The characters you type are displayed above the spreadsheet on the *input line*. Use the *Backspace* key to erase any mistakes. When you're ready to enter the data you typed into the spreadsheet, press *Enter* or any of the direction keys.

Getting Help

Any time you're confused or need assistance while using Quattro, press the HELP key, *F1*. The *help window* appears, with information pertinent to what you're doing. For example, if you're using a menu, it describes the highlighted item on that menu. If an error message is displayed in the middle of your screen, it interprets the message and tells you what you should do.

Each help screen contains several selectable items, called *zoom boxes*, that contain different topics. To display additional information about a topic, select its zoom box. To back up to the previous help screen, press *Esc*.

If you ever get confused about where you are in the help system, press *F1* again, and information about the help system is displayed.

To return to the main help screen, press *Alt-F1*. To return directly to the spreadsheet from within any level of help, select the *Back to Quattro* zoom box or press *Ctrl-Break*.

Once you're back in the spreadsheet, you can return directly to the last help screen displayed by pressing *Alt-F1*.

Using the Menus

Quattro offers hundreds of commands for manipulating and displaying data. Of course, you're not expected to memorize all these commands. Instead, Quattro uses a tree of *menus* to contain its commands. To initiate a command, you simply select it from one of the displayed menus.

All Quattro menus are accessed through a single menu—the main menu. To display this main menu, just press the slash key (/). The main menu contains a list of commands and command categories. When you select a command category, another menu is displayed, listing commands available in that category.

There are two ways to select a command from a menu:

- Use the *Up* and *Down* arrow keys (on the right side of the keyboard) to highlight the command you want. Then press *Enter*.
- Press the key corresponding to the beginning letter of the menu item you want. For example, to select File, press *F*.

To back out of a menu, press *Esc*. To exit the menus altogether and return to the spreadsheet, select Quit from any menu except the main menu, or press *Ctrl* and *Break* at the same time.

You should find Quattro's menus convenient, intuitive, and easy-to-use. If you're not sure what a menu command does, highlight it. A short description of the command is displayed on the command line above the spreadsheet. For further details on the command, press *F1*, and a help window is displayed with more in-depth information.

Ending a Work Session

Remember that when you loaded Quattro, the program was copied from disk into the your computer's temporary memory. When you exit Quattro, the program will be erased from that memory, and with it, any work you accomplished in the meantime. For this reason, you need to save any work you've done by copying it from the temporary memory to a file on disk before you exit the program.

Each spreadsheet you create will be stored in a separate file. A file is simply a means of organizing your work, like a file in a file drawer. When you store data in a file, you give the file a name. Then, to display the information in that file, you simply ask for it by name.

To save your work, press (/) to display the main menu. Select **F**ile (press *F*), then select **S**ave (press *S*). Quattro displays a message at the top of the screen, asking you for the name you want to give the spreadsheet file. Enter a name of up to eight letters or numbers. (Quattro automatically adds a file-name extension.) Avoid punctuation characters. You can use either upper or lowercase; however, Quattro and DOS will translate lowercase letters into uppercase.

When you press *Enter*, Quattro saves the data in the displayed spreadsheet in a file and assigns it the file name you specified. To redisplay that spreadsheet data at a later time, you'll simply select the **F**ile **R**etrieve command and specify the name you gave the file.

To exit Quattro, press the slash key (/) to display the main menu. Then select **Q**uit (press *Q*). If the spreadsheet contains any data that you haven't saved, Quattro displays a warning menu asking, *"Lose Your Changes?"* If you want to discard the work you've done, select **Y**es. If you forgot to save your work, select **N**o, save your work, and select **Q**uit from the main menu again.

This chapter has introduced you to general concepts and skills used in Quattro. To begin experimenting with what you've learned and dig in deeper, skip Chapter 4 and begin the tutorial in Chapter 5.

C H A P T E R

4

Quattro for Lotus 1-2-3 Users

Quattro is similar in format to Lotus 1-2-3 and other spreadsheet programs, although the user interface is considerably different. If you've used Lotus 1-2-3, you should make note of several differences and improvements. If you're more comfortable using the same keys to activate Quattro commands that you used in 1-2-3, you can install a menu tree that uses similar commands.

This chapter includes the following information:

- differences between Quattro and Lotus 1-2-3
- loading Quattro with the 1-2-3-like menu tree and defaults
- installing the 1-2-3-like menu tree
- setting Quattro defaults to emulate 1-2-3
- using 1-2-3 macros with Quattro

If you're a 1-2-3 user, this chapter will help orient you to Quattro with a minimum of relearning.

How Is Quattro Different from 1-2-3?

Like Quattro, Lotus 1-2-3 uses a spreadsheet to store, calculate, and display data, and uses graphs to present a visual interpretation of the data. However, there are significant differences:

- **Minimal installation.** Quattro automatically detects the type of computer you are using, eliminating the need for any program installation. If you have a hard disk, just copy the Quattro disks to your hard disk and load the program. If you have a floppy disk, you need only

insert the disks and type FLOPPY to install Quattro for use with floppy drives.

- **No separate access system.** All of Quattro's functions can be accessed directly from the Quattro spreadsheet. Unlike 1-2-3, you can print a graph or translate a file without exiting the spreadsheet.
- **Smarter recalculation.** Each time a formula in 1-2-3 needs to be recalculated, the program recalculates every formula in the spreadsheet. Quattro recalculates only the formulas whose elements have changed, greatly reducing recalculation time.
- **No copy protection.** Borland does not copy-protect its programs. They can be run from a hard disk without inserting the System Disk in the floppy drive, and there's no need to use special commands to copy protected files onto the hard disk.
- **Easy Date Entry.** Quattro makes it easy to enter dates in the spreadsheet. Instead of using @functions and changing the display format to Date as required in 1-2-3, you simply press *Ctrl-D,* then enter a date in any of the acceptable formats. Quattro automatically changes the format for that cell to Date.
- **Greater macro capability.** Create hundreds of macros per spreadsheet (as opposed to Lotus' 27) with a full set of macro commands. Create macros by actually "recording" your actions rather than typing them. (See "Quattro Macros versus 1-2-3 Macros" at the end of this chapter for details.)
- **Full debugging environment.** Quattro's macro debugging facility lets you watch your macros as they execute step by step. You can set both standard and conditional breakpoints to invoke Single-Step mode at certain points in macros. You can set trace cells, whose contents are displayed in the Debug Window, while the macro is being debugged. And you can edit macros without leaving the Debug Window.
- **Better graphics.** Quattro offers a greater variety of graph types, including three-dimensional and rotated bar graphs, area graphs, and combined graph types (using different types for different series of values). It also offers more customization options, such as the size and font of titles. Both displayed and printed graphs are better quality than those in Lotus 1-2-3, and Quattro supports both EGA and VGA graphics cards.
- **Simpler graph printing and customization.** All Quattro's graphics features can be accessed from within the main program. You never have to leave the spreadsheet to print or customize a graph. And once you've set up your basic printing parameters, you can print graphs by just selecting Go from the Graph Print menu.
- **Direct compatibility with Lotus 1-2-3 files.** In most cases, no extra steps are required to use files created with 1-2-3 and other spreadsheet or

database products. Quattro translates files automatically when you retrieve them. And you can automatically translate a Quattro spreadsheet for use with another program simply by saving it with the appropriate extension. Not only can you pass spreadsheet files back and forth between Quattro and 1-2-3; you can also pass macros.

- **Greater flexibility.** You can customize the Quattro program to your own liking. Prefer the Lotus-type commands? Install a menu tree that lets you use familar command sequences, or custom build your own. Prefer a different color scheme for displaying the program? Select from a vast range of colors, hues, and intensities to display any part of the Quattro program.
- **Transcript Add-In.** Quattro includes a program add-in, called Transcript. When loaded, Transcript records every action you take and stores it in a command history file. You can access the file to view your actions, replay all or part of them, and even copy sections to the spreadsheet to create macros.

Using the 123.RSC Menu Tree and Defaults

Quattro's menu tree includes the same functions as the menus in Lotus 1-2-3 (and then some). If you take the time to learn Quattro's menus, you will probably find them much easier to use. But if you still prefer using the commands you're already familiar with, you can adapt Quattro's menu tree to accept them.

Quattro includes a program add-in, called the Menu Builder, which allows you to make changes to the Quattro menu tree. Also included is a file containing an alternative menu tree (123.RSC) created with the Menu Builder. This menu tree allows you to use the Lotus-compatible commands you've already learned. (Additional Quattro commands on the menus are indicated with a filled-in square next to the command.)

Caution: If you use Quattro additions to the 1-2-3 menus in a macro, you won't be able to run the macro in Lotus 1-2-3.

To load Quattro with the 1-2-3 menu tree, simply type

```
Q123
```

on the DOS command line and press *Enter*. This loads Quattro and the 123.RSC menu tree. It also sets several Quattro defaults to be Lotus-compatible.

Note: If you're going to be using macros created with Lotus 1-2-3, it's best to load 123.RSC with Quattro in this way, because all the defaults are set as well, ensuring accurate macro execution.

Also included with Quattro is a Lotus-compatible menu tree that's abbreviated for use as an alternate (123.ALT). You can load it along with your regular menu tree, then switch to it when you need it from within Quattro, for example to use 1-2-3 macros. Alternate menu trees contain all the necessary commands, but rely on the main menu tree for prompts and messages that depend on the menus.

The following sections describe how to load 123.RSC and 123.ALT from within Quattro and how to set Quattro defaults to be Lotus-compatible.

Note: See the inside cover of the *Quattro Reference Guide* for a diagram of the 123.RSC menu tree.

Installing 123.RSC and 123.ALT from within Quattro

Once you're in Quattro, you can specify a different menu tree to be used consistently or as an alternate menu tree.

To specify 123.RSC as the default main menu tree:

1. With Quattro loaded, press */DS* to select **S**tartup from the Default menu.
2. Select **M**enu Tree. The Menu Tree menu is displayed.
3. Select **M**ain Menus. A list of available main menu trees (*.RSC) is displayed.
4. Select 123.RSC.
5. Press *Esc* twice to return to the Default menu.
6. Select **U**pdate. This stores 123.RSC as the new default.

To establish the new menu tree, you must exit Quattro and reload the program.

Note: Remember that if you load Quattro using `Q123`, the 123.RSC menu tree is loaded automatically, regardless of the default menu tree.

To specify 123.ALT as the alternate menu tree:

1. With Quattro loaded, press */DS* to select **S**tartup from the Default menu. Select **M**enu Tree. The Menu Tree menu is displayed.
2. Select **A**lternate Menus. A list of available menu trees (*.ALT) is displayed.

3. Select 123.ALT.
4. Press *Esc* twice to return to the Default menu.
5. Select **U**pdate. This stores 123.ALT as the new default alternate menu tree.

To switch to the alternate menu tree, select **S**witch Menus from the Menu Tree menu (*/DSCMS*), then select **A**lternate Menus. The alternate menu tree is immediately used. To switch back to the main menu tree, select **S**witch Menus, then **M**ain Menus.

With 123.ALT specified as the alternate, you can switch to the Lotus-compatible menus any time you want, without having to leave Quattro.

Note: Having two menu trees loaded at once (both main and alternate) uses approximately 16K bytes of memory space. Only load the alternate menu tree if you really need it.

Caution: If you use either 123.RSC or 123.ALT without setting defaults to be Lotus-compatible (by loading Quattro with the `Q123` command), and you intend to use 1-2-3 macros, be sure to set the **B**orland Style and **R**emember defaults to **N**o and **D**uring Macros to **Y**es (see page 30). Otherwise, your 1-2-3 macros may not work as expected.

You can make changes to any of the available menu trees with the Menu Builder add-in. You can create your own alternate menu tree by reorganizing the menu commands, changing command names, and even changing the actions taken by certain commands. The Menu Builder is described in Chapter 13 of the *Quattro User's Guide.*

Setting Quattro Defaults for Compatibility

In addition to the difference in user interfaces, there are several other differences between Quattro and Lotus 1-2-3. The next few pages tell you how to customize Quattro to behave in ways more familiar to you, or to be compatible with macros you created with other products.

The features you can change are as follows:

- **Descriptor line placement.** You can move the descriptor line at the bottom of the Quattro screen to the top of the screen.
- **File-name extension.** You can change the default file-name extension from .WKQ to .WK1 or .WKS to automatically assume the Lotus-compatible file-name extension.

- **Autoload file.** You can change the name of the file automatically retrieved when you load Quattro from QUATTRO.WKQ to AUTO123.WK1 or AUTO123.WKS to match Lotus 1-2-3.
- **Menus.** Unlike Lotus 1-2-3, Quattro automatically remembers the last command you used in each menu. If you want, you can change this so that it always highlights the first, or default, item on each menu.
- **Confirmation Prompts.** Quattro prompts you for confirmation when you erase a spreadsheet, retrieve a file, or exit Quattro *only if there is data that may be lost.* Lotus 1-2-3 prompts you for confirmation consistently, regardless of possible data loss.

Caution: After you've reset any of the defaults, be sure to use the **Update** command to store the new default values with Quattro. Otherwise, the previous default values will be restored the next time you use Quattro.

Descriptor Line Placement

If you prefer, you can move the first descriptor line underneath the spreadsheet to the top of the screen.

To move the descriptor line:

1. Press */LD* to select **Descriptor Line** from the **Layout** menu.
2. To store the new position as a permanent default, press *Esc* to return to the main menu, then press *DU* to select **Update** from the Default menu.

Note: If you're using the 123.RSC menu tree, press */IST* to move the descriptor line.

File-Name Extension

Quattro automatically assumes the file-name extension .WKQ when none other is specified. You can change the default extension to anything you like, or you can type in an extension with the file name.

To change the default file-name extension:

1. Press */DSE* to select **Extension** from the Default Startup menu. Quattro prompts you for an extension.
2. Enter the extension you want to use as the default.
3. Press *Esc* to return to the Default menu.
4. Select **Update** to store the extension as the new default.

Note: If you're using the 123.RSC menu tree, press */ISE* to change the file-name extension.

Autoload File

When you load Quattro, the program searches through the default data directory for a file named QUATTRO.WKQ. If it finds one, it automatically retrieves the file and displays it on the screen.

You can change the name of the file Quattro loads automatically to AUTO123.WK1 or AUTO123.WKS (Lotus autoload file names), or to any other file name you like.

To change the name of the autoload file:

1. Press */DSA* to select **A**utoload File from the Default Startup menu. Quattro prompts you for a file name.
2. Enter the name of the file you want retrieved automatically each time you load Quattro.
3. Press *Esc* to return to the Default menu.
4. Select **U**pdate to store the extension as the new default.

Note: If you're using the 123.RSC menu tree, press */ISA* to set the **A**utoload File default.

Menu Memory

Quattro keeps track of the last command you used on each menu. When you redisplay the menu, the last-used command is highlighted. This makes it easy to return to the last command you used; just press *Enter* repeatedly until you reach the submenu containing the command.

If you prefer to have the first, or default, item on each menu highlighted, you can turn this feature off.

To turn off menu memory:

1. Press */DSCR* to select **R**emember from the Default Startup Compatibility menu.
2. Select **N**o from the displayed menu.
3. If you want to use this default from now on, press *Esc* twice to return to the Default menu, then select **U**pdate.

Note: If you're using the 123.RSC menu tree, press */ISCRN* to set the **R**emember default to **N**o.

Confirm Options

Normally, Quattro displays a confirmation menu whenever you erase a spreadsheet, retrieve a file, or quit Quattro, and you haven't saved the data in your current spreadsheet. You then have the option of continuing with the operation or canceling it. Lotus 1-2-3 prompts for confirmation at different times.

Table 4.1 shows the different times at which Lotus 1-2-3 and Quattro prompt for confirmation.

Table 4.1: Quattro and Lotus 1-2-3 Confirmation Prompts

	Lotus Style	**Borland Style**
Erase	Always	If you'll lose changes
Quit	Always	If you'll lose changes
Block Advanced Reset	Never	Always
Graph Name Reset	Never	Always

If you prefer to use Lotus' style of confirmation, you can specify this as the default:

1. Press */DSCB* to select **B**orland-Style from the Default Startup Compatibility Options menu.
2. Select **N**o from the displayed menu.
3. If you want to use this default from now on, press *Esc* twice to return to the **D**efault menu, then select **U**pdate.

Note: If you're using the 123.RSC menu tree, press */ISCBN* to set **B**orland Style to **N**o.

Macro Recording

Quattro lets you *record* actions as macros instead of entering the keystrokes required to perform the actions. It translates the recorded actions into

menu-equivalent commands, which can then be interpreted by any menu tree in effect. (See Chapter 4 of the *Quattro Reference Guide* for a tables listing these commands.)

If you want to use macros you create within Quattro with Lotus 1-2-3, you can specify *keystroke* macro recording. Quattro then records actual keystrokes instead of menu-equivalent commands. Your macros will then be executable in Lotus 1-2-3 (as long as you had the 123.RSC menu tree loaded when you recorded the macros and didn't use any additional Quattro commands).

Note: You can always execute macros you created with Lotus 1-2-3 in Quattro, regardless of the **M**acro Recording default.

To set the **M**acro Recording default to **K**eystroke:

1. Select the **M**acro Recording command from the Default Startup Compatibility Options menu (*/DSCM*).
2. Select Keystroke from the displayed menu.
3. If you want to use this default from now on, press *Esc* twice to return to the **D**efault menu, then select **U**pdate.

Caution: You won't be able to execute macros recorded while Macro Recording is set to Keystroke with any other menu tree.

Note: If you're using the 123.RSC menu tree, press */ISCMK* to set the **M**acro Recording default to **K**eystroke.

Quattro Macros versus 1-2-3 Macros

Quattro offers several improvements over the macro facilities available with Lotus 1-2-3 and similar products.

- The Record mode lets you record the steps you want to store in the macro *as you perform them*, instead of requiring you to remember the necessary keystroke sequence and enter it as a label in a cell.
- In addition to using the *Alt* key to execute macros, Quattro also incorporates a Macro Execute command (*/ME* or the *F8* key) that lets you execute an unlimited number of macros. No longer are you restricted to 27 macros per spreadsheet.
- The MACROS choice key (*Shift-F3*) speeds up macro creation by displaying a list of all macro commands. You can quickly insert a macro command in your macro by selecting it from the list and supplying any required arguments.

- In logical macro recording mode, any menu commands you record in a macro are displayed in the spreadsheet as menu-equivalent commands instead of keystrokes, making the macro much easier to read. For example, */BAP* would appear as `{/ Block,Protect}B1..B20~` instead of `/RPB1..B20~`.
- Quattro supports macro user menus with more than eight items (the limit for Lotus 1-2-3).
- Several Quattro macro commands have a more flexible syntax than Lotus 1-2-3.

To use macros created with Lotus 1-2-3 in Quattro, you must have a Lotus-compatible menu tree loaded (see page 26). If you don't normally use 123.RSC as the main menu tree, you can specify 123.ALT as the alternate menu tree and revert to it as necessary to execute Lotus macros.

You can use macros you record in Quattro with any Quattro menu tree, regardless of the menu tree in effect when you recorded the macros. You can also use them with Lotus 1-2-3, if you create them with the following restrictions:

- Be sure a Lotus-compatible menu tree is in effect when you create the macro, either as the main menu tree or as the alternate.
- Set the **M**acro Recording default to **K**eystroke. Don't use any of the "Quattro-only" commands on the 123.RSC or 123.ALT menu tree. (These are identified with boxes on the menus.)
- Don't use any of the Quattro @function commands that aren't available in Lotus 1-2-3:
  @CELLINDEX
  @CURVALUE
  @DEGREES
  @FILEEXISTS
  @HEXTONUM
  @NUMTOHEX
  @MEMAVAIL
  @MEMEMSAVAIL
  @RADIANS

- Don't use any of the Quattro key-equivalent or macro commands that aren't available in Lotus 1-2-3:
  {ADDIN}
  {CLEAR}
  {CR}
  {DATE}
  {FUNCTIONS}
  {MACROS}
  {STEPOFF}
  {STEPON}
  {;}
- Limit macro user menus to eight items (Lotus' limit).
- Where Quattro allows a more flexible command syntax (for example, referencing an address containing a value instead of giving a value or calling a subroutine by its coordinates), use the more restricted syntax required by Lotus.

C H A P T E R

5

A Tutorial

Welcome to the Quattro Tutorial. The six lessons in this chapter present the basic tools required to use Quattro:

- Lesson 1: Setting Up a Spreadsheet
  Loading Quattro
  Creating Headings
  Adjusting Headings
  Saving Your Work
- Lesson 2: Entering Information
  Entering and Copying Data
  Entering Formulas
  Making Changes to the Spreadsheet
- Lesson 3: Working with Your Database
  Searching
  Sorting
- Lesson 4: Building a Graph
  Creating a Graph
  Customizing Your Graph
  Naming Your Graph
- Lesson 5: Creating a Macro
  Recording a Macro
  Executing Your Macro
- Lesson 6: Printing
  Printing Your Spreadsheet
  Printing Your Graph

Who Should Use This Tutorial

Both new and experienced users of spreadsheet software can benefit from the information in this tutorial. The tutorial lessons cover Quattro's major features. In each lesson you'll learn basic spreadsheet functions and then use Quattro to practice them.

If you're a new user, complete each lesson in order to learn Quattro a step at a time.

If you're an experienced user of spreadsheet software, you can scan each lesson and review the parts of Quattro that may be new or unfamiliar to you. If you want to skip the first couple of lessons, you can retrieve a sample spreadsheet file from the Help Disk (called SAMPLE.WKQ) that includes the spreadsheet created in those lessons.

Another alternative is to complete just the steps in the practice sessions to get a quick, guided tour of Quattro. In the practice sessions you'll get to try out all Quattro's features as you create an expense report spreadsheet for a fictitious company called Allison Springs. The practice sessions should be completed in order, as some sessions use material you created in previous sessions.

Before you get started, you may want to review previous chapters:

- Chapter 2, "Before You Begin" tells you how to set up your computer system to use Quattro.
- Chapter 3, "Quattro for the Beginning Spreadsheet User" explains terms and techniques that all new Quattro users will need to know. Review this chapter to learn, for example, how to use Quattro's help facilities.
- Chapter 4, "Quattro for 1-2-3 Users" will help Lotus 1-2-3 users quickly make the transition to Quattro.

Note: This tutorial assumes that you're using the standard Quattro menu tree.

How to Use the Tutorial

Each lesson in the tutorial is divided into sections that explain a common task. The section starts with an overview of concepts related to the task. For example, the overview to the section "Entering and Copying Data" in Lesson 2 introduces the three data types Quattro uses and shows an example of each.

A practice session follows that shows you how to use Quattro to accomplish the task. Each practice session lists new terms and commands

for your reference and then gives you step-by-step instructions that tell you what to do and how to do it.

Instructions (which may be one or several keystrokes) are always indented and shown in bold type. Tips are sometimes included to give you additional information or to tell you another way to complete the task.

Now you're ready to get started with Lesson 1.

Lesson 1: Setting Up a Spreadsheet

In this lesson you'll set up the expense report spreadsheet for a company called Allison Springs. You will

- load Quattro
- create headings to label the rows and columns
- adjust the heading display so the spreadsheet is easy to read
- save your spreadsheet in a file

Loading Quattro

Before you can create a spreadsheet, you must first load Quattro into your computer's memory. The procedure for this differs, depending on whether you're using a hard disk system or one with only floppy drives.

To load Quattro with a hard disk system:

1. Go to the directory that contains your Quattro files. For example, in your Quattro files are in directory called QUATTRO off your root directory:

   Type: CD \QUATTRO
   Press: *Enter*

2. Now load Quattro:

   Type: Q
   Press: *Enter*

To load Quattro from a floppy-drive system:

1. Place the Quattro System Disk in Drive A and the Resource Disk in Drive B. Make sure you're logged onto Drive A:

   Type: A:
   Press: *Enter*

2. Now load Quattro:

   Type: QF
   Press: *Enter*

3. Remove the Quattro System Disk from Drive A and move the Resource Disk from Drive B to Drive A. Put the Help Disk in Drive B.

Checkpoint. Your screen should now look like the screen shown in Figure 5.1. The READY indicator in the bottom right corner means that Quattro is ready for you to do something.

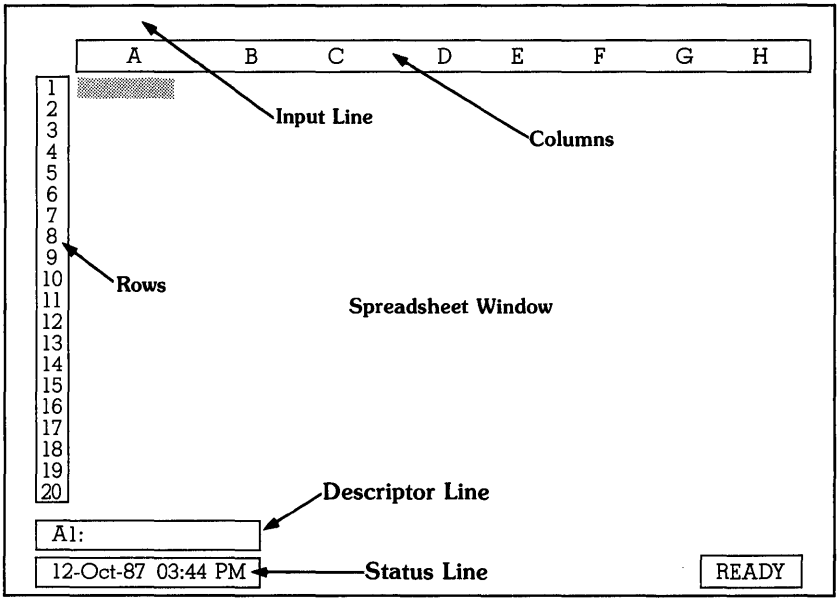


Figure 5.1: The Quattro Spreadsheet

The spreadsheet has four main areas:

- **The Input Line** is initially blank. You'll use it to enter or edit information in the spreadsheet. It's also used by Quattro to prompt you for information and display information about menu commands.
- **The Spreadsheet Window** is made up of *cells* where you enter, display, and organize information in the spreadsheet area.

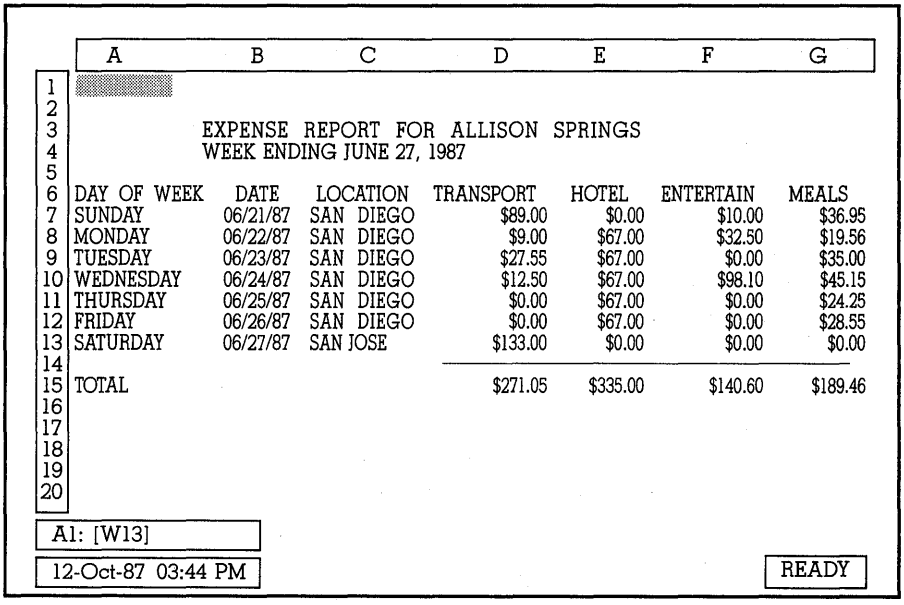
  Every cell has an *address*. The address of the cell highlighted in Figure 5.1 is A1. The address includes the cell's column and row coordinates, in this example Column A and Row 1.

  The screen shows columns A-H and rows 1-20. The entire spreadsheet, however, has 256 columns (lettered A-Z, then AA-AZ, BA-BZ and so on, up to IV) and 8192 rows. You'll find as you use Quattro that you typically use much more of the spreadsheet than fits on the screen at one time. You can *scroll* the spreadsheet to view different areas.

- **The Descriptor Line** displays information about the current cell and any error messages.
- **The Status Line** displays the date, time and the current spreadsheet mode or status condition, such as READY or CAPS.

Creating Headings

Usually, the first thing you do when creating a new spreadsheet is to figure out the structure for your spreadsheet. You do this by creating column and/or row *headings* to define your data. Figure 5.2 shows the column and row headings for the spreadsheet for Allison Springs.



	A	B	C	D	E	F	G
1							
2							
3		EXPENSE REPORT FOR ALLISON SPRINGS					
4		WEEK ENDING JUNE 27, 1987					
5							
6	DAY OF WEEK	DATE	LOCATION	TRANSPORT	HOTEL	ENTERTAIN	MEALS
7	SUNDAY	06/21/87	SAN DIEGO	$89.00	$0.00	$10.00	$36.95
8	MONDAY	06/22/87	SAN DIEGO	$9.00	$67.00	$32.50	$19.56
9	TUESDAY	06/23/87	SAN DIEGO	$27.55	$67.00	$0.00	$35.00
10	WEDNESDAY	06/24/87	SAN DIEGO	$12.50	$67.00	$98.10	$45.15
11	THURSDAY	06/25/87	SAN DIEGO	$0.00	$67.00	$0.00	$24.25
12	FRIDAY	06/26/87	SAN DIEGO	$0.00	$67.00	$0.00	$28.55
13	SATURDAY	06/27/87	SAN JOSE	$133.00	$0.00	$0.00	$0.00
14							
15	TOTAL			$271.05	$335.00	$140.60	$189.46
16							
17							
18							
19							
20							

Figure 5.2: The Allison Springs Expense Report Spreadsheet

As with any form you create, good planning pays off. The more care you put into structuring your Quattro spreadsheet, the happier you'll be with the results. Take time to think about what you want Quattro to accomplish, and organize your data accordingly. You may even want to make some pencil sketches of the spreadsheet before you start.

This practice session introduces the following terms and procedures:

❒ **Cell Selector.** The highlighted rectangle that indicates the current cell is called the *cell selector.*

- **Moving the Cell Selector.** To enter spreadsheet information you position the cell selector and start typing. In this lesson you'll use the arrow keys on your keyboard to move the cell selector. Arrow keys are shown as *Right arrow, Left arrow, Up arrow* and *Down arrow.*

- **Label.** A label is any text you enter into a cell. Labels can begin with any letter or punctuation mark other than . (period), / (slash), + (plus), – (minus), $ (dollar sign), ((left parenthesis), @ (at sign), or # (pound sign).

- **Entering Labels.** The label appears on the input line as you type it. If you mistype, press *Backspace* and retype. To write the label into the current cell, press *Enter.*

To enter labels for the expense report spreadsheet:

1. Move the cell selector to cell B3 and enter the label for the spreadsheet's main heading (refer to Figure 5.2 if necessary):

   Press: *Right arrow* then *Down arrow* twice to move to cell B3
   Type: EXPENSE REPORT FOR ALLISON SPRINGS
   Press: *Enter*

   Tips: Use your Caps Lock key to enter data in all capital letters. If numbers appear on the input line when you try to move the cell selector, you may have inadvertently pressed the Num Lock key. This causes the numeric keypad keys to be used as numbers rather than as direction keys. Press Num Lock to turn off the Num Lock function.

2. Move the cell selector to cell B4 and enter the subheading for the spreadsheet:

   Press: *Down arrow* to move to cell B4
   Type: WEEK ENDING JUNE 27, 1987
   Press: *Enter*

3. Move the cell selector to cell A6 and enter the first column heading:

   Press: *Down arrow* twice then *Left arrow* to move to cell A6
   Type: DAY OF WEEK
   Press: *Enter*

4. As you can see, entering labels is a rather straightforward process. So far you haven't encountered anything unusual. Watch what happens though when you enter the next label. Move to cell B6 and enter the next column heading:

   Press: *Right arrow* to move to cell B6
   Type: DATE
   Press: *Enter*

Checkpoint: Your spreadsheet should now look like the one shown in Figure 5.3.

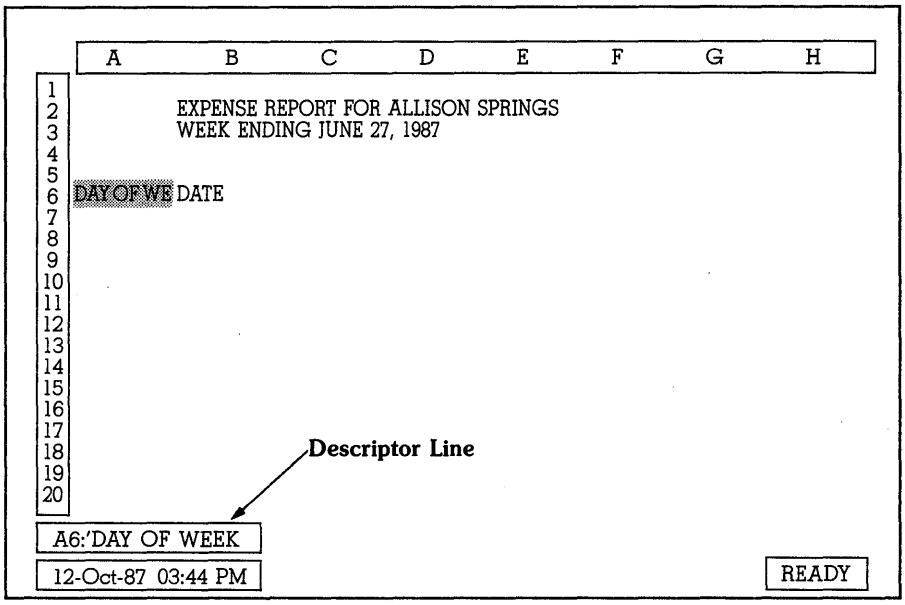


Figure 5.3: Creating Headings for the Allison Springs Spreadsheet

You added a main heading, subheading and two column headings to the spreadsheet. When you added the label to cell B6 it covered up part of the label in cell A6. This is because the label for A6 was too long to fit in column A.

You can see a cell's full contents by reading the descriptor line. Move the cell selector to cell A6 to display the descriptor line as shown in Figure 5.3.

You can leave the spreadsheet as is and refer to the cell description to read the entire label. Or, you can adjust the spreadsheet so the full label appears in the spreadsheet area. The next section shows you how to widen column A to display the full label.

Adjusting Headings

There are many ways to adjust the appearance of a spreadsheet so it's easier to read and use. In this section you'll see how to make two common adjustments: changing the width of a column and changing the alignment of the label in the cell.

You make all adjustments to the spreadsheet by selecting commands from Quattro's main menu (see Figure 5.4). Press the / (slash) key next to the right *Shift* key to display the main menu.

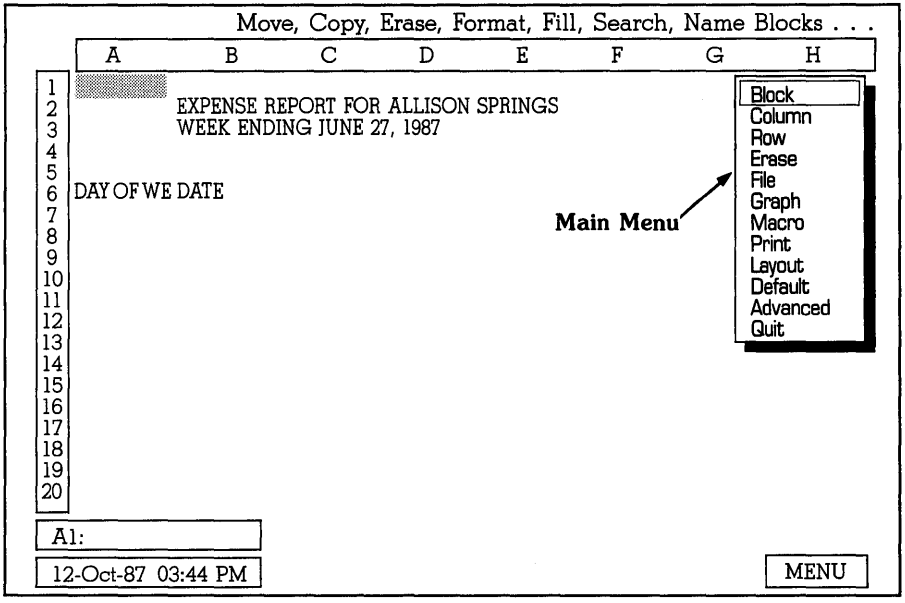


Figure 5.4: The Quattro Main Menu

The input line now displays a description of the highlighted command. In Figure 5.4 the **B**lock command is highlighted. The input line displays the commands you can access through the **B**lock command. As you move the highlight with the arrow keys, the description changes.

Changing Column Width

This practice session introduces the following terms and procedures:

❒ **Selecting Menu Commands.** To select a command you can:

Press the arrow keys to highlight a command and then press *Enter*.

Type the first letter of the command name.

Note: The spreadsheet must be in Ready mode (with the READY indicator in the bottom right corner) in order to use the menus. If a slash is shown on the top line when you press /, you've accidentally begun a cell entry. Press Esc *to erase the entry, then press / again.*

- **Function Keys.** The function keys on the left or top of your keyboard perform frequently used Quattro commands. In this practice session you'll use:

  F5 (GOTO) displays the prompt `Enter address to go to:` on the input line. You can use this key as a short cut (instead of the direction keys) to move the cell selector.

  F2 (EDIT) puts the spreadsheet in Edit mode so you can change the current cell's entry.

- **Default Commands:** Default is a command on the main menu. Select it to display a menu of commands that let you change settings that affect the entire Quattro program.

To adjust the width of column A and then add the rest of the column and row headings shown in Figure 5.2:

1. Increase the width of column A. If you're not already in column A, move to any cell in it, and then select the Column Width command:

   Press: *Left arrow* until the cell selector is in any row in column A
   Press: */ (the slash key)* to display the main menu
   Press: *C* to select the Column command
   Press: *W* to select the Width command

   Tip: Don't confuse the slash key (/) with the backslash key (\). Use the slash key to display the main menu.

2. Type the number of characters (1 to 240) to make column A after the prompt `Alter the width of the current column (1..240):`

   Type: *13*
   Press: *Enter*

   Tip: If you don't know how many characters wide to make a column, use Right arrow and Left arrow to actually "stretch" or contract the column on the screen. When it's the width you want, press Enter.

3. Now add the rest of the labels for this part of the spreadsheet. Move to column C6 and add the label LOCATION:

   Press: *F5*
   Type: *C6*
   Press: *Enter*
   Type: *LOCATION*
   Press: *Enter*
   Press: *Right arrow*

4. Complete the remaining column headings. Enter the label for cell D6 (the cell selector should be in cell D6):

   Type: *TRANSPORT*
   Press: *Enter*
   Press: *Right arrow*

   Repeat this procedure for the other labels:

In cell:	Type:
E6	HOTEL
F6	ENTERTAIN
G6	MEALS
H6	TOTAL

   Tip: Press Right arrow instead of Enter after typing the label name to move one cell to the right after entering the label. Then you can enter the label for that cell.

5. You can widen columns D through H so the labels aren't quite so close to each other. An easy way to do this is to change the default column width. This will change the width of every column on the spreadsheet, except those changed (previously or in the future) with the **Column Width** command. From the spreadsheet, select the **Default Formats Width of Col** command:

   Press: */DFW*

   Tip: If you select the wrong command, or if you change your mind after selecting a command, just press Esc to back up to the previous menu.

6. Replace the current default column width (9 characters) with a new default:

   Type: *10*
   Press: *Enter*

7. Now that the column width is 10 characters, fewer columns fit on the screen. To see the entire spreadsheet, use any of these keys to scroll what's displayed on the screen:

   - *Arrow keys* to move one cell in the direction of the arrow
   - *Ctrl Right arrow* and *Ctrl Left arrow* to move right or left one screen
   - *Pg Up* and *Pg Dn* to move one screenful (20 rows) up or down
   - *End <direction key>* to move to the border of the current block or, if the current cell is empty, the next filled-in cell in the direction of the arrow
   - *Home* to go to cell A1

8. Now complete the row headings. Move to cell A7 and enter the label:

   Press: *direction keys or F5* to move to cell A7
   Type: *SUNDAY*

Press: *Down arrow*

Repeat this procedure for the other labels:

In cell:	Type:
A8	MONDAY
A9	TUESDAY
A10	WEDNESDAY
A11	THURSDAY
A12	FRIDAY
A13	SATURDAY
A14	TOTAL

9. Check over your spreadsheet now.

   If you want to edit a label:

   Press: *direction keys* or *F5* to move to the cell you want to edit.

   Press: *F2* to put the spreadsheet in EDIT mode. Press *Left arrow* to position the cursor at the error. Type the new character(s) you want to insert or press *INS* (the Insert key) to use Overtype mode (OVR) to replace characters. (Insert mode is the default.) If you don't want to edit the label, press *Esc.*

   If you want to replace a label:

   Press: *Enter* to write the corrected label.

   If you want to erase a label:

   Press: *direction keys* or *F5* to move to the cell you want to erase.

   Press: *DEL* (the delete key) to erase the cell contents completely.

Checkpoint: Your spreadsheet should now look like the one shown in Figure 5.5.

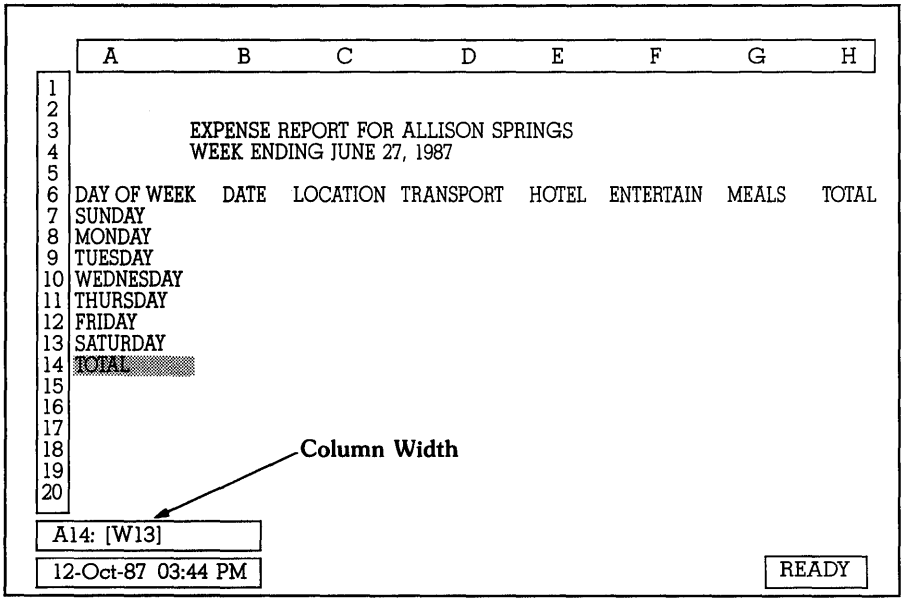


Figure 5.5: The Spreadsheet After Adjusting Column Widths and Adding Labels

You adjusted the column widths to make the spreadsheet more readable. You widened column A to 13 characters to accommodate the label in cell A6. (If the selector's in column A, the descriptor line shows the column width after the cell address.) And you widened all other columns to 10 characters by changing the default. These changes will remain in effect until you change them again.

Aligning Headings

Another adjustment you can make is to change the label position (alignment) within a cell. A label is aligned in a cell according to the spreadsheet's label alignment default. This default is initially left, but can be changed to right or centered.

This practice session introduces the following terms and commands:

- **Label-Prefix Character.** Every cell label is preceded by a label-prefix character to show its alignment in the cell. If you don't enter one, the default label prefix (initially an apostrophe for left-aligned) is automatically inserted. You can align a label differently by preceding it with a different label prefix—a quotation mark (") to align it right or a caret (^) to center it. Label-prefix characters aren't displayed in the

spreadsheet. You can see them, however, on the descriptor line when a label is selected.

- **Block of Cells.** A cell block is defined by *block coordinates*. Block coordinates indicate the top left and bottom right cell in the block. The block coordinates A1..B3 include the cells A1, A2, A3, B1, B2, and B3. A block can also be a single cell. The block coordinates A7..A7 include only the cell A7.
- **Block Commands.** Block commands perform a single action, such as changing label alignment, on a block of cells. You'll use the Label Align command on the Block menu (the **B**lock **L**abel Align command) to change the label alignment for several cells.

To center the labels for cells B6 through H6 on the Allison Springs spreadsheet:

1. From the spreadsheet, select the **B**lock **L**abel Align command:
   Press: */BL*
2. From the Label Align menu select the **C**enter command:
   Press: *C*
3. Type the block coordinates to be affected by this alignment:
   Type: *B6..H6*
   Press: *Enter*

Checkpoint: Your spreadsheet should now look like the one shown in Figure 5.6. Be sure the cell selector is on DATE in cell B6.

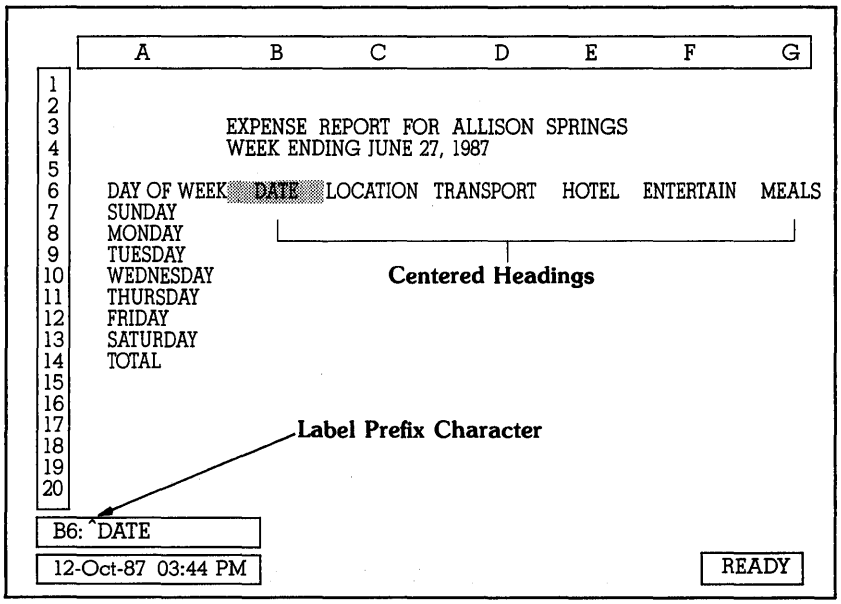


Figure 5.6: The Spreadsheet After Changing Label Alignment

Changing label alignment is another way to adjust the way a spreadsheet looks. In this spreadsheet you centered the labels for the block of cells B6..H6. The other labels remain left-aligned, the current default. If the current cell contains a label, the descriptor line shows the label-prefix character.

Saving Your Work and Returning to DOS

Each time you fill in a cell, the information is stored temporarily in computer memory. If for any reason the power to your computer is interrupted, the information currently stored in memory is permanently lost. Therefore, store your work frequently, or as soon as you've created something you don't want to have to re-create!

This practice session introduces the following terms and commands:

- **File Name.** Each spreadsheet in Quattro is stored in a separate file that has a name. File names can have as many as eight characters, including letters, numbers and punctuation marks. If you don't include a file-name extension, Quattro adds the default extension automatically (the initial default is .WKQ).

❒ **File Commands.** File commands let you work with spreadsheet files. You'll use two commands on the File menu: Save and Retrieve.

To save the spreadsheet for Allison Springs, return to DOS, and then retrieve the spreadsheet:

1. From the spreadsheet, select the File Save command to save the current spreadsheet:

   Press: */FS*

2. The input line displays the prompt `Enter file name:` followed by the path of your current directory, for example C:\QUATTRO. Enter a file name for this spreadsheet:

   Type: *expenses*
   Press: *Enter*

3. The file is saved. Quattro automatically adds the default file-name extension. You can erase the screen without worry:

   Press: */E*

   Note: If you select the Erase command without first saving the spreadsheet, Quattro will display a warning menu: "Lose Your Changes?" You can respond No (so you can first save the spreadsheet) or Yes (and lose the work you've done).

4. Now retrieve the file:

   Press: */FR*
   Move: Highlight bar to EXPENSES.WKQ (if necessary)
   Press: *Enter*

5. Now exit Quattro and return to DOS; select the Quit command from the main menu:

   Press: */Q*

Checkpoint: You've saved the spreadsheet. Your current hard disk directory (or floppy disk) now contains the file EXPENSES.WKQ. You erased the screen and retrieved your file from disk. At this point, you can continue with the tutorial or take a break.

When you're ready to continue the tutorial, load Quattro again and use the File Retrieve command to display the spreadsheet.

You can take a break at any point in the tutorial. Be sure to save your work first (press */FS* and press *Enter*, then press *R* to replace the existing file). Then press */Q* to exit.

Summary

In Lesson 1 you set up headings for an expense report spreadsheet. You adjusted headings so the spreadsheet is easy to read, and you saved the spreadsheet in a file.

The following table summarizes the tasks presented in Lesson 1:

Table 5.1: Tasks in Lesson 1

Task	Action
Start Quattro	At the DOS prompt type *Q* (*QF* if you have a floppy-drive system) and press *Enter*.
Display main menu	Press the slash (/) key.
Select a command	Use the arrow keys to highlight the command and press *Enter*. Type the first letter of the command name.
Move to a cell	Press the *arrow keys* to move the cell selector in the direction of the arrow. Press the *F5 GOTO* key to select a specific cell address to go to. Press *Pg Dn, Pg Up, Ctrl-Right arrow* or *Ctrl-Left arrow* to scroll the spreadsheet one screenful at a time. Press *Home* to go to cell A1.
Enter a label	Move the cell selector to a cell, type the label and press *Enter* or an arrow key.
Edit a label	Move the cell selector to the cell you want to edit and press the *F2 EDIT* key. Correct the entry and press *Enter*. Move the cell selector to the cell you want to edit and retype the label. Then press *Enter* or an arrow key. Move the cell selector to the cell you want to erase and press *DEL*.
Change column width	To change the default column width for the spreadsheet, display the Default Formats menu (/DF). Select the Width of Col command and

	type the number of characters you want to use as the default. To change a single column, move the cell selector to any row in the column whose width you want to change. Display the Column menu (/C). Select the **W**idth command and type the number of characters you want the column to be, or use the arrow keys to adjust it.
Change label alignment	Display the Block (/B) menu. Use the **L**abel Align command to select the type of alignment (left, center, or right). After the prompt, enter the block coordinates of the cells whose labels you want to align. The descriptor line shows the label-prefix character of the current label.
Save the spreadsheet	Display the File menu (/F). Select the **S**ave command and enter a name for the spreadsheet file. Or, press *Enter* to use the file name shown on the input line. If displayed, select Cancel, Replace, or Backup from the Overwrite Confirmation menu.
Erase the spreadsheet	Select the **E**rase command from the main menu (/E).
Retrieve a spreadsheet	Select the File **R**etrieve command from the main menu (/FR). Press *direction keys* to highlight the spreadsheet you want to work with and press *Enter.*
Quit Quattro	Select the **Q**uit command from the main menu (/Q). If displayed, select No or Yes from the Exit Confirmation menu: "Lose Your Changes?"

If You're Ready for More ...

As you become more experienced with Quattro, you will discover other ways to accomplish the tasks presented in this lesson. And you will discover many more things you can do with the program.

Your *Quattro User's Guide* provides detailed information about all areas of Quattro and is written in a straightforward, easy-to-understand manner.

Chapters in the *Quattro User's Guide* that contain information related to this lesson include:

- Chapter 1, "Quattro Basics"
  - Other ways to move the cell selector
  - How to use the Quattro help system
  - How to back out of or cancel an action
- Chapter 3, "Entering and Editing Data"
  - More about labels that are wider than one cell
  - How to set the label alignment when you enter the label
  - Keys to use in Edit mode
- Chapter 6, "Saving and Retrieving Files"
  - How to load a file from the DOS command line
  - How to delete a file

This is the end of Lesson 1. In Lesson 2 you will learn how to enter information into the spreadsheet.

Lesson 2: Entering Information

In this lesson you'll enter information into the Allison Springs expense spreadsheet you set up in Lesson 1. You will

- enter data, such as dates and dollar amounts for the expense categories
- copy information from one part of the spreadsheet to another
- enter formulas to calculate data in the spreadsheet
- change the spreadsheet display

Entering and Copying Data

All data entered in a Quattro spreadsheet can be classified as either labels (like the headings you entered in Lesson 1) or values. Figure 5.7 points out labels and three kinds of value entries: dates, numbers, and formulas.

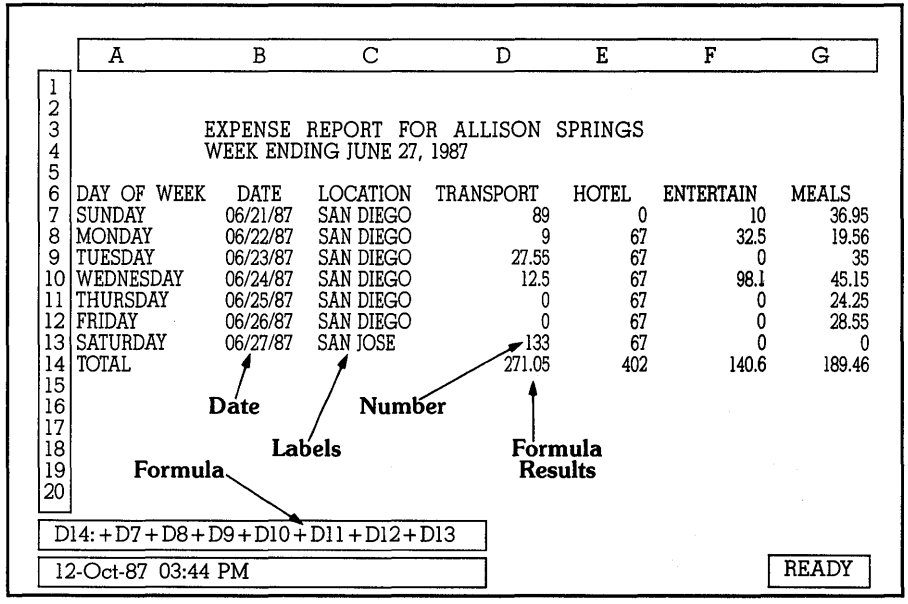


Figure 5.7: Labels and Values in a Spreadsheet

- **Dates.** Cells B7..B13 contain dates. Quattro uses a special date prefix to distinguish dates from other numbers, making it very easy for you to enter dates.

- **Numbers.** Cells D7..G13 contain numbers. Numbers are initially displayed as you entered them, but you can change the format to show currency, percentage, scientific notation and other number display formats.
- **Formula.** Cells D14..H14 and H7..H14 contain formulas. Formulas combine *values* (such as a number or a cell address) and *operators* (such as + or *).
- **Labels.** Cells C7..C13 contain labels. A label is any text entry in a spreadsheet, not just a heading.

Entering Dates and Locations

This practice session introduces the following procedures:

- ❒ **Entering Dates.** Quattro uses a date prefix to distinguish dates from numbers. You enter the date prefix by holding down *Ctrl* and pressing *D* before you type the date.
- ❒ **Block Copy.** The **B**lock **C**opy command lets you copy the contents of one block of cells to another. You specify the block to copy (the source) and the block to copy data into (the destination).
- ❒ **Pointing out cells.** Instead of typing block coordinates, you can use the cell selector to point to them on the spreadsheet. Move to one corner of the block, press the period key, move to the other corner, and press *Enter*.

To enter dates and locations for the spreadsheet shown in Figure 5.7:

1. Move to cell B7 and enter Sunday's date:

   Move: to cell B7
   Press: *Ctrl-D*
   Type: *6/21* (Quattro assumes the current year)
   Press: *Down arrow*

   Note: If the date doesn't appear as expected, try again. If the number 0.285714 appeared (the result of dividing 6 by 21), you probably didn't press Ctrl-D. If ERR appeared, you probably didn't enter the full date, for example you forgot to press / between the month and year.
2. The cell selector should now be in cell B8. (If you pressed *Enter* after entering the date in cell B7, press *Down arrow* now to move to cell B8.) Enter Monday's date:

Press: *Ctrl-D*
Type: *6/22*
Press: *Down arrow*

Now the cell selector is in cell B9. Repeat this procedure for the dates for cells B9 through B13:

In cell:	Type:
B9	*Ctrl-D* 6/23
B10	*Ctrl-D* 6/24
B11	*Ctrl-D* 6/25
B12	*Ctrl-D* 6/26
B13	*Ctrl-D* 6/27

3. Now enter the labels shown in the Location column in Figure 5.7. The **B**lock **C**opy command makes this easy. First, move to cell C7 and enter the label:

   Move: to cell C7
   Type: *SAN DIEGO*
   Press: *Enter*

4. Copy the label in cell C7 to cells C8 through C12 with the **B**lock **C**opy command:

   Press: */BC*

5. Use the source block coordinates displayed after the prompt `Source block of cells: C7..C7:`

   Press: *Enter*

   *Note: If the coordinates C7..C7 are not displayed, it's because you were in a different cell when you selected the **B**lock **C**opy command. To select the correct source block, just type C7 and press Enter.*

6. After the prompt `Destination for cells: C7`, type the block of cells to copy cell C7 to (the destination cells)

   Type: *C8..C12*
   Press: *Enter*

   Tip: Instead of typing the cell coordinates, you can point them out. To do this, move the cell selector to cell C8 and press the period key (.) to anchor this cell as the first cell coordinate. Press Down arrow until you're in cell C12, then press Enter.

7. Enter the label in cell C13 to complete the entries for the Location column:

   Press: *Down arrow* six times
   Type: *San Jose*
   Press: *Enter*

8. Save your work:

Press: */FS*
Press: *Enter*

9. Select Replace from the Overwrite Confirmation menu:

   Press: *R*

   Note: If you don't want to save your changes, select Cancel and then Quit Quattro. Select Backup to create a second copy of the EXPENSES file.

Checkpoint: Your spreadsheet should now look like the one shown in Figure 5.8. The cell selector is in cell B13.

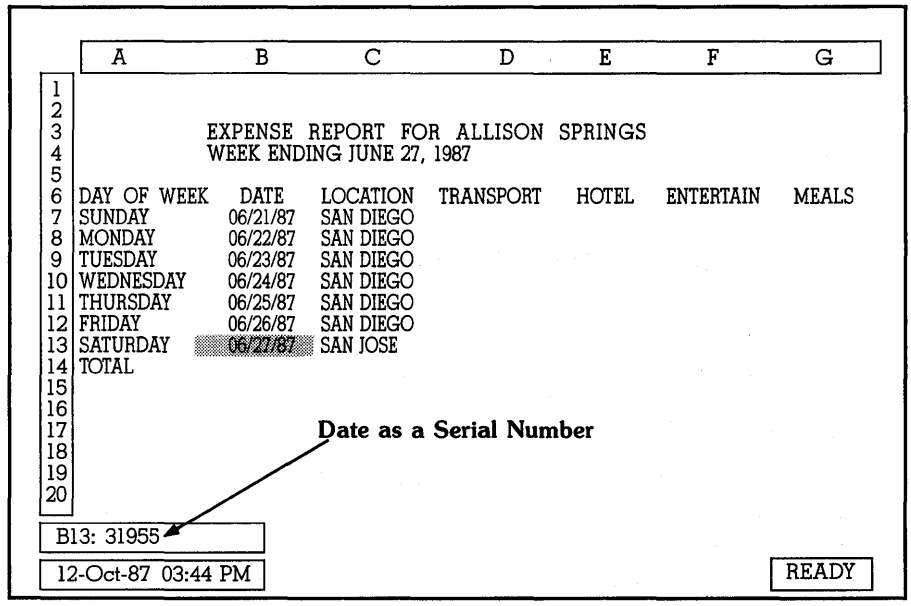


Figure 5.8: The Spreadsheet After Entering Dates and Locations

You entered dates for this expense report in cells B7 through B13. The dates are displayed on the spreadsheet in the standard (default) format. On the descriptor line, however, a date is displayed as a serial number: January 1, 1900 is 0; January 2, 1900 is 1 and June 27, 1987 is 31955.

You also used the **Block Copy** command to enter the labels for cells in the Location column.

Entering Numbers

If the first character you type is a number, Quattro assumes you're typing a number value (as opposed to a date or label). When you enter numbers in a

spreadsheet, never include dollar signs ($) or commas. You can also leave off zeroes after decimal points. (For example, to enter $65.10, just type 65.1 *Enter.*)

You can set the display format in Quattro to automatically add dollar signs, commas, and additional zeroes after the decimal point.

To enter the numbers for the spreadsheet shown in Figure 5.7:

1. Move to cell D7 and enter the transportation costs for Sunday:

   Move: to cell D7
   Type: *89*
   Press: *Down arrow*

   Repeat this procedure for the other entries:

Monday (D8)	9
Tuesday (D9)	27.55
Wednesday (D10)	12.5
Thursday (D11)	0
Friday (D12)	0
Saturday (D13)	133

   Tip: If you make an error, press Backspace to erase the mistake. To start over, press Esc before you press Enter or, if you've already pressed Enter, press DEL to erase the contents of the current cell.

2. Move to cell E7 and enter the hotel costs for Sunday and Monday:

   Move: to cell E7
   Type: *0*
   Press: *Down arrow*
   Type: *67*
   Press: *Enter*

3. Complete the other entries for the Hotel column. Since the values are identical, you can copy the values. From the spreadsheet, select the **B**lock **C**opy command:

   Press: */BC*

4. Use the cell coordinates displayed after the prompt `Source block of cells: E8..E8:`

   Press: *Enter*

   Note: If E8..E8 is not displayed after the prompt, type E8 before you press Enter.

5. Point out the block of cells to copy cell E8 to (the destination cells):

   Press: *Down arrow*
   Type: . (period)
   Press: *Down arrow* until you reach cell E13.

Press: *Enter*

Tip: You can type the Block coordinates E9..E13 instead of pointing out the cells.

6. Complete the entries for the Entertainment column:

   Move: to cell F7
   Type: *0*
   Press: *Down*
   Type: *32.5*
   Press: *Down*

   Use this procedure for the other entries:

In cell:	Type:
F9 (Tuesday)	0
F10 (Wednesday)	98.1
F11 (Thursday)	0
F12 (Friday)	0
F13 (Saturday)	0

7. Complete the entries for the Meals column:

In cell:	Type:
G7 (Sunday)	36.95
G8 (Monday)	19.56
G9 (Tuesday)	35
G10 (Wednesday)	45.15
G11 (Thursday)	24.25
G12 (Friday)	28.55
G13 (Saturday)	0

8. This is the end of this practice session. Save your work:

   Press: */FS*
   Press: *Enter*
   Press: *R*

Checkpoint: Your spreadsheet should now look like the one shown in Figure 5.9.

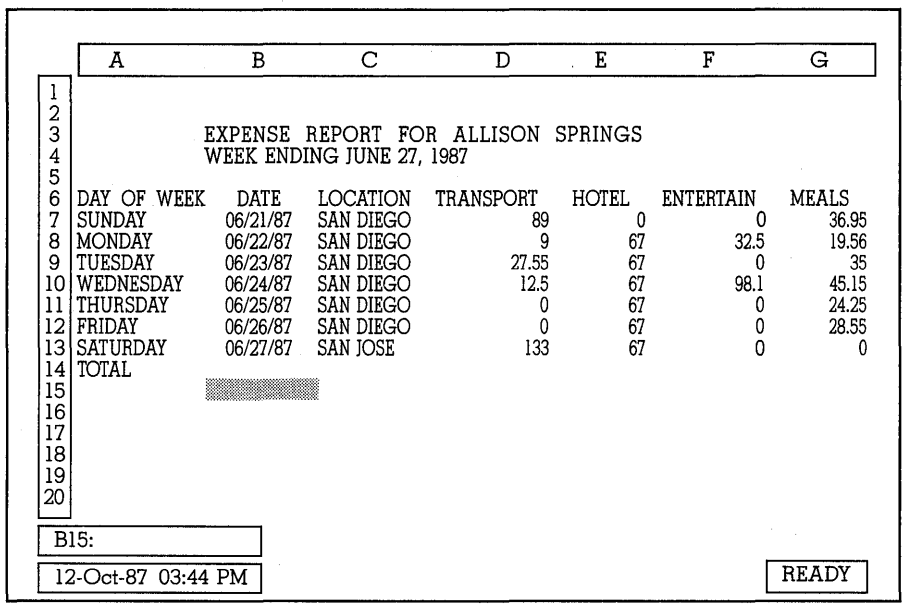


Figure 5.9: The Spreadsheet After Entering Numbers

You entered dollar amounts for this expense report in the Transportation, Hotel, Entertainment and Meals columns. The numbers are displayed as you entered them. (You will change the format to include the dollar sign and decimal places later.)

You also used the **Block Copy** command to copy numbers in the Hotel column.

Entering Formulas

A formula is an equation that Quattro solves. A formula can be as simple as adding a column of figures, or as complicated as calculating gross profit margins.

A formula includes *values* (such as the cell C12) and *operators* (such as +). For example, the formula +G12+8 adds the value 8 to the contents of cell G12. (The plus sign preceding G12 tells Quattro to view this as a value, not a label.)

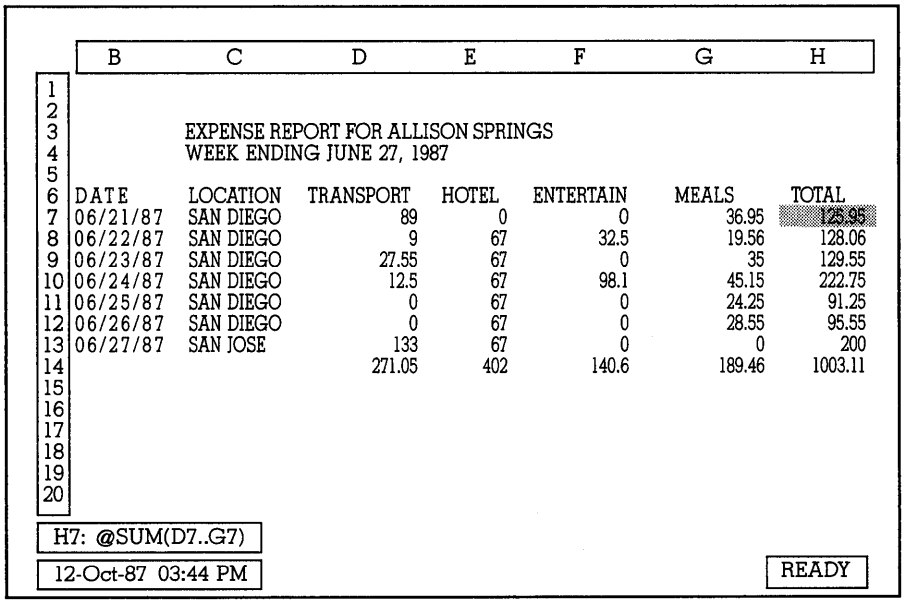


Figure 5.10: A Formula in a Spreadsheet

The cell displays the results of the formula. In Figure 5.10, cell H7 contains a formula to add the values of all the expenses for Monday. You can see the formula on the descriptor line and the results in cell H7.

Before you start this practice session, make sure your spreadsheet contains values for the expense categories, as shown in Figure 5.9. This practice session introduces the following terms and procedure:

- **Entering Formulas.** To enter a formula, move to the cell where you want the results of the calculations displayed, type the formula, and press *Enter*. Formulas begin with one of these characters:

  0 1 2 3 4 5 6 7 8 9 . + – (@ # $ or *

- **@ Functions.** Quattro @ functions are a set of standard formula commands. The standard format for @ functions is:

  @function(argument)

  The function tells Quattro what to do; the argument tells Quattro how to do it. In the formula @SUM(G12+8), the function @SUM tells Quattro to add; the argument (G12+8) tells Quattro to add a value of 8 to the value of cell G12.

To enter formulas for cells D14-G14 and H7-H14:

1. In cell D14 enter a formula that adds the values of entries in the Transportation column:

   Move: to cell D14
   Type: *+D7+D8+D9+D10+D11+D12+D13*
   Press: *Enter*

2. The same formula, with different cell references, is used for the other expense columns: Hotel, Entertainment, and Meals. You can use the **B**lock **C**opy command to copy the formula because Quattro automatically adjusts formulas to include the correct cells. From the spreadsheet, select the **B**lock **C**opy command:

   Press: */BC*

3. Use the cell coordinates displayed after the prompt `Source block of cells: D14..D14:`

   Press: *Enter*

   Note: If D14..D14 is not displayed after the prompt, type D14 before you press Enter.

4. After the prompt `Destination for cells: D14`, specify the block of cells to copy the formula in cell D14 to (the destination cells):

   Type: *E14..G14*
   Press: *Enter*

   *Tip: Any time you use the **B**lock **C**opy command you can point out the source and destination cells. See the summary (page 67) to review the procedure.*

5. Quattro has successfully copied and adjusted the formula so the totals are accurate for each column. Move the cell selector to cell E14:

   Press: *Right arrow*

6. When Quattro copied the cell, it adjusted the formula for this column. (You can see the formula on the descriptor line.) Move the cell selector to cells F14 and G14 and note how the formula is adjusted.

7. In cell H7 use an @function to total the expenses for Sunday:

   Move: to cell H7
   Type: *@SUM*
   Type: *(D7..G7)*
   Press: *Enter*

   Note: If you mistype, for example if you insert a space or forget to type a parenthesis, Quattro will display an error message and attempt to position the cursor at the place of the error. Correct the error and then press Enter, or press Esc to cancel the formula and start over.

8. You can use the **B**lock **C**opy command to copy the formula in cell H7 to cells H8..H14:

   Press: */BC*
   Type: *H7*
   Press: *Enter*
   Type: *H8..H14*
   Press: *Enter*

9. Now put Quattro to work. Enter a $10.00 entertainment expense in cell F7. As soon as you make the change, the total expenses in columns H7, F14 and H14 increase by $10.00.

   Move: to cell F7
   Type: *10*

   The totals in cells F14 and H14 should automatically increase by $10.00 (If not, you may have entered a formula incorrectly. Check the formulas in those cells and, if necessary, reenter them and try again.)

10. This is the end of this practice session. Save your work:

    Press: */FS*
    Press: *Enter*
    Press: *R*

Checkpoint: Your spreadsheet should now look like the one shown in Figure 5.11.

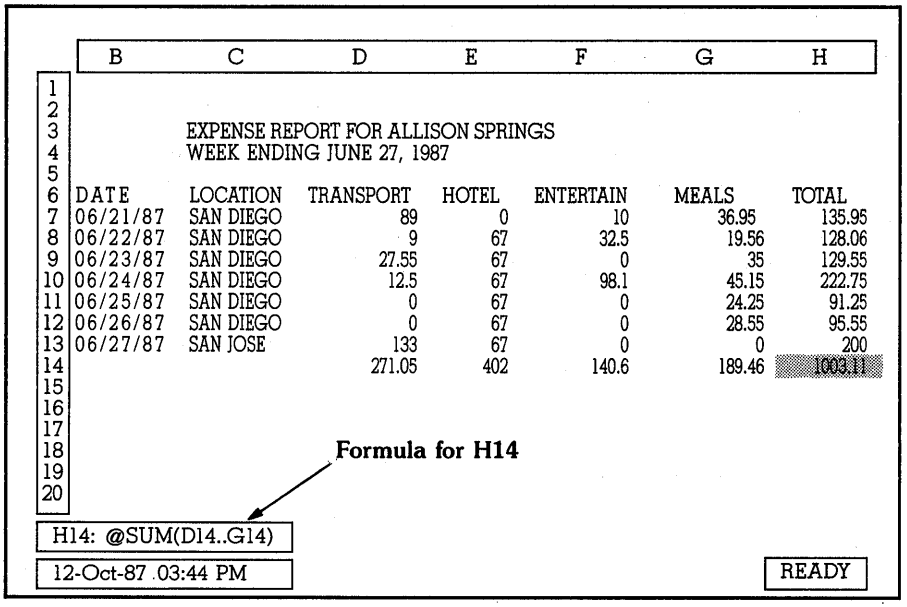


Figure 5.11: The Spreadsheet After Entering Formulas

To complete the spreadsheet, you entered formulas for the cells showing row and column totals. Because the formulas for these cells were identical (except for the cells used in the argument), you could use the **Block Copy** command.

While the cell shows the result of the calculation, the formula itself is displayed on the descriptor line when the cell is highlighted.

Though fairly simple, the spreadsheet for Allison Springs is now functionally complete. The next section gives you just a taste of ways you can use Quattro to adjust your spreadsheet.

Making Changes

After you enter a spreadsheet's essential information you'll often want to change how the information is displayed. With Quattro you can make just about any change you'd want.

To make this spreadsheet easier to read, you'll now make the following changes:

- **Change the display format** to display the numbers you entered as currency.

- **Insert a dotted line** between the daily values and totals.
- **Freeze headings** on the screen as titles.

This practice session introduces the following terms and concepts:

- **Backslash Command.** To repeat a character across an entire cell, precede it with a backslash. For example, \- enters a row of dashes across a cell.
- **Display Format.** You can change the way numbers are displayed in the spreadsheet by changing the display format. You can change display format for a block of cells or for the entire spreadsheet.
- **Titles.** Titles are specific rows and columns that remain fixed on the screen when you scroll other parts of the spreadsheet.

Displaying Numbers as Currency

Because all of the numbers in the spreadsheet represent dollars, the quickest way to display the numbers as currency is by changing the default display format.

To display the numbers in your spreadsheet as dollars:

1. Select the Default Formats **D**isplay command:

   Press: */DFD*
2. Choose Currency as the display format.

   Press: *C*
3. Quattro prompts you for the number of decimal places to show. Use the default number (2) displayed with the prompt:

   Press: *Enter*
4. Select Quit to exit the Default menu and return to the spreadsheet.

   *Tip: You can also use the **B**lock **D**isplay Format command /BDF to change the display format for specified blocks of the spreadsheet.*

Insert a Dashed Line

Dashed lines between columns of values and totals can make the spreadsheet more readable.

To insert a dashed line between the totals on row 14 and the values in columns D through H:

1. Insert a blank row above row 14:

   Move: to cell D14
   Press: */RI* to select **R**ow **I**nsert
   Press: *Enter*

   The totals for columns D through H are now in row 15 and row 14 is blank. The cell selector should be in cell D14.

2. Use a shortcut to draw a dashed line in cell D14:

   Type: \- (backslash minus sign)
   Press: *Enter*

   Tip: The backslash (\) repeats the character following it across the width of the cell.

3. Copy this line to the cells E14..H14 with the **B**lock **C**opy command:

   Press: */BC*
   Press: *Enter* after the first prompt
   Type: *E14..H14*
   Press: *Enter*

Freezing Titles on the Screen

You probably noticed that when you entered totals in column H, the row headings disappeared from the left of the screen. You can use the **T**itles command to specify headings as titles. Titles stay on the screen at all times, no matter where you scroll.

To freeze headings as titles:

1. Move the cell selector to the top left corner of the part of the spreadsheet you want to be able to see titles:

   Move: to cell B7

   Note: All cells above and to the left of the selector will become titles.

2. Specify both the column and row headings as titles with the **L**ayout **T**itles command:

   Press: */LT*
   Press: *B* to select Both from the Titles menu

   If you have a color monitor, the titles appear in a different color.

   Tip: You can also freeze just rows (Horizontal) or just columns (Vertical). To clear titles, select Clear from the Layout Titles menu (/LTC).

Now watch what happens when you scroll the spreadsheet:

Press: *End-Right*
Press: *Home.*

The titles stay on your screen, even when you scroll.

3. This is the end of this practice session. Save your work:

Press: */FS*
Press: *Enter*
Press: *R*

Checkpoint: Your spreadsheet should now look like the one shown in Figure 5.12.

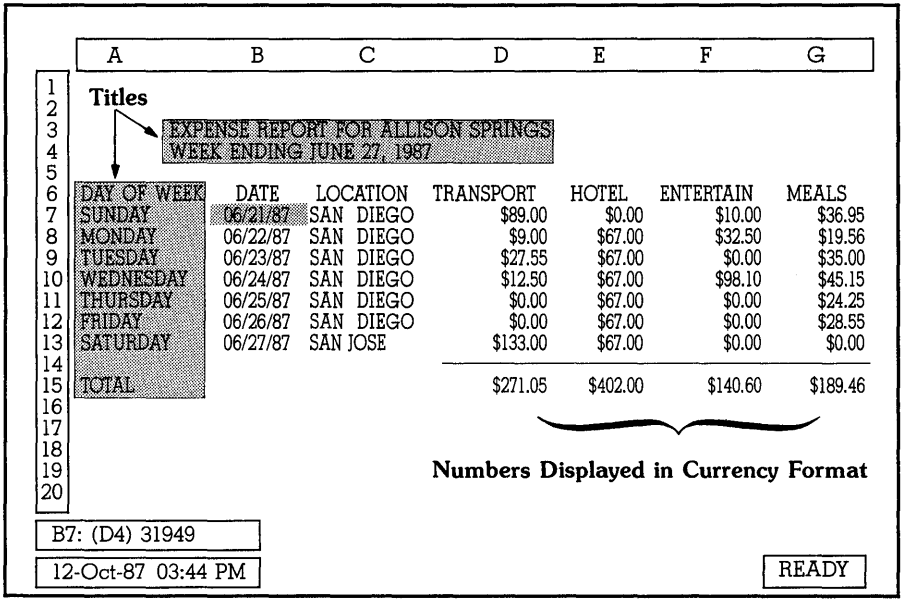


Figure 5.12: The Spreadsheet After Making Changes

You made changes to the screen to make it easier to read and to use. You changed the expense entries to display the currency format, inserted a row and added a dotted line before the total figures, and froze titles on the screen so you can see the headings when you scroll the spreadsheet.

Lesson 2 Summary

In Lesson 2 you entered dates, numbers and formulas in the spreadsheet for Allison Springs. You also practiced some common techniques for changing the way information is displayed on the screen.

The following table summarizes the tasks presented in Lesson 2:

Table 5.2: Tasks in Lesson 2

Task	Action
Enter a date	Position the cell selector. Press *Ctrl-D*, type the date and press *Enter*.
Enter a number	Position the cell selector. Type the number and press *Enter*. You don't need to enter zeroes after decimal points, and you shouldn't enter the $ symbol for dollar amounts.
Enter a formula	Position the cell selector. Type the formula and press *Enter*. Formulas contain values and operators and begin with any of these characters: 0 1 2 3 4 5 6 7 8 9 . + – (@ # $ or * The standard format for @ functions is: @function(argument).
Insert a row	Move to the row below where you want the new row inserted. Display the Row menu (/R). Select the Insert command and press *Enter* or enter new coordinates after the prompt.
Display numbers as currency	To change the default display format to currency, display the Default Formats Display menu (*/DFD*). Select the Currency option, enter the number of decimal digits you want display, and press *Enter*. To change the display format of a block to currency, display the Block Display Format menu (*/BD*). Select the Currency command and specify the number of decimal digits and the block to be affected by the format. Unlike label alignment, you can set the number display format before you've entered numbers in the cell.

Set titles	Move the cell selector below the row or to the right of the column you want to freeze as a spreadsheet title. Display the Layout menu (/L). Select the Titles command and pick Both, Horizontal, or Vertical from the menu.
Copy cell contents	Display the Block menu (/B). Select the Copy command. Indicate block coordinates after the prompts `Source Block of Cells:` and `Destination for Cells:`. Source and destination blocks can be single cells or multiple-cell blocks. To indicate coordinates you can: 1. Press *Enter* to use the coordinates shown; 2. Type new coordinates; 3. Use the *direction keys* to point them out.
Pointing	Position the selector in one corner of the block and press the period key (.) to anchor cell. Move to the opposite corner and press *Enter*. Some prompts assume the current cell is an anchor. To unanchor the cell, press *Esc*. You can then move to a new cell and anchor it with the period key.

If You're Ready for More ...

For more information on any of the material covered here, see the *Quattro User's Guide*. In addition, the following sections of the *User's Guide* contain information related to this lesson:

- Chapter 3 "Entering and Editing Data"
  - How to enter numbers as a label (such as a phone number)
  - What to do when a value appears as a string of asterisks
- Chapter 4 "Making Changes"
  - How to move data from one block to another
  - How to use two windows to view a spreadsheet
  - How to transpose rows and columns
  - How to change numerous cell entries instantaneously with the Search/Replace command
- Chapter 5 "Changing the System Defaults"
  - How to change the default currency format

- How to change the default display format

This is the end of Lesson 2. In Lesson 3 you'll search through your spreadsheet for specified data and sort the rows of your data.

Lesson 3: Working With Your Database

A database is any collection of information that's organized so you can find individual entries quickly. A calendar is a database organized by dates. An address book is a database organized alphabetically.

A spreadsheet database requires a specific format: columns contain categories of information called *fields;* rows contain groups of related information about a single entry called *records*. Most of your spreadsheet (A6..H13) is set up like a database (see Figure 5.13).

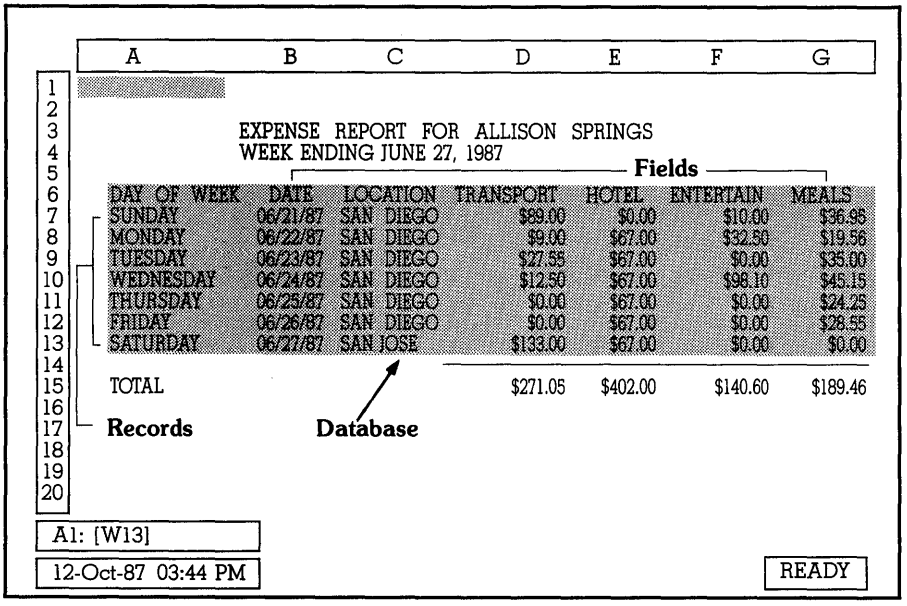


Figure 5.13: The Spreadsheet as a Database

In this lesson you'll use some of Quattro's database capabilities with your spreadsheet. You will

- search through your database for specified information.
- sort entries in your database.

Searching the Database

This practice session introduces the following terms and commands:

- **Fields.** A database typically has several fields that organize the entries into categories of information, such as meal expenses.
- **Field Names.** The labels, or column headings, defining a database's fields are called field names.
- **Records.** A record contains all given information about a single entry, for example, the expenses incurred in a single day.
- **Search Criteria.** Search criteria tell Quattro what field(s) to search and what data to search for. Quattro looks for all records that match the search criteria.
- **Block to Search.** You can define all or part of your spreadsheet as the block in which Quattro searches for records that match the search criteria.
- **Output Block.** An output block is a separate area of the spreadsheet where you can copy the records that match the search criteria—for example, to create a list of all customers in Tallahassee. The output block includes the names of the fields you want copied for those records.
- **Formula Criterion.** The formula criterion is a type of search criteria that includes a cell reference, an operator and a value, for example F9>50. The cell reference tells Quattro the field to search (column F) and the row to begin the search (row 9). The operator and value tell Quattro what to look for (entries that are greater than 50).
- **Query Command.** Searching is done with the Query command on the Advanced Database menu.

To search through your spreadsheet (database) for all records that show more than $30.00 in the Meals column, then copy parts of those records to a different area:

1. First, set up the *output block* that tells Quattro which fields of the matching records to copy. Copy the DAY OF WEEK and DATE field names to an area to the right of the database:

   Move: to cell A6
   Press: */BC*
   Press: . *(period)* to anchor the cell
   Press: *Right arrow*
   Press: *Enter*
   Type: *J6* as the destination block
   Press: *Enter*

Tip: You can put the output block anywhere. A good area to pick is to the right of the spreadsheet.
Notice: When you moved the selector to cell A6, column A was duplicated on the screen. This gives you access to the frozen titles.

2. Copy the field name MEALS to the output block:

   Press: */BC*
   Type: *G6*
   Press: *Enter*
   Type: *L6*
   Press: *Enter*

   Tip: You can type the field names in the output block instead of using the **B**lock **C**opy *command. However, if the field names in the output block don't match exactly the field names in the database, Quattro will not be able to successfully copy the matching records.*

3. Move to Column J and use the **C**olumn **W**idth command to increase the column's width to 13 so the full field name is displayed:

   Press: *Ctrl-Right arrow* to scroll right
   Move: to any cell in column J
   Press: */CW*
   Type: *13*
   Press: *Enter*

4. Now you are ready to set up the database search with the **A**dvanced **D**atabase **Q**uery command:

   Press: */ADQ*

5. Use the **F**ormula Criterion command to specify a search condition that looks for records with an amount greater than $30.00 in the Meals field.

   Press: *F*
   Type: *G7>30*
   Press: *Enter*

   Note: G7 is the address of the first entry in the field you want to search (not *the field name); >30 tells Quattro to match records whose value is greater than 30.*

6. Quattro displays the database search information on the menu as you define it to help you keep track of what you've done. Now define the output block you set up in steps 1 and 2 (J6..L6):

   Press: *O*
   Move: to cell J6 (if you're not already there)
   Press: *. (period)*
   Press: *Right arrow* two times
   Press: *Enter*

   Tip: When you specify the heading row only as the output block, Quattro will copy all the matching records under these headings, overwriting any existing

information in the cells below. If you specify an exact block to copy to, including rows beneath the headings, Quattro fills only that block.

7. Finally, tell Quattro what part of the database to search with the **Block** command:

   Press: *B*
   Type: *A6..G13*
   Press: *Enter*

   Tip: Always include the field names you want to search in the search block. You do not have to include all rows in the database, however.

8. Now you can perform the search. Select the **Locate** command:

   Press: *L*

9. Quattro lets you look at the matches one at a time. The first match is highlighted. Scroll the Meals column into view:

   Press: *Right arrow* repeatedly until the Meals column shows

10. Highlight the next match:

    Press: *Down arrow*

11. Continue pressing *Down arrow* to look at matches. Quattro will beep when you've reached the last match. If you want to look at the matches again, press *Up arrow* or *Home*. Then return to the Query menu:

    Press: *Enter*

12. Now copy the matches to the output block with the **Extract** command:

    Press: *E*

13. If you blinked, you may not have seen Quattro perform that action. Return to the spreadsheet to see the matches in the output block:

    Press: *Q*

14. This is the end of this practice session. Save your work:

    Press: */FS*
    Press: *Enter*
    Press: *R*

Checkpoint: Your output block should now contain the records shown in Figure 5.14.

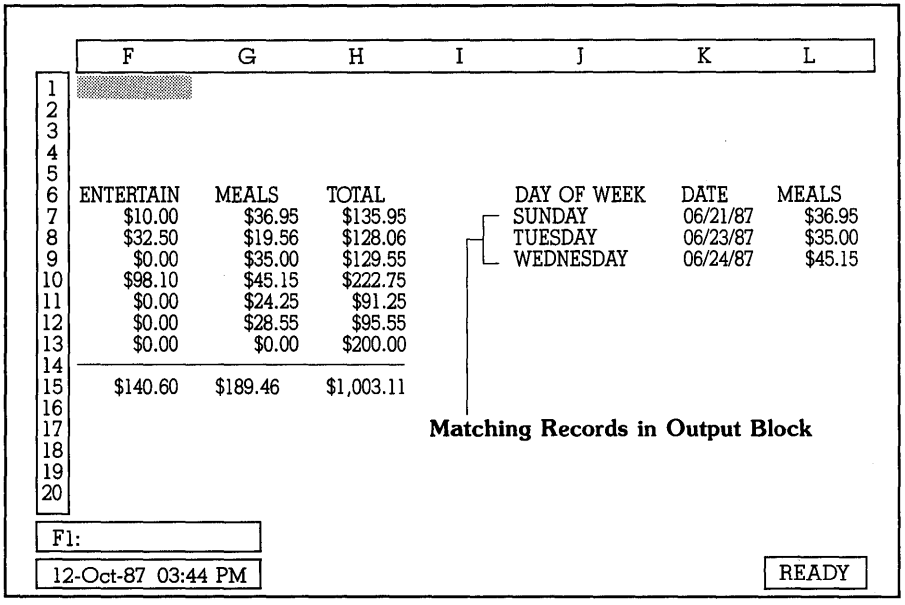


Figure 5.14: An Output Block

You used commands on the Advanced Database Query menu to set up and search a database. You used a Formula Criterion to specify the search criteria and you put a copy of the matching records in an Output Block.

The Allison Springs Expense Report is small enough that you can probably do a database search as quickly as Quattro. You'll find, however, that this process makes searching even a very large database quite simple and fast.

Sorting the Database

Another Database command you'll find useful is Sort. The Sort command lets you rearrange data so it's easier to locate specific information. Your database records are currently sorted by date.

In this practice session, you'll order the records in the output block you just created by values in the Meal field.

This practice session introduces the following terms and commands:

- **Sort Key.** Quattro lets you specify up to five fields, or *sort keys*, to sort the database. Records are first sorted by the primary sort key, then the secondary, and so on.

❒ **Sort Directions.** Each key can be sorted in ascending order (for example 0-10 or A-Z) or in descending order (10-0 or Z-A).

To sort the records in the output block by meal values:

1. Specify the output block as the block you want to sort with the **A**dvanced **D**atabase **S**ort **B**lock command:

   Press: */ADSB*
   Move: to cell J7
   Press: the period key (.)
   Press: *End-Down arrow* to move to cell J9
   Press: *End-Right arrow* to move to cell L9
   Press: *Enter*

   Note: When you specify the block to search, be sure to specify all the columns of the records you want to sort; otherwise, the fields of your database will be mismatched. But don't include the row with the field names or it will be sorted with the records.

2. Specify the Meals field as the primary key to sort by with the **1**st Key command:

   Press: *1*
   Move: to any cell in column L
   Press: *Enter*

   Tip: You can select the cell that contains the field name, or any other cell in that column.

3. Specify Ascending as the sort order:

   Press: *A*

4. Sort the block with the **G**o command:

   Press: *G*

5. Exit the Sort menu:

   Press: *Q*

   Notice: The output records are now sorted by the increasing values in the Meals column. This is the end of this practice session. Use the **F**ile **S**ave command to save your work:

   Press: */FS*
   Press: *Enter*
   Press: *R*

Checkpoint: Your output block of the spreadsheet should now look like the one shown in Figure 5.15.

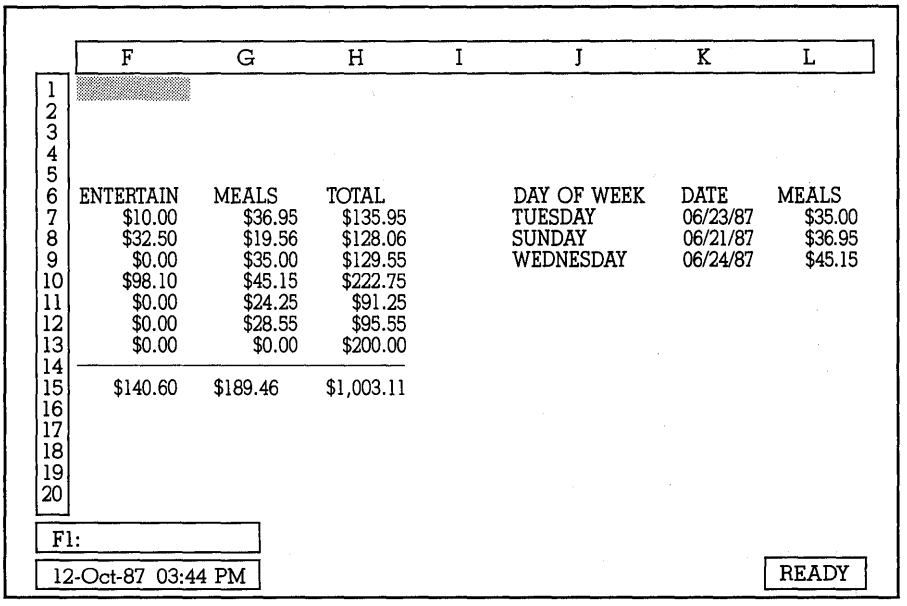


Figure 5.15: The Database After Sorting

You sorted the records in the search output block to arrange the values in the Meals column in ascending order, from least to most expensive. There were so few records in this block, you could easily sort them in your mind. You can imagine how handy sorting is, however, when you have a database with hundreds of records.

Lesson 3 Summary

In Lesson 3 you learned about Quattro's database capabilities. You searched through your database and extracted records to an output block. Then you sorted the extracted records.

The following table summarizes the tasks presented in Lesson 3:

Table 5.3: Tasks in Lesson 3

Task	Action
Set up a spreadsheet as a database	A spreadsheet database uses labels as field names in the top row. The first record is entered in the next row (do not separate the field names and the records with a blank row or dashed line).
Search a database	Display the Advanced Database Query menu (/ADQ). Use the **B**lock command to specify the block in the database you want to search. You can enter the search conditions with the **F**ormula Criterion command and perform the search with the **L**ocate command. If you have set up an output block (and specified it with the **O**utput Block command), you can use the **E**xtract command to copy specified fields of the matching records.
Sort a database	Display the Advanced Database Sort menu (/ADS). Use the **B**lock command to specify the data you want to sort. Select the primary sort field with the **1**st Key command. Perform the sort with the **G**o command.

If You're Ready for More ...

For more information on any of the material covered here, see the *Quattro User's Guide*. In addition, the following sections of the *User's Guide* contain information related to this lesson:

- Chapter 9 "Working with Your Database"
  - How to restore the original order of your database
  - How to use a criteria table to specify multiple criteria for a database search
  - How to set up a form for data entry

This is the end of Lesson 3. In Lesson 4 you will learn how to build a graph using your spreadsheet data.

Lesson 4: Building a Graph

With Quattro you can instantly prepare a graphics presentation of the data in your spreadsheet. You can use different graph types to depict your data. And you can print the graphs or store them with the spreadsheet for future reference.

In this lesson you will

- create a basic pie graph from your spreadsheet data.
- create graphic effects by adding titles and changing the layout.
- store the graph with your spreadsheet.

(Lesson 6, "Printing," tells you how to print your graph.)

Note: If your computer doesn't have a graphics card, you won't be able to display graphs on your screen. You can still create the graph, however, and print it on a graphics printer.

Creating a Graph

You can select from 10 kinds of graphs, including area graphs, pie charts, xy graphs, and various types of bar and line graphs. If you don't select a graph type, Quattro automatically prepares a bar graph as shown in Figure 5.16.

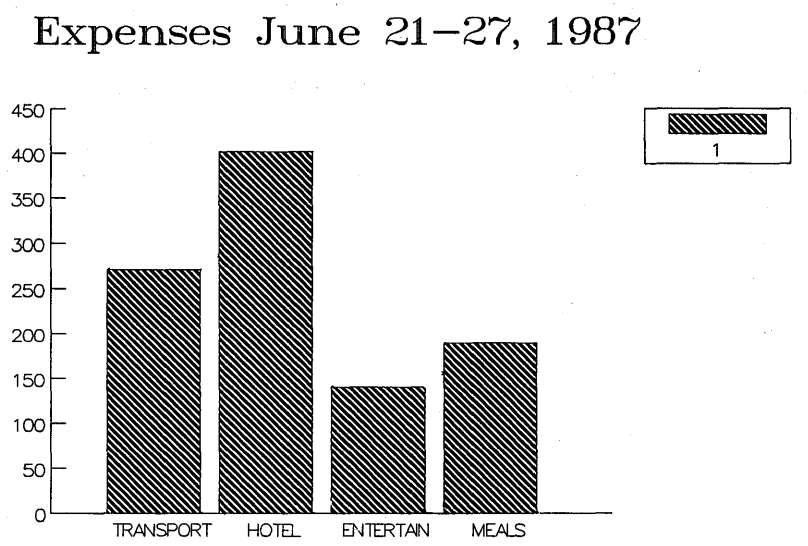


Figure 5.16: A Bar Graph

This graph includes:

- **Titles.** You can add a main title and titles for each axis to your graph.
- **X-Axis Labels.** You select the x-axis labels from headings on your spreadsheet to define the data plotted.
- **Series values.** For all but pie graphs, you can plot up to six series of values on the spreadsheet. Pie graphs plot one series of data at a time. The graph in Figure 5.16 plots one series of values: the total amount for each expense category.
- **Y-Axis Values.** Quattro automatically selects the *y*-axis values for the data you selected to graph. However, you can adjust the scale of this axis and the number of tick marks displayed.

Once you select one or more data series to graph, you can instantly see it presented in any of the graph types.

This practice session introduces the following terms and commands:

- **Pie Graph.** A pie graph uses only one series of data. It shows the relationship of one value in the series (as a slice) to the entire series (the pie).
- **Series.** Each group of values you plot on a graph is called a series.

- **Font.** Quattro lets you select from 11 different typefaces to use for graph titles.
- **X-Axis Labels.** You can add labels to the values you're graphing with the X-Axis Labels command.

To create a pie graph that shows the total amounts for each of the expense categories:

1. Specify the total amounts for the expense categories as the series of values to plot with the Graph Series Values 1st Series command:

   Press: */GS1*
   Move: to cell D15
   Press: . to anchor the cell selector
   Press: *Right arrow* three times
   Press: *Enter*

   Tip: If the cell selector is already anchored, press Esc to release it. If you prefer, you can type the block coordinates (D15..G15).

   Note: Pie graphs use only the first series values. If you select more series values, they will be ignored in pie graphs.

   You can display the graph as soon as you've selected the values to plot. Quattro automatically creates a stacked bar graph. From the Series Values menu, select the View command to see the graph:

   Press: *V*

   Note: Your computer must have a graphics board for you to display the graph on your screen. If you have a hard disk, the graph files must be in your resource directory. If you have a floppy-drive system, make sure the Resource Disk is in Drive A.

2. Return to the Series Values menu:

   Press: *any key*

3. Now display the data in a pie graph. From the Graph menu select the Graph Type Pie command:

   Press: *Esc* to return to the Graph menu
   Press: *GP*

4. Display the graph as a pie graph with the View command:

   Press: *V*

   Tip: You can view your graph from most graph menus with the View command. You can also view it directly from the spreadsheet with the GRAPH key (F10).

5. You can see the percentages the different expenses contribute to the whole, but you can't see which expense refers to which type of expense.

You can make this clear by adding labels with the **X**-Axis Labels command:

Press: any key to return to the Graph menu.
Press: X
Move: to cell D6
Press: the period key to anchor the cell
Press: *Right arrow* three times
Press: *Enter*

6. Take a look at the pie graph with the labels:

   Press: V
   Press: any key

7. Now add a title to identify this graph with the Titles **1**st Line command:

   Press: *T1*
   Type: *Expenses June 21-27, 1987*
   Press: *Enter*
   Press: *V* to see the results
   Press: *any key* to return to the Titles menu

8. Change the font to Triplex give the graph a different look:

   Press: *F* to select Font
   Press: *C* to select the Triplex font

9. From this menu you can also enlarge the labels next to the pie slices with the **S**ize command:

   Press: *S*
   Press: *X*
   Press: *L* for Large

10. Display the graph. Experiment with other fonts and sizes if you like.

    Press: *V*
    Press: *any key* to return to the Titles menu

11. This is the end of this practice session. Select the **Q**uit command and then save your work:

    Press: *Q*
    Press: */FS*
    Press: *Enter*
    Press: *R*

    Note: The last graph you created is saved with the spreadsheet. Shortly, you'll learn how to save more than one graph.

Checkpoint: Figure 5.17 shows the pie graph you created.

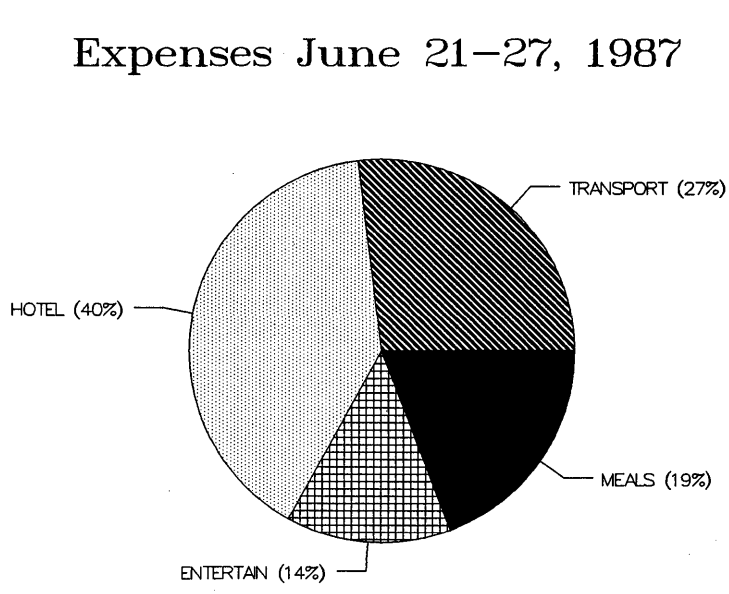


Figure 5.17: A Pie Graph for the Allison Springs Expense Report

You used commands on the Graph menu to specify the spreadsheet data to graph, select the type of graph, and add a title to the graph.

Customizing Your Graph

When you customize a graph, you change the defaults Quattro uses to prepare the basic graph. For example, you can

- select different colors and patterns to represent the series values or slices of a pie.
- change the patterns used to display grids, or remove the gridlines entirely.
- adjust the scale on the *y*-axis and the tick marks on the *x*-axis of bar graphs.
- explode, or offset, a pie slice for emphasis.

To add finishing touches to the pie graph you created in the previous practice session:

1. Change the percentages shown next to each slice to dollar amounts. Use the Customize Pies Label Format command:

   Press: */GCPL*
   Press: *Down arrow* to highlight $
   Press: *Enter*
   Press: *V* to view the changes
   Press: *any key* to return to the Customize Pies menu

2. Now explode the slice showing the entertainment total:

   Press: *E*
   Press: *3* to select the third slice
   Press: *E*
   Press: *V* to view the change
   Press: *any key* to return to the Explode menu

3. This is the end of this practice session. Select the **Q**uit command and then save your work:

   Press: *Q*
   Press: */FS*
   Press: *Enter*
   Press: *R*

Checkpoint: Your graph should now look like the one shown in Figure 5.18.

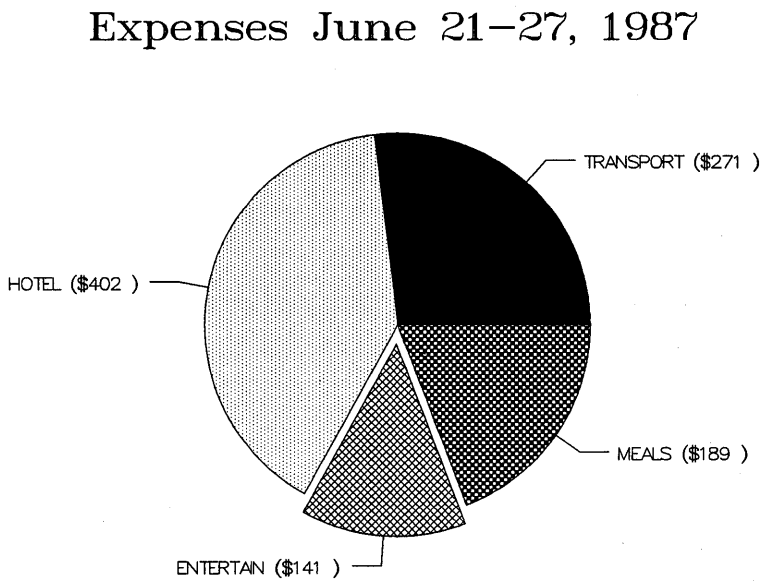


Figure 5.18: After Customizing a Graph

You made custom changes to the graph for the Allison Springs Expense Report with commands on the Customize Pies menu. You used the Label Format command to change percentages to dollar amounts and the Explode command to pull out one of the slices from the pie.

Naming Your Graph

When you save your spreadsheet, Quattro automatically saves the last graph you created. To create more than one graph with a spreadsheet, simply give each graph a name. Then Quattro stores it with the spreadsheet.

Named graphs are stored with the spreadsheet and can be displayed at any time. When you redisplay the graph it will reflect any changes that have been made to the spreadsheet data.

To store and redisplay your graph:

1. Store the current graph with the **Graph Name Store** command:
   Press: */GNS*

Type: *totals-pie*
Press: *Enter*

Tip: You can use any graph name up to 15 characters.

The graph is stored and you are returned to the Graph menu. Now create a second graph and store it. Select the **G**raph Type command:

Press: *G*
Press: *R* to select a Rotated Bar graph
Press: *V*
Press: *any key*

Tip: Quattro will use the current series values in the new graph. If you want the new graph to plot different data you can select the Graph Series Values command and specify new series values.

2. Store the second graph. From the Graph menu select the **N**ame **S**tore command:

   Press: *NS*
   Type: *totals-rotate*
   Press: *Enter*

   Note: Each graph name must be unique. If the graph name already exists, Quattro will overwrite the graph assigned to it.

3. Redisplay the pie chart with the **N**ame **D**isplay command:

   Press: *ND*
   Press: *Down arrow* to highlight TOTALS-PIE
   Press: *Enter*

4. You are returned to the Graph menu and now the pie chart is current again. Select the **V**iew command:

   Press: *V*
   Press: *any key*

5. This is the end of this practice session. Save your work:

   Press: *Q*
   Press: */FS*
   Press: *Enter*
   Press: *R*

Checkpoint: You used commands on the Graph Name menu to store and retrieve named graphs. You stored the current graph (with the **N**ame **S**tore command), created a new graph (with the **T**ype of Graph command), stored it (with the **N**ame **S**tore command) and then redisplayed the first graph (with the **N**ame **D**isplay command).

Lesson 4 Summary

In Lesson 4 you learned about Quattro graphs. You created a basic pie graph, selecting the series of values to graph and the labels to define the values. You added a graph title and changed its font and size. You then customized the graph, changing the way information is displayed. Finally, you stored two versions of the graph with the spreadsheet.

The following table summarizes the tasks presented in Lesson 4:

Table 5.4: Tasks in Lesson 4

Task	Action
Select a graph type	Display the Graph menu (/G). Select the **G**raph Type command and select a graph from the list shown.
Select the data to graph	Display the Graph Series Values menu *(/GS)*. For each series of values you want the graph to depict, specify the block that contains those values. Use the **1**st Series command to enter coordinates for the first series of values, **2**nd Series to enter coordinates for the second series of values, and so on up to six series. Type the cell coordinates or use the cell selector to point them out. While there is no limit to the number of values allowed in a series, a crowded graph can be hard to read.
Add a title	Display the Graph Titles menu (/GT). Select the **1**st Line command and type a title for the graph. Select the **F**ont command to change the typeface and the **S**ize command to change the type size.
Change the layout	Display the Graph Customize menu (/GC). To change the graph color and patterns, use the **C**olors command. To change a pie graph, select the **P**ies command.
Store a graph with the spreadsheet	Display the Graph Name menu (/GN). Select the **S**tore command to type a name for the current graph. Select the **D**isplay command to display a stored graph.
Update a graph	Because Quattro stores graph settings and not a "picture" of the graph with the spreadsheet, the

	graph is automatically updated when you change the data in the spreadsheet.
View a graph	Select the **V**iew command. The **V**iew command appears on most menus in the Graph menu structure. Press any key to return to the menu.

If You're Ready for More ...

For more information on any of the material covered here, see the *Quattro User's Guide.* In addition, the following sections of the *User's Guide* contain information related to this lesson:

- Chapter 8 "Building Graphs"
  - Store a graph in a DOS file
  - Change the colors and fill patterns
  - Specify a different graph type for individual series of values

This is the end of Lesson 4. In Lesson 5 you will learn how to create macros.

Lesson 5: Creating a Macro

Imagine that you have just inherited a large spreadsheet that contains 16 columns of numbers, all of different lengths. You want to add a formula at the end of each column that totals the contents of the column. Will you have to type separate formulas for each column? No. Not if you know how to create a macro, that is.

A macro is a list of instructions for Quattro to carry out. When you invoke the macro, Quattro follows the instructions exactly as you've listed them. Thus, a macro accomplishes in one step what you normally accomplish in several keystrokes or commands.

A macro can be as simple as a label entered into a cell, or as complicated as an interactive program that guides users through Quattro.

In this lesson you will

- define a macro by recording keystrokes.
- try out the macro by executing it.

Recording a Macro

The simplest way to define a macro is to *record* it. When you record the macro, Quattro makes a list of everything you type and every command you select. This list is stored in a cell, just like other data.

When you create a macro you assign it

- **a name.** Each macro is given a name that's added to a *macro list* for the current spreadsheet. To run the macro, you select it from the macro list.
- **a cell location.** The best place to locate a macro is in a block to the right and below the spreadsheet. In this position, there's less danger of accidentally deleting your macro when you edit the spreadsheet. If the macro you're creating will write data into the current cell, be sure to specify a macro location that's different from the cell you're using to record.

This practice session introduces the following terms and concepts:

❒ **Record Mode.** When you create a macro, you actually *record* it by walking through the steps you want the macro to perform.

- **Alt-F8.** You start and stop recording a macro by holding down the *Alt* key and pressing *F8*. The first time you press *Alt-F8*, Quattro asks you for the name and location of the macro, then enters Record mode.

In this practice session you'll create a macro that enters a dashed line in the current cell, moves to the cell below, and enters a formula to total the column.

To create the macro:

1. Move to an empty cell and start the macro record process:

   Move: to cell I20
   Press: *Alt-F8*

2. Enter a name for the macro:

   Type: *total*
   Press: *Enter*

3. Enter the location for the macro:

   Type: *J20*
   Press: *Enter*

   Note: Because this macro will enter data in the current cell, you must specify a different location for storing the macro.

4. The RECORD indicator appears on the status line. Each key you press will now be stored in cell J20 as a macro. Record the process for entering a dashed line in a cell and moving to the cell below:

   Type: \-
   Press: *<Down arrow>*

5. Now create a formula that will add all the values in a column, regardless of its length:

   Type: *@sum(*
   Press: *Up arrow*
   Press: the period key (.)
   Press: *<End>*
   Press: *Up arrow*
   Press: the close parenthesis key [ )]
   Press: *Enter*

   Tip: End-Up arrow moves the selector to the first filled-in cell in the block. Stop the recording process:

   Press: *Alt-F8*

   The dashed line and formula are stored in cell J20 as a macro named TOTAL.

6. Erase the dashed line and formula you entered while creating this macro:

Move: to cell I20
Press: *Del*
Move: to cell I21
Press: *Del*

7. Now save your work:

Press: */FS*
Press: *Enter*
Press: *R*

Checkpoint: You recorded your macro in cell J20. Your spreadsheet should now look like the one shown in Figure 5.19.

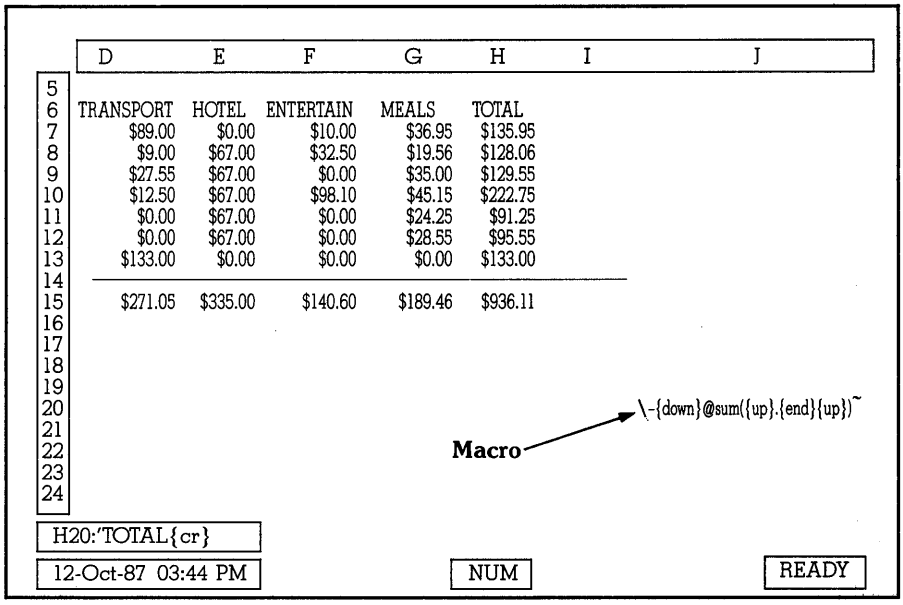


Figure 5.19: Your Macro in cell J20

When you record a macro, the keys you press and the commands you select are entered as special notations. The *Up arrow* key appears as {UP} and the carriage return appears as a tilde (~).

Executing a Macro

To execute a recorded macro, you press the MACRO key (*F8*). A list of all macros for the spreadsheet is displayed, and you can select one from the list to execute it.

In this practice session, you'll delete the totals from columns D and E of your spreadsheet, then use the the macro you created in the last session to reenter them. You also create a short column of numbers, then use the macro to total them.

To practice using your TOTAL macro:

1. First, erase the dashed lines and formulas in cells D14..E15 with the **B**lock **E**rase command:

   Move: to cell D14
   Press: */BE*
   Press: the period key (.)
   Press: *Down arrow*
   Press: *Right arrow*
   Press: *Enter*

2. Now, execute the macro:

   Press: *F8*
   Press: *Enter*

3. Execute the macro again for column E:

   Move: to cell E14
   Press: *F8*
   Press: *Enter*

   *Note: Quattro adjusted the formula for the current column, just as it did when you used the **B**lock **C**opy command to copy the formula.*

4. Now create two new columns of numbers to see how this macro works for a column of any length:

   Move: to cell B20
   Press: *1 Down arrow*
   Press: *2 Down arrow*
   Press: *3 Down arrow*
   Press: *4 Down arrow*
   Press: *5 Down arrow*

   *Note: The numbers are shown as dollars, since this is the default display format. You could change the display format for the block (using the **B**lock **D**isplay Format command) to General or Fixed to display them simply as digits.*

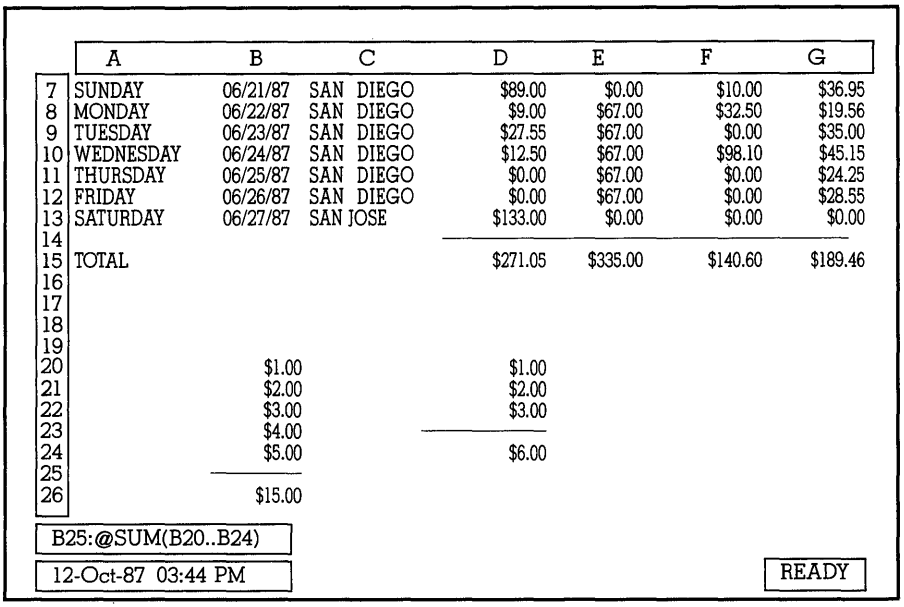
   Move to cell D20 and type a shorter column:

   Move: to cell D20
   Press: *1 Down arrow*
   Press: *2 Down arrow*
   Press: *3 Down arrow*

5. Use the TOTAL macro to total the columns:

Move: to cell B25
Press: *F8*
Press: *Enter*
Move: to cell D23
Press: *F8*
Press: *Enter*

Checkpoint: Your spreadsheet should now look like the one shown in Figure 5.20.



	A	B	C	D	E	F	G
7	SUNDAY	06/21/87	SAN DIEGO	$89.00	$0.00	$10.00	$36.95
8	MONDAY	06/22/87	SAN DIEGO	$9.00	$67.00	$32.50	$19.56
9	TUESDAY	06/23/87	SAN DIEGO	$27.55	$67.00	$0.00	$35.00
10	WEDNESDAY	06/24/87	SAN DIEGO	$12.50	$67.00	$98.10	$45.15
11	THURSDAY	06/25/87	SAN DIEGO	$0.00	$67.00	$0.00	$24.25
12	FRIDAY	06/26/87	SAN DIEGO	$0.00	$67.00	$0.00	$28.55
13	SATURDAY	06/27/87	SAN JOSE	$133.00	$0.00	$0.00	$0.00
14							
15	TOTAL			$271.05	$335.00	$140.60	$189.46
16							
17							
18							
19							
20		$1.00		$1.00			
21		$2.00		$2.00			
22		$3.00		$3.00			
23		$4.00					
24		$5.00		$6.00			
25							
26		$15.00					

B25:@SUM(B20..B24)

12-Oct-87 03:44 PM READY

Figure 5.20: Invoking Macros

You executed the macro you created to work on both existing and new columns of your spreadsheet. The macro entered dashed lines and totaled figures in the column above the current cell. The totals for the new columns included only those values you just entered, because there was at least one blank cell between the new values and the figures above them.

Lesson 5 Summary

In Lesson 5 you learned about creating and executing a macro for a spreadsheet. You created a simple macro and executed it.

The following table summarizes the tasks presented in Lesson 5:

Table 5.5: Tasks in Lesson 5

Task	Action
Create a macro	To start recording a macro, press *Alt-F8*. Enter a name for the macro. Enter the address of a cell in which to store it. Press the keys and select the commands required to carry out the steps in the macro. To stop recording the macro, press *Alt-F8* again.
Execute a macro	If the macro enters data in the current cell, move the selector to where you want the data entered. Press the MACRO (*F8*) to display the macro list. Highlight the macro you wnat to execute and press *Enter*.

If You're Ready for More ...

For more information on any of the material covered here, see the *Quattro User's Guide*. In addition, the following sections of the *User's Guide* contain information related to this lesson:

- Chapter 12 "Using Macros"
  - Create an "instant" macro that's executed with the *Alt* key
  - Use macro commands
  - Test ("debug") macros
  - Create a macro that's executed automatically when you retrieve a spreadsheet
  - Delete macros

This is the end of Lesson 5. In Lesson 6 you will learn how to print a spreadsheet and a graph.

Lesson 6: Printing

In this lesson you will

- print the main part of your Allison Springs spreadsheet
- print the pie chart you created in Lesson 4

Note: In order to print graphs, your printer must have graphics capability.

Printing Your Spreadsheet

With Quattro, you can print a simple list of values from a spreadsheet, or create a thorough, multi-page report, complete with headers, footers, and borders.

In this session, you will print the main section of your spreadsheet. Because it is wider than 76 characters, it will be printed on two pages, which you can then tape together to see the full spreadsheet.

Note: Quattro assumes that you're using a parallel printer attached to your computer's first parallel port. It also assumes that your printer doesn't have automatic line feed and that it uses continuous-feed paper. If this is not the case, you need to specify differences with the **D**efault **H**ardware **T**ext Printer command. (See Chapter 5 of the *Quattro User's Guide* for details.)

To print the Allison Springs Expense Report spreadsheet:

1. Make sure your printer is turned on and the paper in it properly aligned.
2. Display the Print menu:

   Press: */P*
3. Specify the block of cells to print with the **B**lock command:

   Press: *B*
   Type: *A1..H15*
   Press: *Enter*
4. The Allison Springs spreadsheet has too many columns to fit on an 8.5x11 sheet of paper. Quattro will print as much as it can on the first page, then print the rightmost columns on the next page. To make the spreadsheet appear centered when you combine the pages, widen the left margin with the **P**age Layout **M**argins & Length **L**eft command:

Press: *PML*
Type: *25*
Press: *Enter*

Tip: The default left margin setting will return next time you use Quattro. To permanently change the margin settings, select the **Print Page Layout Update** *command (/PPU).*

5. Now print the spreadsheet. Return to the Print menu and select the Go command:

   Press: *Esc* twice to return to the Print menu
   Press: *G*

   Note: If the printer is not turned on, or if there is another problem in printing the report, Quattro will display a warning menu on the bottom line of the screen. Correct the situation and then press any key to continue printing.

   Tip: To interrupt printing, hold down **Ctrl** *and press* **Break.**

Checkpoint: You printed the Allison Springs Expense Report spreadsheet. To make the printed spreadsheet more readable, you can tape the two pages together (see Figure 5.21).

EXPENSE REPORT FOR ALLISON SPRINGS
WEEK ENDING JUNE 27, 1987

DAY OF WEEK	DATE	LOCATION	TRANSPORT	HOTEL	ENTERTAIN	MEALS	TOTAL
SUNDAY	06/21/87	SAN DIEGO	$89.00	$0.00	$10.00	$36.95	$135.95
MONDAY	06/22/87	SAN DIEGO	$9.00	$67.00	$32.50	$19.56	$128.06
TUESDAY	06/23/87	SAN DIEGO	$27.55	$67.00	$0.00	$35.00	$129.55
WEDNESDAY	06/24/87	SAN DIEGO	$12.50	$67.00	$98.10	$45.15	$222.75
THURSDAY	06/25/87	SAN DIEGO	$0.00	$67.00	$0.00	$24.25	$91.25
FRIDAY	06/26/87	SAN DIEGO	$0.00	$67.00	$0.00	$28.55	$95.55
SATURDAY	06/27/87	SAN JOSE	$133.00	$67.00	$0.00	$0.00	$200.00
TOTAL			$271.05	$402.00	$140.60	$189.46	$1,003.11

Figure 5.21: Combining the Two Printed Pages

Printing a Graph

Printing a graph is like printing a spreadsheet, except that you may need to experiment a bit more to position the graph exactly the way you want it on the page. If your printer does not have graphics capability, you will not be able to complete this section.

This practice session introduces the following terms and commands:

- **Printer Make, Model and Mode.** Select your printer manufacturer and model from lists Quattro provides. If relevant, Quattro will also prompt you for the printer mode (dots per inch).
- **Device connection** indicates which port is used to connect the printer to your computer.
- **Serial Printer Information.** If your printer is connected through a serial port, Quattro uses the baud rate (data transmission speed, 110-19200), parity (the error handling mechanism, odd or even) and stop bits (the number of bits at the end of serial data, 1 or 2) determined by DOS. You only need to specify this information if you haven't yet used this printer with your computer.

Before you can print a graph, you must specify information about your printer. You only need to do this once. When you update the Quattro configuration file (with the **G**raph **P**rint **U**pdate command), your printer specifications are stored within Quattro.

To specify information about your printer:

1. Display the Graph Print menu:
   Press: */GP*

2. Specify information for your primary graphics printer:
   Press: *P* to select Printers
   Press: *1* to select 1st Printer
   Press: *T* to select Type of Printer
   Press: *Down arrow* until your printer make is highlighted
   Press: *Enter*
   Press: *Down arrow* until your printer model is highlighted
   Press: *Enter*
   Press: *Down arrow* until the mode you want is highlighted
   Press: *Enter*

Note: If your exact printer make or model aren't listed, select the one closest in compatibility. If you're using a dot matrix printer, different dpi's *will be listed as modes. You can use any dpi (dots per inch), but the higher the dpi, the better the quality will be.*

If you're using a serial printer or if your printer's connected to other than the first parallel port, you need to specify the device connection:

Press: *D* to select Device
Press: *Down arrow* to highlight your printer's port
Press: *Enter*

Note: If you're using a serial printer, Quattro uses the baud rate, parity, and stop bit settings determined by DOS. If you haven't used this printer with DOS before, you may need to change these settings.

3. After setting your printer specifications, you need to store them with Quattro:

   Press: *Esc* twice to return to the Print menu
   Press: *U* to select Update

   Note: Once you've updated this information, there's no need to enter it again, unless you use a different printer.

Now that the printer specifications are set, you can print the graph.

To print the pie chart you created in Lesson 4:

1. Use the **G**raph **P**rint **L**ayout **O**rientation command to specify printing the graph vertically instead of horizontally (the default):

   Press: *LO*
   Press: *P* to select Portrait (Vertical)

2. Begin printing:

   Press: *Esc*
   Press: *G*

   Note: If Quattro can't find the graph printing files, it can't print your graph. Be sure the files ending with .BGI are in the disk or directory indicated by your default resource directory.

   Tip: To interrupt printing before it's complete, hold down the Ctrl key and press Break.

   This is the end of the last practice session in the tutorial. Before you quit Quattro and return to DOS, you can:

   Save this spreadsheet:

   Press: *Q* to return to the spreadsheet
   Press: */FS* to select the **F**ile **S**ave command
   Press: *R* to save the latest changes

Delete this spreadsheet:

Press: *Q* to return to the spreadsheet
Press: */E* to erase the spreadsheet from the screen
Press: */FE* to select the **F**ile **E**rase command
Press: *W* to erase the worksheet (spreadsheet) file
Press: *Down arrow* to highlight EXPENSES.WKQ
Press: *Enter* to delete the spreadsheet
Press: *Y* to confirm

3. Quit Quattro and return to DOS:

   Press: */Q*

Checkpoint: You set printer specifications (with the **P**rinters command) for your primary graphics printer. (If you are using a serial printer, you specified port and possibly baud rate, parity and stop bit information as well.) You used the **O**rientation command to position the graph vertically on the page, then sent the graph to the printer with the **G**o command. The graph you printed should look exactly like that in Figure 5.17.

Lesson 6 Summary

In Lesson 6 you learned about printing spreadsheets and graphs.

The following table summarizes the tasks presented in Lesson 6:

Table 5.6: Tasks in Lesson 6

Task	Action
Print a spreadsheet	Display the Print menu (/P). Use the **B**lock command to specify the part of the spreadsheet to print. Use the **P**age Layout command to specify how you want the spreadsheet layed out on the page. Select the **G**o command to send the spreadsheet to the printer.
Print a graph	Display the Graph Print menu (/GP). If you haven't already, use the **P**rinters command to set printer specifications. Use the **L**ayout command to position the graph on the page. Use the **G**o command to send the graph to the printer.

If You're Ready for More ...

For more information on any of the material covered here, see the *Quattro User's Guide*. In addition, the following sections of the *User's Guide* contain information related to this lesson:

- Chapter 7 "Printing"
  - Add text to be printed as headers and/or footers on each page
  - Print row or column headings on each page
  - Use setup strings to send commands to your printer, for example, to produce compressed or letter-quality printing
- Chapter 8 "Building Graphs"
  - Print more than one graph on a page
  - Change the position of a graph on the page
  - Change the colors used to print the graph on a color printer or plotter

This is the end of Lesson 6 and the tutorial.

Congratulations! You have finished practicing all the basic Quattro features. You should now be able to build your own simple spreadsheet.

From here, you should go to the *Quattro User's Guide* for detailed information on each of the areas covered here, as well as much other information not touched upon by this tutorial. Once you feel secure with your knowledge of Quattro, you can use the *Quattro Reference Guide* to look up the basic procedures for most Quattro operations. The *Reference Guide* also includes detailed information about @functions, macro commands, and menu-equivalent commands.

For assistance while you're working with Quattro, you can also use the HELP key *F1*. This key accesses Quattro's extensive context-sensitive help system, which displays information on your screen about what you're doing.

A P P E N D I X

A

Glossary

address—the location of a cell in a spreadsheet, defined by the letter of its column followed by the number of its row. For example, C5 is the address of the cell in column C and row 5.

block—any rectangular group of cells, indicated by the addresses of the top-left and bottom-right cells.

borders—the lettered row at the top of the spreadsheet and the numbered column to the left that are used to identify cell addresses.

cell—a box in the spreadsheet used to enter data. A spreadsheet is made up of thousands of cells, ordered by rows and columns.

cell selector—the highlighted rectangle that indicates the current cell.

coordinates—the two points of reference that define a cell or block. The address of a cell is the letter of the column followed by the number of the row containing it. The coordinates of a block are the addresses of the top-left and bottom-right cells in the block.

database—an organized collection of information. In Quattro, a database is organized as rows, or *records*, of information, divided into separate columns, or *fields*.

default—a standard setting used when none other is specified. For example, the default column width is nine. You can change a default value temporarily or permanently. And you can depart from the default value for specified areas of the spreadsheet (for example, changing the width of an individual column).

descriptor line—the line on which information about the current cell (and any error messages) are displayed. Initially, this is the second line from the bottom of the screen. You can optionally move it to the top of the screen.

direction keys—keys on the numeric keypad (on the right side of the keyboard) used to move the cursor or cell selector.

directory—a section of a disk created with the DOS MKDIR or MD command. Sometimes directories are further broken down into *subdirectories*.

display format—the format in which a value is displayed.

DOS—the computer operating system required in order to run Quattro.

field—a category of information in a database. In a Quattro database, fields are set up as columns of information.

file—a section of a disk used to store data.

floppy-drive system—a computer that in lieu of a hard disk has two floppy-disk drives used to write and read files from a floppy disk.

frozen titles—columns and/or rows that have been fixed on the screen. They remain in place even when the rest of the spreadsheet is scrolled.

function—one of a set of special commands that can be entered in a spreadsheet cell, either alone or within a formula. They perform advanced calculations and provide the resulting value. Also called @functions, because they all begin with an @.

function keys—the keys labeled *F1* through *F10* at the top or left of the keyboard, used to perform special Quattro functions.

hard disk—part of a computer used to store data in files.

hardware—the physical equipment used to run Quattro: your computer, disk drivers, screen, and printer.

headings—a column and/or row that contains text defining data below or to the right.

input line—the line above the spreadsheet used to display data when you enter or edit it. It's also used for menu descriptions and system prompts.

label—any textual cell entry.

label-prefix character—a character preceding a label entry that indicates how to align the entry. A single quote (') aligns a label entry left, a double quote (") aligns it right, and a caret (^) centers it.

macro—a sequence of keystrokes and/or commands that are recorded and stored in a spreadsheet and that can be executed automatically.

macro commands—a set of special commands that can be used within macros.

menu-equivalent commands—special commands that correspond to menu items, used in macros and command history transcripts.

operating system—the base software your computer uses to run other programs. For example, Quattro requires DOS as a base in order to run.

operator—a mathematical symbol used in a formula to express a relationship between two values. For example, in the formula *A6 + 10 / B2*, both + and / are operators.

plotter—a computer printing device that uses interchangeable colored ink jets, or *pins*, to print multicolored text and graphs.

pointing—the method of indicating a cell block by moving the cell selector to its coordinates.

protection—a security function that prevents the contents of a cell block or the entire spreadsheet from being changed.

RAM (random-access memory)—a temporary storage area within your computer, used for storing your work until you save it to disk.

recalculation—the act of calculating formulas in a spreadsheet.

record (n.)—a set of information in a database. In a Quattro database, records are rows of data.

resolution—the number of pixels used by a screen to display graphics and text. The greater the resolution, the sharper the screen display is.

series — a series of values plotted as a group on a graph.

status line—the bottom line of the spreadsheet screen, showing date, time, spreadsheet mode, and any status conditions.

value—any numeric value in the spreadsheet, entered either as a number, a date, or a formula that calculates a number.

window—the part of the spreadsheet screen used to view data. You can open a second window in Quattro, and use it to view a different part of your spreadsheet.

x-axis—the horizontal line at the bottom of a graph, used to plot values.

y-axis—the vertical line at the left of a graph, used to plot values.

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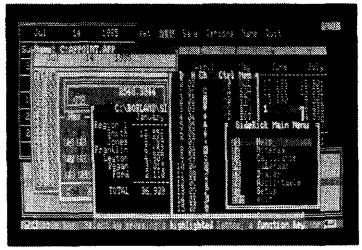

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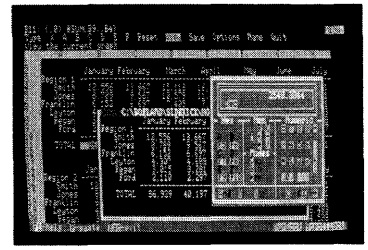

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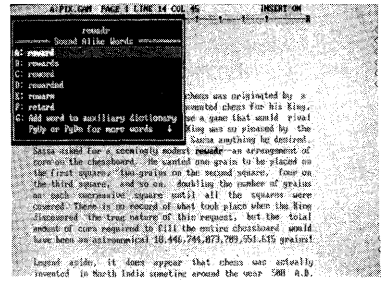

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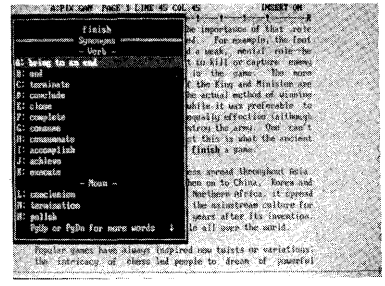

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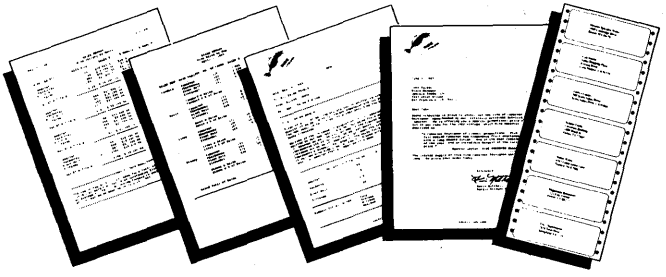

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Turbo Pascal 4.0 has all the features

Turbo Pascal 4.0 has all the features of Turbo Pascal 3.0, *plus* an amazing compilation speed of 27,000 lines per minute,* support for programs larger than 64K, a library of powerful standard units, separate compilation, and much more.

The single-pass, native code compiler offers improved code generation, smart linking to remove unused code from your programs, built-in project management, separate compilation using units, output screen saved in a window, MAP files for use with standard debuggers, a command-line version of the compiler and MAKE utility, and built-in support for 8087/80287/80387 math coprocessors.

All these advanced features, plus the integrated programming environment, online help, and Borland's famous pull-down menus, make Turbo Pascal 4.0 the high-speed, high-performance development tool every programmer hopes for.

Built-in editor

An improved, full-screen editor for editing, compiling, and finding and correcting errors from inside the integrated development environment. Supports 25, 43, and 50 lines per screen, tabs, colors, and new command installation.

Interactive error detection

The compiler instantly locates errors, automatically activates the editor, and shows you the location of the error in the source code.

Pick list

Lets you pick a file from a list of the last eight files loaded into the editor and opens it at the exact spot where you last edited the file. It even remembers your last search string and search options.

Free MicroCalc spreadsheet

A new and improved version of the full-fledged spreadsheet included on your Turbo Pascal disk, absolutely free! You get the complete, revised source code, ready to compile and run.

Compatibility with Turbo Pascal 3.0

A conversion program and compatibility units help you convert all your 3.0 programs to 4.0.

Other Technical Features:

- Several powerful standard units (*System Dos, Crt,* and *Graph*)
- Device-independent graphics support for CGA, MCGA, EGA, VGA, Hercules, AT&T 6300, and IBM 3270 PC
- Extended data types, including *LongInt*
- Optional range- and stack-checking; short-circuit Boolean expression evaluation
- Support for inline statements, inline macros, and powerful assembly language interface
- Faster software-only floating point; toggle switch for 80x87 support including *Single, Double, Extended,* and *Comp* IEEE reals (with numeric coprocessor)
- Automatic execution of initialization and exit code for each unit
- Nested include files up to 8 levels deep, including main module and units
- Operating system calls and interrupts
- Interrupt procedure support for ISRs
- Variable and value typecasting
- Shell to DOS transfer

Minimum system requirements: For the IBM PS/2™ and the IBM® and Compaq® families of personal computers and all 100% compatibles. Integrated environment: 384K; command line: 256K; one floppy drive.
*Run on an 8MHz IBM AT

Suggested retail price $99.95 (not copy protected)

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TURBO PASCAL®

TOOLBOXES AND DEVELOPER'S LIBRARY

An unsurpassed collection of TURBO PASCAL TOOLS that make you the expert, now upgraded to Version 4.0!

Turbo Pascal Tutor:

For both the novice programmer and the professional. Everything you need to write a simple program or handle advanced concepts like using assembly language routines with your Turbo Pascal programs. The programmer's guide covers the fine points of Turbo Pascal programming with lots of examples; and on accompanying disk gives you all the source code. A real education for just *$69.95*!

Turbo Pascal Editor Toolbox:

Everything you need to build your own custom text editor or word processor including easy-to-install modules, source code and plenty of know-how. Includes all the popular features like word-wrap, auto indent, find/replace. Just *$99.95*!

Turbo Pascal Database Toolbox:

A complete library of Pascal procedures that let you sort and search your data and build powerful applications. Includes Turbo Access files that use B+ trees to organize and search your data, and Turbo Sort to sort it. GINST even gets your programs up and running on other terminals! Includes a free database that you can use as is or modify to suit your needs. Just *$99.95*!

Turbo Pascal Graphix Toolbox:

Gives you all the high-resolution graphics and graphic window management capabilities you need, with tools to draw and hatch pie charts, bar charts, circles, rectangles and a full range of geometric shapes. Save and restore graphic images to and from disk, plot precise curves, and create animation.* All for just *$99.95*!

Turbo Pascal GameWorks:

Secrets and strategies of the masters with easy-to-understand examples that teach you how to quickly create your own computer games using Turbo Pascal. For instant excitement, play the three great computer games included on disk—Turbo Chess, Turbo Bridge and Turbo Go-Moku. They're all compiled and ready to run. Just *$99.95*!

Turbo Pascal Numerical Methods Toolbox:

All the state-of-the-art applied mathematical tools you'll ever need. A collection of Turbo Pascal mathematical routines and programs and ten independent modules that you can easily adapt to different programs. Gives you the kind of mathematical routines IMSL® and NAG libraries provide for FORTRAN. Complete with sample programs and source code for each module. All for just *$99.95*!

Buy them separately or get The Developer's Library, which includes all six, for just $395 suggested retail price! Not copy protected!

System Requirements: For the IBM PS/2™ and the IBM® and Compaq® families of personal computers and all 100% compatibles.
Operating System: PC-DOS (MS-DOS) 2.0 or later.
**Turbo Pascal Graphix Toolbox* also requires one of the following graphics adapters: CGA, EGA, Hercules, or IBM 3270.

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BOR 0486

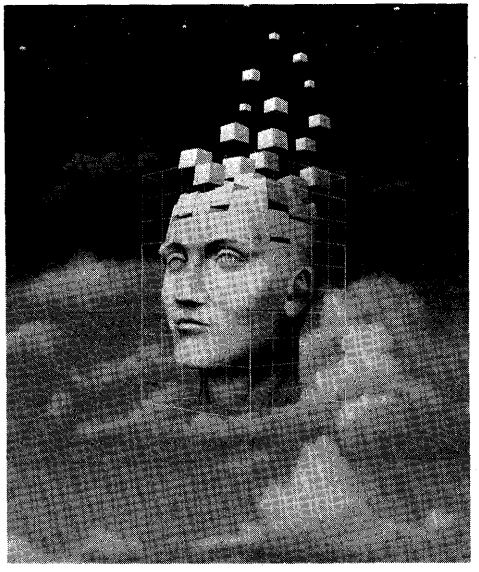
TURBO PROLOG™

STEP-BY-STEP TUTORIAL AND DEMO PROGS. WITH SOURCE CODE INCLUDED

the natural language of Artificial Intelligence

Turbo Prolog brings fifth-generation supercomputer power to your IBM®PC!

Turbo Prolog takes programming into a new, natural, and logical environment



With Turbo Prolog, because of its natural, logical approach, both people new to programming *and* professional programmers can build powerful applications such as expert systems, customized knowledge bases, natural language interfaces, and smart information management systems.

Turbo Prolog is a *declarative* language which uses deductive reasoning to solve programming problems.

Turbo Prolog provides a fully integrated programming environment like Borland's Turbo Pascal,® the *de facto* worldwide standard.

You get the complete Turbo Prolog programming system

You get the 200-page manual you're holding, software that includes the lightning-fast Turbo Prolog six-pass compiler and interactive editor, and the free GeoBase natural query language database, which includes commented source code on disk, ready to compile. (GeoBase is a complete database designed and developed around U.S. geography. You can modify it or use it "as is.")

Turbo Prolog's development system includes:

- ☐ A complete Prolog compiler that is a variation of the Clocksin and Mellish Edinburgh standard Prolog.
- ☐ A full-screen interactive editor.
- ☐ Support for both graphic and text windows.
- ☐ All the tools that let you build your own expert systems and **AI** applications with unprecedented ease.

Minimum system configuration: IBM PC, XT, AT, Portable, 3270, PCjr and true compatibles. PC-DOS (MS-DOS) 2.0 or later. 384K RAM minimum.

Suggested Retail Price: $99.95 (not copy protected)

BORLAND *INTERNATIONAL*

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TURBO PROLOG™ TOOLBOX

Enhances Turbo Prolog with more than 80 tools and over 8,000 lines of source code

Turbo Prolog, the natural language of Artificial Intelligence, is the most popular AI package in the world with more than 100,000 users. Our new Turbo Prolog Toolbox extends its possibilities.

The Turbo Prolog Toolbox enhances Turbo Prolog—our 5th-generation computer programming language that brings supercomputer power to your IBM PC and compatibles—with its more than 80 tools and over 8,000 lines of source code that can be incorporated into your programs, quite easily.

Turbo Prolog Toolbox features include:

- ☑ Business graphics generation: boxes, circles, ellipses, bar charts, pie charts, scaled graphics
- ☑ Complete communications package: supports XModem protocol
- ☑ File transfers from Reflex,® dBASE III,® Lotus 1-2-3,® Symphony®
- ☑ A unique parser generator: construct your own compiler or query language
- ☑ Sophisticated user-interface design tools
- ☑ 40 example programs
- ☑ Easy-to-use screen editor: design your screen layout and I/O
- ☑ Calculated fields definition
- ☑ Over 8,000 lines of source code you can incorporate into your own programs

Suggested Retail Price: $99.95 (not copy protected)

Minimum system configuration: IBM PC, XT, AT or true compatibles. PC-DOS (MS-DOS) 2.0 or later. Requires Turbo Prolog 1.10 or higher. Dual-floppy disk drive or hard disk. 512K.

BORLAND INTERNATIONAL

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BOR 0240

TURBO BASIC®

The high-speed BASIC you've been waiting for!

You probably know us for our Turbo Pascal® and Turbo Prolog.® Well, we've done it again! We've created Turbo Basic, because BASIC doesn't have to be slow.

If BASIC taught you how to walk, Turbo Basic will teach you how to run!
With Turbo Basic, your only speed is "Full Speed Ahead"! Turbo Basic is a complete development environment with an *amazingly fast compiler,* an *interactive editor* and a *trace debugging system*. And because Turbo Basic is also compatible with BASICA, chances are that you already know how to use Turbo Basic.

Turbo Basic ends the basic confusion
There's now one standard: Turbo Basic. And because Turbo Basic is a Borland product, the price is right, the quality is there, and the power is at your fingertips. Turbo Basic is part of the fast-growing Borland family of programming languages we call the "Turbo Family." And hundreds of thousands of users are already using Borland's languages. So, welcome to a whole new generation of smart PC users!

Free spreadsheet included with source code!
Yes, we've included MicroCalc,™ our sample spreadsheet, complete with source code. So you can get started right away with a "real program." You can compile and run it "as is," or modify it.

A technical look at Turbo Basic

- ☑ Full recursion supported
- ☑ Standard IEEE floating-point format
- ☑ Floating-point support, with full 8087 coprocessor integration. Software emulation if no 8087 present
- ☑ Program size limited only by available memory (no 64K limitation)
- ☑ EGA, CGA, MCGA and VGA support
- ☑ Full integration of the compiler, editor, and executable program, with separate windows for editing, messages, tracing, and execution
- ☑ Compile and run-time errors place you in source code where error occurred
- ☑ Access to local, static and global variables
- ☑ New long integer (32-bit) data type
- ☑ Full 80-bit precision
- ☑ Pull-down menus
- ☑ Full window management

Suggested Retail Price: $99.95 (not copy protected)

Minimum system configuration: IBM PC, AT, XT, PS/2 or true compatibles. 320K. One floppy drive. PC-DOS (MS-DOS) 2.0 or later.

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BOR 0265B

TURBO BASIC®
DATABASE TOOLBOX™

With the Turbo Basic Database Toolbox you can build your own powerful, professional-quality database programs. And like all other Borland Toolboxes, it's advanced enough for professional programmers yet easy enough for beginners.

Three ready-to-use modules

The Toolbox enhances your programming with three problem-solving modules:

Turbo Access quickly locates, inserts, or deletes records in a database using B+ trees—the fastest method for finding and retrieving database information. (Source code is included.)

Turbo Sort uses the *Quicksort* method to sort data on single items or on multiple keys. Features virtual memory management for sorting large data files. (Commented source code is on disk.)

TRAINER is a demonstration program that graphically displays how B+ trees work. You can key in sample records and see a visual index of B+ trees being built.

Free sample database

Included is a free sample database with source code. Just compile it, and it's ready to go to work for you—you can use it as is or customize it. You can search the database by keywords or numbers, update records, or add and delete them, as needed.

Saves you time and money

If you're a professional programmer writing software for databases or other applications where search-and-sort capabilities are important, we can save you time and money. Instead of writing the same tedious but essential routines over and over again, you can simply include any of the Toolbox's modules in your own compiled programs.

Technical Features

- ☑ Maximum number of files open: 15 files, or 7 data sets
- ☑ Maximum file size: 32 Mb
- ☑ Maximum record size: 32K
- ☑ Maximum number of records: +2 billion
- ☑ Maximum field size: 32K
- ☑ Maximum key size: 128 bytes
- ☑ Maximum number of keys: +2 billion

Suggested Retail Price: $99.95 (not copy protected)

Minimum system requirements: For the IBM PS/2 and the IBM® and Compaq® families of personal computers and all 100% compatibles, running Turbo Basic 1.0. PC-DOS (MS-DOS®) 2.0 or later. Memory: 640K.

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BOR 0384A

TURBO BASIC® EDITOR TOOLBOX™

With Turbo Basic we gave you the fastest BASIC around. Now the Turbo Basic Editor Toolbox will help you build your own superfast editor to incorporate into your Turbo Basic programs. We provide all the editing routines. You plug in the features you want!

Two sample editors with source code

To demonstrate the tremendous power of the Toolbox, we've included two sample editors with complete source code:

FirstEd. A complete editor with windows, block commands, and memory-mapped screen routines, all ready to include in your programs.

MicroStar™: A full-blown text editor with a pull-down menu user interface and all the standard features you'd expect in any word processor. Plus features other word processors can't begin to match:

- ☑ RAM-based editor for superfast editing
- ☑ View and edit up to eight windows at a time
- ☑ Support for line, stream, and column block mode
- ☑ Instant paging, scrolling, and text display
- ☑ Up to eight hidden buffers at a time to edit, swap, and call text from
- ☑ Multitasking to let you print in the "background"
- ☑ Keyboard installation for customizing command keys
- ☑ Custom designing of colors for text, windows, menus, and status line
- ☑ Support for DOS functions like Copy file, Delete file, Change directory, and Change logged drive

Build the word processor of your choice!

We give you easy-to-install modules. Use them to build yourself a full-screen editor with pull-down menus, and make it work as fast as most word processors—without having to spend hundreds of dollars!

Source code for everything in the Toolbox is provided. Use any of its features in your own Turbo Basic programs or in programs you develop for others. You don't even have to pay royalties!

Suggested Retail Price: $99.95 (not copy protected)

Minimum system requirements: For the IBM PS/2™ and the IBM® and Compaq® families of personal computers and all 100% compatibles running Turbo Basic 1.0. PC-DOS (MS-DOS®) 2.0 or greater. Memory: 640K.

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TURBO C®

Includes free MicroCalc spreadsheet with source code

A complete interactive development environment

With Turbo C, you can expect what only Borland delivers: Quality, Speed, Power and Price. And with its compilation speed of more than 7000 lines a minute, Turbo C makes everything else look like an exercise in slow motion.

Turbo C: The C compiler for both amateurs and professionals

If you're just beginning and you've "kinda wanted to learn C," now's your chance to do it the easy way. Turbo C's got everything to get you going. If you're already programming in C, switching to Turbo C will considerably increase your productivity and help make your programs both smaller and faster.

Turbo C: a complete interactive development environment

Like Turbo Pascal® and Turbo Prolog,™ Turbo C comes with an interactive editor that will show you syntax errors right in your source code. Developing, debugging, and running a Turbo C program is a snap!

Technical Specifications

- ☑ Compiler: One-pass compiler generating native in-line code, linkable object modules and assembler. The object module format is compatible with the PC-DOS linker. Supports small, medium, compact, large, and huge memory model libraries. Can mix models with near and far pointers. Includes floating point emulator (utilizes 8087/80287 if installed).
- ☑ Interactive Editor: The system includes a powerful, interactive full-screen text editor. If the compiler detects an error, the editor automatically positions the cursor appropriately in the source code.
- ☑ Development Environment: A powerful "Make" is included so that managing Turbo C program development is easy. Borland's fast "Turbo Linker" is also included. Also includes pull-down menus and windows. Can run from the environment or generate an executable file.
- ☑ Links with relocatable object modules created using Borland's Turbo Prolog into a single program.
- ☑ ANSI C compatible.
- ☑ Start-up routine source code included.
- ☑ Both command line and integrated environment versions included.

"Sieve" benchmark (25 iterations)

	Turbo C	*Microsoft® C*	*Lattice C*
Compile time	***3.89***	*16.37*	*13.90*
Compile and link time	***9.94***	*29.06*	*27.79*
Execution time	***5.77***	*9.51*	*13.79*
Object code size	***274***	*297*	*301*
Price	***$99.95***	*$450.00*	*$500.00*

Benchmark run on a 6 Mhz IBM AT using Turbo C version 1.0 and the Turbo Linker version 1.0; Microsoft C version 4.0 and the MS overlay linker version 3.51; Lattice C version 3.1 and the MS object linker version 3.05.

Suggested Retail Price: $99.95* (not copy protected) *Introductory offer good through July 1, 1987.

Minimum system configuration: IBM PC, XT, AT and true compatibles. PC-DOS (MS-DOS) 2.0 or later. One floppy drive. 320K.

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BOR 0243

EUREKA: THE SOLVER™

The solution to your most complex equations—in seconds!

If you're a scientist, engineer, financial analyst, student, teacher, or any other professional working with equations, Eureka: The Solver can do your Algebra, Trigonometry and Calculus problems in a snap.

Eureka also handles maximization and minimization problems, plots functions, generates reports, and saves an incredible amount of time. Even if you're not a computer specialist, Eureka can help you solve your real-world mathematical problems fast, without having to learn numerical approximation techniques. Using Borland's famous pull-down menu design and context-sensitive help screens, Eureka is easy to learn and easy to use—as simple as a hand-held calculator.

X + exp(X) = 10 solved instantly instead of eventually!

Imagine you have to "solve for X," where X + exp(X) = 10, and you don't have Eureka: The Solver. What you do have is a problem, because it's going to take a lot of time guessing at "X." With Eureka, there's no guessing, no dancing in the dark—you get the right answer, right now. (PS: X = 2.0705799, and Eureka solved that one in .4 of a second!)

How to use Eureka: The Solver

It's easy.

1. Enter your equation into the full-screen editor
2. Select the "Solve" command
3. Look at the answer
4. You're done

You can then tell Eureka to

- Evaluate your solution
- Plot a graph
- Generate a report, then send the output to your printer, disk file or screen
- Or all of the above

Some of Eureka's key features

You can key in:

- ☑ A formula or formulas
- ☑ A series of equations—and solve for all variables
- ☑ Constraints (like X has to be < or = 2)
- ☑ A function to plot
- ☑ Unit conversions
- ☑ Maximization and minimization problems
- ☑ Interest Rate/Present Value calculations
- ☑ Variables we call "What happens?," like "What happens if I change this variable to 21 and that variable to 27?"

Eureka: The Solver includes

- ☑ A full-screen editor
- ☑ Pull-down menus
- ☑ Context-sensitive Help
- ☑ On-screen calculator
- ☑ Automatic 8087 math co-processor chip support
- ☑ Powerful financial functions
- ☑ Built-in and user-defined math and financial functions
- ☑ Ability to generate reports complete with plots and lists
- ☑ Polynomial finder
- ☑ Inequality solutions

Minimum system configuration: IBM PC, AT, XT, PS/2, Portable, 3270 and true compatibles. PC-DOS (MS-DOS) 2.0 and later. 384K.

Suggested Retail Price: $167.00 (not copy protected)

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SIDEKICK®: THE DESKTOP ORGANIZER Release 2.0

Macintosh™

The most complete and comprehensive collection of desk accessories available for your Macintosh!

Thousands of users already know that SideKick is the best collection of desk accessories available for the Macintosh. With our new Release 2.0, the best just got better.

We've just added two powerful high-performance tools to SideKick—Outlook™: The Outliner and MacPlan™: The Spreadsheet. They work in perfect harmony with each other and *while* you run other programs!

Outlook: The Outliner

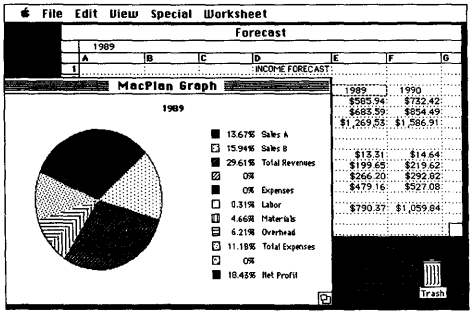
- It's the desk accessory with more power than a stand-alone outliner
- A great desktop publishing tool, Outlook lets you incorporate both text and graphics into your outlines
- Works hand-in-hand with MacPlan
- Allows you to work on several outlines at the same time

MacPlan: The Spreadsheet

- Integrates spreadsheets and graphs
- Does both formulas and straight numbers
- Graph types include bar charts, stacked bar charts, pie charts and line graphs
- Includes 12 example templates free!
- Pastes graphics and data right into Outlook creating professional memos and reports, complete with headers and footers.

SideKick: The Desktop Organizer, Release 2.0 now includes

- ☑ Outlook: The Outliner
- ☑ MacPlan: The Spreadsheet
- ☑ Mini word processor
- ☑ Calendar
- ☑ PhoneLog
- ☑ Analog clock
- ☑ Alarm system
- ☑ Calculator
- ☑ Report generator
- ☑ Telecommunications (new version now supports XModem file transfer protocol)



MacPlan does both spreadsheets and business graphs. Paste them into your Outlook files and generate professional reports.

Suggested Retail Price: $99.95 (not copy protected)

Minimum system configurations: Macintosh 512K or Macintosh Plus with one disk drive. One 800K or two 400K drives are recommended. With one 400K drive, a limited number of desk accessories will be installable per disk.

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BOR 0069D

REFLEX® PLUS: THE DATABASE MANAGER

Macintosh™

All the Power & Flexibility of a Relational Database Made Easy! Reflex Plus: The Database Manager is the first relational database that's easy to learn, powerful, and aimed at your needs. Reflex Plus is not a mere file organizer, nor is it a monstrously complicated behemoth aimed solely at consultants. Reflex Plus is the only relational database aimed at your needs and time constraints.

Reflex Plus accomplishes this by taking full advantage of the Macintosh's superior graphic ability while still giving users what they want: unlimited flexibility in creating databases, accessing data, and producing reports.

What puts the plus into Reflex Plus?

Borland listens to its customers and has added the most-asked-for features and improvements to Reflex Plus.

High-powered features of Reflex Plus:

- ☑ Multiple entry forms for the same database.
- ☑ Entry for more than one database in a single entry form.
- ☑ Your choice of having an entry form that shows one record at a time, or one that shows all the records at once.
- ☑ Calculated fields in entry forms.
- ☑ Display-only fields.
- ☑ Default (but editable) fields.
- ☑ New functions like GROUPBY, which lets you easily show records grouped by values in common.
- ☑ A selection of useful templates.
- ☑ Larger record size. (You can now choose record sizes of 1000, 2000, or 4000 characters.)

Check out these Reflex Plus features:

- ☑ Visual database design.
- ☑ A "what you see is what you get" design capability both for entry forms and reports.
- ☑ Compatible with all Macintoshes with at least 512K, including the SE™, and Macintosh II.™

The heart of Reflex Plus is in its special functions with which you create formulas. With over 50 function words to choose from, you are given all the power of programming without struggling with complex syntax. Reflex Plus functions are straightforward and can handle all types of data.

Armed with these functions, you create formulas that sort, search, calculate, quantify, qualify—you name it. And if you don't feel up to writing the formula yourself, Reflex Plus will do it for you. Using the FormulaBuild dialog box, you can master even the most complicated formula.

Display grouped data. Reflex Plus gives you unlimited flexibility when you want to display your data grouped in meaningful ways.

Flexible entry forms. Most databases have a data entry form, and that's that. Reflex Plus lets you design your own (but if you don't want to bother, Reflex Plus will make one for you). Here are just some of the options available in your entry forms:

- ☑ View all records at once.
- ☑ View one record at a time.
- ☑ Enter data into many databases at once.
- ☑ Use calculated fields.
- ☑ Default values in fields, display-only values, and lots more.

Convenience and Ease

- ☑ ***Preset entry forms.*** Let Reflex Plus create an entry form for you.
- ☑ ***Preset reports.*** Let Reflex Plus create a table-style report for you.
- ☑ ***Paste Formula command.*** Let Reflex Plus guide you through the steps of creating formulas for power searching and data manipulation.
- ☑ ***On-line help facility.*** Reflex Plus has an extensive on-screen, context-sensitive help feature.
- ☑ ***Paste Choice command.*** This command lets you paste in fields that duplicate all the attributes of another field. A great time saver. The command also lets you build formulas by pointing and clicking.
- ☑ ***Auto-save.*** You'll never lose data again with Reflex Plus's auto-save feature.

Database specifications: Maximum single field length: 4072 bytes. Maximum fields per record: 254. Maximum record length: 4080 bytes. Maximum records per file: limited only by disk capacity. Maximum number of linked database files: 200. Maximum number of open windows: 15. Maximum number of files that can be used by a report: no limit.

Suggested Retail Price: $279.00 (not copy protected)

Minimum system requirements: Runs on any Macintosh with at least 512K memory. Minimum setup is one 800K (double-sided) disk drive or two 400K (single-sided) drives. Works with the Hierarchical File System, Switcher, and most hard disks. Supports printing on the ImageWriter and the LaserWriter.

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TURBO PASCAL® MACINTOSH™

The ultimate Pascal development environment

Borland's new Turbo Pascal for the Mac is so incredibly fast that it can compile 1,420 lines of source code in the 7.1 seconds it took you to read this!

And reading the rest of this takes about *5 minutes*, which is plenty of time for Turbo Pascal for the Mac to compile at least *60,000 more lines* of source code!

Turbo Pascal for the Mac does both Windows and "Units"

The *separate* compilation of routines offered by Turbo Pascal for the Mac creates modules called "Units," which can be linked to any Turbo Pascal program. This "modular pathway" gives you "pieces" which can then be integrated into larger programs. You get a more efficient use of memory and a reduction in the time it takes to develop large programs.

Turbo Pascal for the Mac is so compatible with Lisa® that they should be living together

Routines from Macintosh Programmer's Workshop Pascal and Inside Macintosh can be compiled and run with only the subtlest changes. Turbo Pascal for the Mac is also compatible with the Hierarchical File System of the Macintosh.

The 27-second Guide to Turbo Pascal for the Mac

- Compilation speed of more than 12,000 lines per minute
- "Unit" structure lets you create programs in modular form
- Multiple editing windows—up to 8 at once
- Compilation options include compiling to disk or memory, or compile and run
- No need to switch between programs to compile or run a program
- Streamlined development and debugging
- Compatibility with Macintosh Programmer's Workshop Pascal (with minimal changes)
- Compatibility with Hierarchical File System of your Mac
- Ability to define default volume and folder names used in compiler directives
- Search and change features in the editor speed up and simplify alteration of routines
- Ability to use all available Macintosh memory without limit
- "Units" included to call all the routines provided by Macintosh Toolbox

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TURBO PASCAL® TUTOR

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Turbo Pascal for the Absolute Novice
delivers the basics—a concise history of Pascal, key terminology, your first program.

A Programmer's Guide to Turbo Pascal
covers Pascal specifics—program structure, procedures and functions, arrays, strings, and so on. We've also included Turbo Typist, a textbook sample program.

Advanced Programming
takes you a step higher into stacks, queues, binary trees, linked structures, writing large programs, and more.

Using the Power of the Macintosh
discusses the revolutionary hardware and software features of this machine. It introduces the 600-plus utility routines in the Apple Toolbox.

Programming the Macintosh in Turbo Pascal
shows you how to create true Macintosh programs that use graphics, pull-down menus, dialog boxes, and so on. Finally, MacTypist, a complete stand-alone application featuring animated graphics, builds on Turbo Typist and demonstrates what you can do with all the knowledge you've just acquired.

The disk contains the source code for all the sample programs, including Turbo Typist, MacTypist, and Turbo Tutor. The Tutor's split screen lets you run a procedure and view its source code simultaneously. After running it, you can take a test on the procedure. If you're stuck for an answer, a Hint option steers you in the right direction.

Macintosh topics included are

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- ☑ menus
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- ☑ File Manager
- ☑ debugging

Suggested Retail Price: $69.95

Minimum system requirements: Any Macintosh with at least 512K of RAM. Requires Turbo Pascal.

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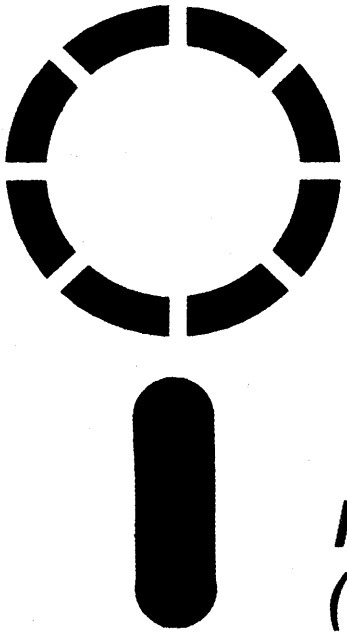

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