



Apple II

Apple PILOT

Editors Manual



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(408) 996-1010

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The Apple PILOT Lesson Text Editor incorporates portions of the UCSD Pascal™ Editor. UCSD Pascal was developed largely by the Institute for Information Science at the University of California at San Diego, under the direction of Kenneth L. Bowles.

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PILOT stands for Programmed Inquiry, Learning or Teaching. The original PILOT was developed in 1968 by Dr. John A. Starkweather and associates at the University of California, San Francisco.

The Apple PILOT programming language is based on a version of the PILOT programming language called COMMON PILOT developed by George Gerhold and Larry Kheriaty at Western Washington University. We thank them for their permission to use material from their Common PILOT Language Reference Manual in this document.

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PREFACE

Apple PILOT is designed to help you write teaching programs using the Apple PILOT programming language. These programs may involve asking students questions, analyzing answers, showing pictures and playing music. These capabilities are demonstrated in a sample PILOT lesson that comes with Apple PILOT. PILOT, in its simplest form, can be used by people with little programming experience. Apple's expanded version of PILOT is powerful enough to produce exciting and worthwhile lessons.

Four editors help you write lessons in the Apple PILOT programming language. The Lesson Text Editor is the main tool you use to write lessons. In this editor you can insert, delete, copy, and move instructions or text at will. The Character Set Editor lets you create new characters or pictures which appear when you press a key on the Apple keyboard. The new characters can be used to display text in completely different alphabets, such as Russian or Arabic. The Graphics Editor helps you draw colored pictures, graphs, and charts which you can incorporate in your lessons. With the Sound Effects Editor, you can create musical compositions and sound effects to use in your lessons.

Two manuals accompany your Apple PILOT System: the Apple PILOT Editors Manual which explains how to use the four Apple PILOT Editors, and the Apple PILOT Language Reference Manual which provides a detailed reference of the Apple PILOT language. These two manuals are designed for a person who is already familiar with the PILOT programming language but not necessarily familiar with the Apple II computer or the four editors. You are now reading the Editors manual.

The following is a summary of the contents of each of the two manuals which explain the Apple PILOT System:

Editors Manual

Overview of the System
Start Up and Maintenance
Common Editor Features
The Lesson Text Editor
The Graphics Editor
The Character Set Editor
The Sound Effects Editor
Appendices

Language Reference Manual

Overview of the Language
Text Instructions
Response Instructions
Control Instructions
Computation Instructions
Special Effects Instructions
File-Handling Instructions
Execution-Time Commands
Hints for Beginners
Advanced Programming
Appendices

To learn about the Apple PILOT System, we recommend that you begin by reading chapters 1-4 of this manual FIRST. These chapters cover the introduction to the Apple PILOT System, the introduction to the four editors, and a detailed chapter on the Lesson Text Editor. You will use the Lesson Text Editor to write lessons in the PILOT language. Once you understand the Lesson Text Editor, you can either continue in

this manual learning about the three Special Editors or spend time examining the Apple PILOT Language Reference Manual and come back to learn about the Special Editors later.

Chapter 1 begins by describing the requirements for setting up your computer system to run Apple PILOT. Following that, you will learn how to run a demonstration PILOT lesson which shows some of the capabilities of Apple PILOT. The remainder of Chapter 1 gives an overview of the entire Apple PILOT System. It explains the general method of using the programming language and the Special Editors to create lessons in Apple PILOT.

Chapters 2 and 3 discuss common features of the PILOT Editors.

Chapters 4-7 explain the four Apple PILOT Editors in detail. These chapters give complete information on how to use the Lesson Text Editor to write a lesson, and how to create various special effects for use in your lessons.

There are three appendices for this manual. The first contains the printed text of two demonstration programs, the printed notes from a Sound Effects file, and explanations of two sample Character Set files. The second explains error messages you might see on your display screen if you made a mistake in one of the Special Editors, and the third provides a quick reference summary to the four editors.

Sometimes you'll see the symbol



preceding a paragraph. This symbol indicates points about which you need to be cautious.

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SETTING UP YOUR SYSTEM

When you opened the package containing this manual, you should also have found the following items:

- * Two copies of the AUTHOR diskette. (Set one aside in a safe place. We will call this a back up copy.)
- * One Lesson diskette containing demonstration programs. This is labelled "LESSON" and referred to as the LESSON diskette throughout this manual.

These diskettes contain all the programs necessary for the Apple PILOT System. Before using these diskettes, however, you must first make sure your Apple computer and its accessories are properly set up for use with Apple PILOT. Thus, in addition to the contents of your Apple PILOT package, you should have the following:

- * An Apple II or Apple II Plus computer with at least 48K bytes of memory.
- * Two Apple Disk II disk drives for Author Mode or one Apple Disk II disk drive for Lesson Mode, set up to use either the Language System or DOS 3.3.
- * A TV or a monitor. Color allows you to take advantage of PILOT color graphics, but black and white will work satisfactorily.

The manuals which accompany your Apple computer, the disk drives, and DOS 3.3 or the Apple Language System explain how to set up your computer system and connect all the parts.

Before using PILOT, you need to understand how to use and care for your disk drives and diskettes. This information is found in your DOS Manual in the section called Care of the Disk II and Diskettes. This manual assumes you are familiar with the Apple's power switch, keyboard, and disk drives.

The instructions in this manual are written as if the Apple you are using is equipped in the following manner:

- * It has an Autostart ROM. This means that when you start up your Apple by turning on the power switch, with the AUTHOR diskette in drive 1 and a Lesson diskette in drive 2, you see the Apple PILOT Main Menu appear on the screen.
- * Pressing the RESET key has the effect of turning your system off and then on again.

If you do not have an Autostart ROM, consult the DOS Manual under "booting" for an explanation of how to boot Apple PILOT. Some Apple keyboards are equipped with a switch which lets you change the normal RESET command to CTRL-RESET (issued by pressing the RESET key while holding down the CTRL key). For the sake of simplicity, the

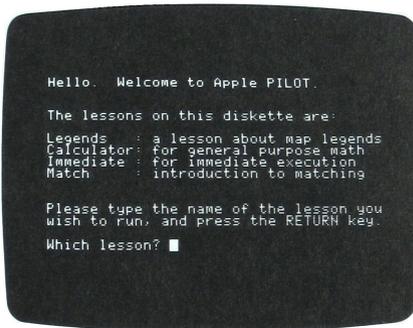
descriptions in this manual assume such keyboards are set to "normal", RESET-only operation.

DEMONSTRATION LESSONS

A PILOT "lesson" is a program written by an author in the PILOT language that serves as a lesson to a student who "runs" that program. PILOT lessons are stored on Lesson diskettes. To give you a sample of what PILOT lessons can do, you are encouraged to assume the role of the student in running a sample lesson.

Get the diskette labelled LESSON from its package and insert it in drive 1 with the label facing up and the oval cutout toward the back of the disk drive, as described in the DOS manual. Then shut the disk drive door. It is a good idea to get into the habit of putting diskettes that are not being used in their paper envelope holders.

Start up your Apple by turning on its power switch. The disk drives will whirr for a moment, as the Apple reads in the information from the LESSON diskette. You should now see the following:



This serves as a table of contents to the lessons on the LESSON diskette. There are four demonstration lessons. The first, LEGENDS, demonstrates the wide variety of Apple PILOT's capabilities. We suggest you try running LEGENDS first. To do so, type LEGENDS and press the RETURN key. The lesson will start running immediately. Try some wrong responses and some tricky ones too. The LEGENDS lesson appears printed on paper in the appendix on Demonstration Programs.

The other demonstration lessons are useful for those already familiar with Common PILOT or Apple PILOT. CALCULATOR uses PILOT's mathematical capabilities to provide you with a simulated calculator. IMMEDIATE executes immediately any single PILOT instruction that you type. MATCH lets you specify a Match instruction and then tells you whether or not subsequent typed responses are matched by that instruction.

USING THE SYSTEM

There are two ways or modes of using the Apple PILOT System: Author Mode and Lesson Mode. Author Mode allows you to use the Lesson Text Editor and the Special Editors to write new lessons in the Apple PILOT programming language. You also test your lesson in Author Mode to see how it will look to the student and to see if you have made any mistakes. Author Mode requires two Apple II disk drives. A student will use Lesson Mode to run previously written lessons programmed in Apple PILOT. The student uses Lesson Mode to learn from any available lesson. Lesson Mode requires one Apple II disk drive.

The rest of this chapter gives you an overview of Author Mode, Lesson Mode, and overall PILOT lesson planning. The three diagrams that are included offer a schematic representation of how to use the Apple PILOT System. A careful study of these diagrams should provide a fuller understanding of how the parts of the system interact as a whole. Later chapters will discuss these components, especially the use of Author Mode, in much greater depth.

AUTHOR MODE

You received three diskettes with your Apple PILOT System, two labelled AUTHOR (these are identical: one is to be used as a back-up copy), the other labelled LESSON. Put one of the AUTHOR diskettes aside in a safe place. To begin a lesson-writing session in Author Mode, place either one of the AUTHOR diskettes in drive 1 and the LESSON diskette in drive 2. Then start up your system by turning on the Apple's power switch. Soon a display called the Main Menu appears on your TV or monitor screen. The Main Menu shows you the main choices that PILOT offers you in the same way a restaurant menu shows you the dishes from which you may choose. The following photograph shows the PILOT Main Menu.



THE MAIN MENU

The Main Menu offers you six options to choose from as listed below.

<u>Main Menu Option</u>	<u>What You Do</u>
Lesson Text Editor	Write a lesson.
Character Set Editor	Design alternate keyboard symbols.
Graphics Editor	Make your own picture.
Sound Effects Editor	Make your own music.
Initialize a diskette	Prepare a diskette for storing lessons.
Duplicate a lesson diskette	Make copies of lessons and files.

On the Main Menu display opposite each of these options is a letter. To choose an option, press the letter on the Apple's keyboard corresponding to your choice, and then press the RETURN key.

WRITING A LESSON

A lesson is a collection of PILOT instructions written in the Lesson Text Editor. Lessons may use pictures, sound effects, and alternate character sets created by three Special Editors. Products of all four editors are stored on diskettes in "files". A file is a collection of information that is given a name and treated as a single unit. In this manual, files written in the Lesson Text Editor are usually called lessons. The four editors you, as the author, use to write PILOT lessons are described below.

* The Lesson Text Editor lets you type a sequence of instructions in the Apple PILOT programming language in order to create the main body of a lesson. This lesson is then stored on a Lesson diskette for use by the student. Later, when a student runs the lesson in Lesson Mode, the instructions in the lesson will tell the computer when to display text on the screen, when to accept responses from the student, and how to handle those responses.

* The Graphics Editor lets you draw a picture, graph, chart or other graphic image. This picture is then stored on a Lesson diskette in one of two forms: a standard form that can re-draw the picture step by step on the screen, or the "Quick-Draw" form that can bring the finished picture onto the screen all at once. When a student runs a lesson in Lesson Mode, special instructions in the lesson can display your stored graphics image.

* The Sound Effects Editor lets you create a short musical composition or sound effect and store it on a Lesson diskette. Later, when a student runs a lesson in Lesson Mode, special instructions in the lesson can play your stored sound effect.

* The Character Set Editor lets you create a new set of characters or pictures corresponding to the keys on the Apple keyboard. This new character set is then stored on the Lesson diskette. When a student runs a lesson in Lesson Mode, special instructions in the lesson can retrieve your character set to display text in different alphabets, drawings, or symbols using pictures designed with this editor.

When you select one of the editors from the Main Menu, you will see the menu for the editor you have chosen on your TV or monitor screen. This editor menu is similar to a title page and table of contents. It tells you which editor you are in, and lists those files on the current Lesson diskette that were created using that editor. Just as you use a table of contents to find which chapter you want in a book, you can use the list of files on the editor screen to specify a lesson or special effect on which you want to do further work. In addition to the list of existing files, each editor offers you several options for creating new files and using existing files. It also provides information about the amount of space available on a Lesson diskette and the space in each file for writing lessons.

When you are finished writing a new lesson, make copies for your students by using the Main Menu option, "Duplicate a lesson diskette".

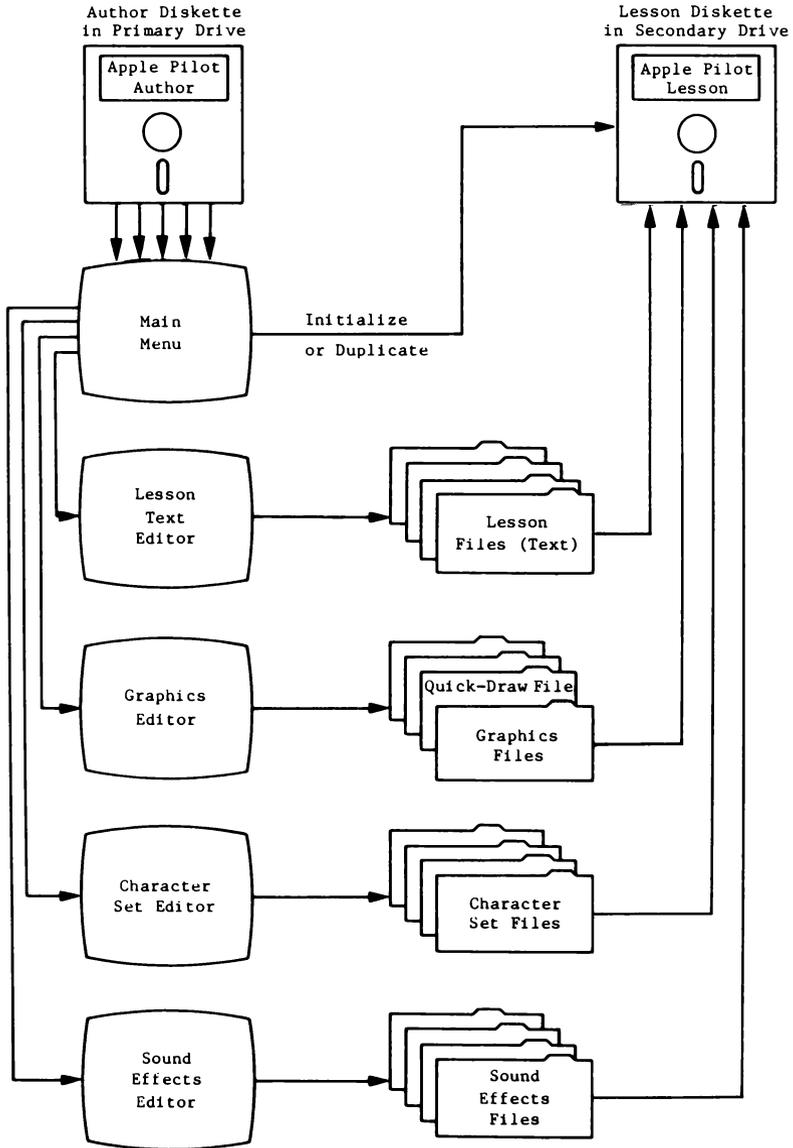
TESTING A LESSON

While you are developing your lessons, you will want to test them to see that they are programmed correctly and that the pieces all fit together the way you had planned. The Lesson Text Editor lets you run your lesson to see what it will look like in Lesson Mode. It also requires that you interact with the lesson the way a student would, and gives you error messages if you have made any mistakes in writing your lesson. Testing your lessons is explained fully in the chapter on the Lesson Text Editor.

DIAGRAM OF AUTHOR MODE

The following diagram shows how Author Mode works. The Main Menu lets the author use various editors to create different kinds of files. The files are combined into a PILOT lesson which is stored on a Lesson diskette.

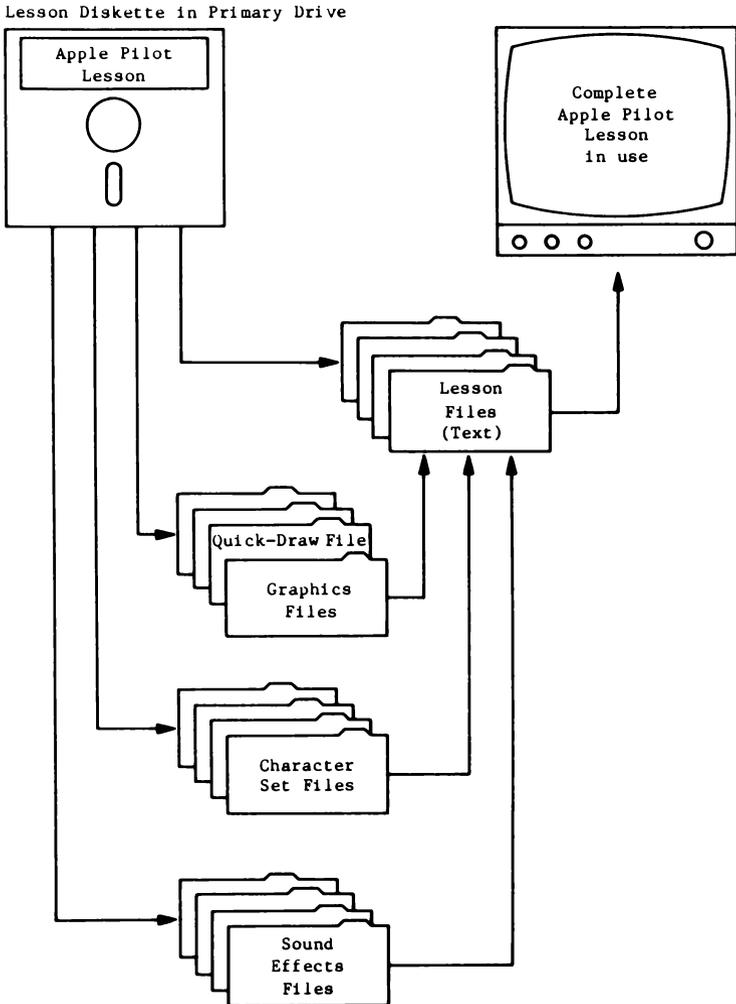
AUTHOR MODE: CREATING AN APPLE PILOT LESSON



LESSON MODE

Lesson Mode allows students to use lessons. When you have provided your students with a duplicate Lesson diskette, they are ready to run the Apple PILOT System in Lesson Mode. To run the lesson, the student places a Lesson diskette in drive 1 (the primary drive if there is more than one), closes the door on the disk drive and turns on the power. Lesson Mode may utilize multiple disk drives and multiple Lesson diskettes. The following diagram illustrates using a PILOT lesson.

DIAGRAM OF LESSON MODE



THE HELLO PROGRAM

A Lesson diskette may include more than one lesson. Apple PILOT lets a student select in two ways which lesson to run:

1. If the Lesson diskette contains a program named HELLO, the HELLO program runs automatically each time the system is started up with the Lesson diskette in drive 1 (Lesson Mode). If you try the LEGENDS demonstration lesson, you see a display on your screen offering you several choices of different lessons to run. These choices are presented by the HELLO program, which serves as a table of contents, for the lessons on the diskette. The HELLO program is listed on the Lesson Text Editor menu. To create your own table of contents for your Lesson diskette, type L from the Main Menu and you see HELLO listed as one of the files on the Lesson Text Editor menu. Now type E for Edit and then HELLO. Insert the names of lessons you are offering to the student; delete the names of those lessons not offered. This HELLO program is automatically placed on any newly initialized diskette. It can be removed by the Delete option in the Lesson Text Editor and replaced using the New option to create a file named HELLO.
2. If the HELLO program has been deleted from the Lesson diskette, when the student starts the system in Lesson Mode, this message appears.

LESSON:

The student responds by typing the name of a lesson on that Lesson diskette and pressing the RETURN key. Then that lesson will begin to run. Without a HELLO program, the teacher must previously have supplied the appropriate lesson name to the student.

STUDENT OPTIONS

During the course of a normal PILOT lesson, the student is often asked questions about the material in the lesson. The PILOT lesson then compares these answers to various responses, which the author anticipated, and proceeds accordingly.

If it seems desirable, the author can also construct a lesson that lets students jump to different parts of the lesson or stop a lesson. These student options can be very helpful to the author in testing lessons. They allow you to skip parts of a lesson that you have already tested and go directly to untested portions. These student options are discussed further in the chapter on the Lesson Text Editor under Testing Your Lessons and in the Apple PILOT Language Reference Manual under the PROblem instruction in the chapter on Response Instructions.

PLANNING A PILOT LESSON

Each PILOT lesson you write represents a major investment of your time and energy. Over time, you may build up a library of PILOT programs just as a library accumulates a collection of books. You will want to

take the same care in writing your lessons as you would in writing a book or an article. This means setting aside time for lesson planning and evaluation.

In the diagram below, showing the complete process of developing a PILOT program, there is a column labelled "Lesson Planning". This phase of writing a PILOT program is every bit as important as using the various editors. When you have formulated a lesson idea, make an outline of the lesson. Break that outline into several major topics, each of which will become a separate lesson segment.

Next, make a detailed outline of one of the major topics, including where you plan to use sound, graphics, or character sets. If possible, show this outline to selected colleagues and students. The more feedback you get and the sooner you get it, the more successful your lesson will be.

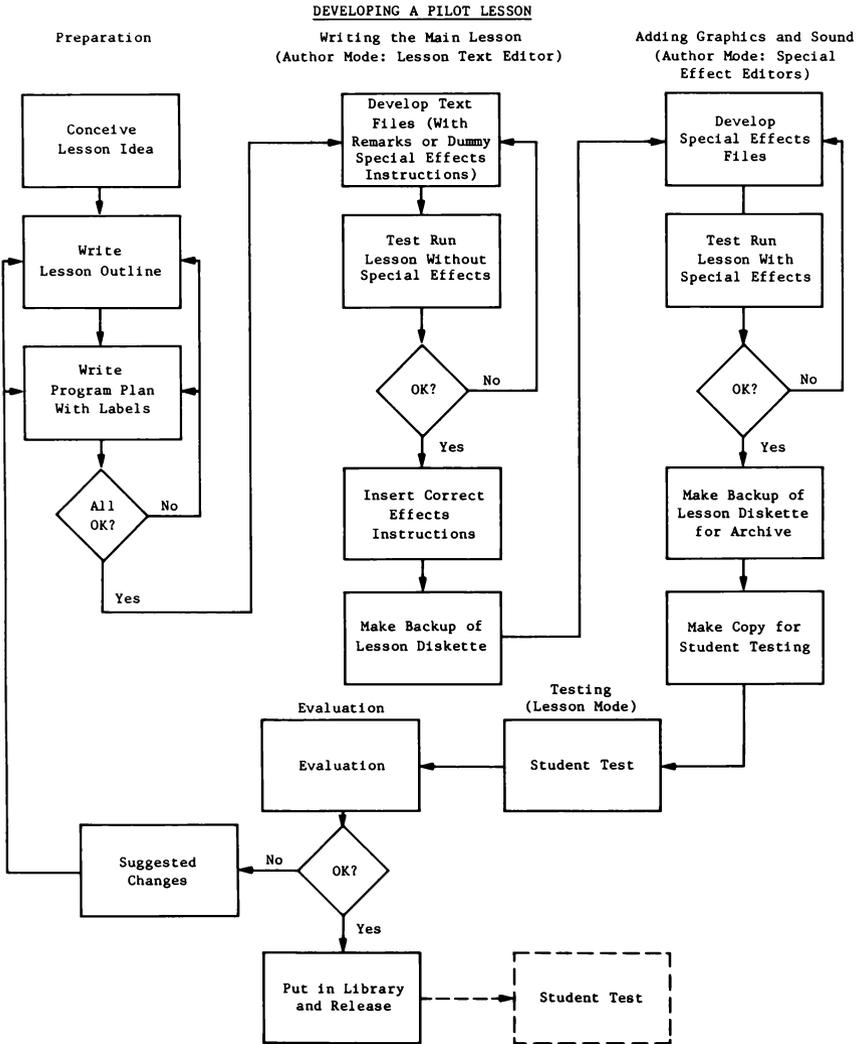
Once you are satisfied with your outline, make it into a PILOT lesson plan by assigning labels (names) to sections. Labels are a part of the PILOT language marking different sections of a lesson. Choose labels for the outline that help describe the section. You'll probably be able to use many of these labels in your PILOT lesson. It is useful, both for organizational and testing purposes, to have labels selected before you begin work on your lesson. Labels are fully discussed in the chapter on Control Instructions as well as in the Apple PILOT Language Reference Manual in the chapter on the Overview of the Apple PILOT language.

When you are satisfied with your lesson plan, you are ready to use Author Mode to begin writing your PILOT lesson. At this point you may either work on your special sound, graphics or character set files first, or you may start writing the program in the Lesson Text Editor. The diagram on the next page is drawn as if you had chosen to write your program first, before you have any actual special effects to call into your lesson. If this is the case, you can simply mark the section in your program that will have these effects (see Remark statements in the chapter on Standard Instructions in the Apple PILOT Language Reference Manual) or you can make short "dummy" files that contain a few reminders of your finished special editor file, but are not complete graphics, sound effects or character sets.

When you have completed your lesson and corrected any errors, have colleagues and students evaluate it for direct feedback. The PILOT language has an "answer counter" that can tell you how many times a student has attempted to answer any particular question. This can be helpful in analyzing how successfully your lesson teaches certain material, and in eliminating ambiguous or confusing test questions. The answer counter is discussed in the chapters on Computation Instructions and Hints for Beginners in the Apple PILOT Language Reference Manual.

Notice that eliciting feedback is included as an integral part of the lesson writing process at each stage. It is much easier, both psychologically and physically, to incorporate changes from feedback as you go along rather than trying to change a finished product.

LESSON DEVELOPMENT DIAGRAM



CHAPTER 2

START UP AND MAINTENANCE

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- 15 INITIALIZING A DISKETTE
- 17 DUPLICATING A LESSON DISKETTE
- 19 Duplication Difficulties
- 20 DISKETTE FILE LENGTHS

Chapter 1 and the demonstration lesson provided an overview of Apple PILOT's capabilities. This chapter gives you details of starting up and maintaining the PILOT system.

USING THE MAIN MENU

Place the AUTHOR diskette in drive 1 and the LESSON diskette in drive 2, and shut the disk drive doors. Now start up the system: with the two PILOT diskettes placed in their proper drives, turn on the Apple's power switch. If your system is already on, simply press the Apple's RESET key to restart the system.

After a few moments, your Apple reads in all the information needed for Apple PILOT's Author Mode. Then you see the Main Menu appear on the screen. The Main Menu, shown below, displays the names of the four editors, as well as other choices which PILOT offers you.



The Main Menu provides the organizational backbone of Apple PILOT. You gain access to each Editor of the Apple PILOT System through the Main Menu.

Below the list of choices is an arrow and a white box called the "cursor", followed by this message:

Type option letter and press RETURN.
Press CTRL-C to return to this menu.

This message is called a prompt line. A prompt line is any message on the screen which asks you to type information or reminds you how to proceed with the task at hand. The cursor is a white box which indicates where the next character you type will appear. Sometimes it is blinking to make it easier for you to find it in the text.

To indicate your menu choice, press the letter on the Apple keyboard which corresponds to the Main Menu choice you want to make, and then press the RETURN key.

In this prompt line as well as throughout the Apple PILOT System, you see the letters CTRL-C. CTRL stands for the word ConTRoL. The CTRL key is at the left side of the Apple keyboard. If you hold down the CTRL key and then press another key at the same time, the computer responds by performing certain actions. To type CTRL-C, press C while holding down the CTRL key. Notice that no character appears on the screen; instead, the Main Menu is redisplayed.



The RESET key is located at the upper right corner of the Apple keyboard. Pressing this key is equivalent to turning the power off and on again. If you press the RESET key while writing a lesson or creating a special effects file, the file will be lost and any work you have not already saved during your current editing session will be lost.

INITIALIZING A DISKETTE

The Apple PILOT System cannot store information on a new, blank diskette fresh from the manufacturer. Therefore, the Main Menu offers an option that allows you to "initialize" any high-quality 5 1/4-inch floppy diskette so that it can be used as a Lesson diskette with the Apple PILOT System. You can also initialize old 5 1/4-inch diskettes formerly used by Apple PILOT or other languages. However, initializing a "used" diskette will erase any previous contents to get the diskette ready for storing new information.

Initializing a new Lesson diskette is a two-step process:

1. "Formatting" prepares the diskette so PILOT can store lessons and other information on the diskette. Formatting the diskette, divides it into 280 information storage units called "blocks", and creates a special startup program and a directory to the blocks on the diskette.
2. The second initializing step gives the newly formatted diskette a name, and then transfers to that diskette a HELLO lesson and those portions of the Apple PILOT System needed to operate in Lesson Mode.

The LESSON diskette you received as part of the Apple PILOT package has already been initialized and is ready for immediate use.

If you try to initialize a diskette that already contains Apple PILOT lessons or other data, the initialization process will permanently destroy that existing information by erasing it. That is why there is a warning when you begin the initialization process.

To "Initialize a diskette", type I from the Main Menu. This produces the warning and prompt:

```
**DANGER DANGER WARNING WARNING**
YOU ARE ABOUT TO DESTROY A DISKETTE!
INSERT DISKETTE TO BE FORMATTED IN
SECONDARY DRIVE, THEN TYPE
FORMAT TO FORMAT THE DISKETTE,
OR PRESS CTRL-C TO RETURN TO MAIN MENU
==>
```

Before doing anything else, remove the diskette in drive 2, and insert the diskette you want to initialize in that drive. Now type FORMAT, and press the RETURN key. The ==> symbol points to the place where the next typed character will appear.

If you insert a blank diskette, you will see the message:

```
NOW FORMATTING DISKETTE
```

If the diskette is not blank, but is a PILOT or Pascal diskette named CHAP7:, for example, you will see this message:

```
**WARNING**
THIS DISKETTE IS NOT NAMED BLANK:
DESTROY DIRECTORY OF CHAP7: ?
```

Type Y and the formatting process begins. When the formatting is completed, you are prompted:

```
ENTER NAME OF DISKETTE, OR
JUST PRESS RETURN TO GIVE IT
THE NAME LESSONS.
```

```
==>
```

If you press the RETURN key, your diskette will be named LESSONS. If you want to give it a different name, type a name of up to seven characters. The name can include any character except dollar sign, colon, equals sign, left and right brackets, space, asterisk, pound sign (#), semicolon, and comma. Then press the RETURN key. All diskette names are followed by a colon which serves to separate the diskette name from the file name. For example, if you see MATH:SUBTRACT, you know that the name of the diskette is MATH: and the name of the file is SUBTRACT.

While the Lesson Mode portions of the Apple PILOT System, including the HELLO lesson, are transferred from the AUTHOR diskette in drive 1 to the newly formatted Lesson diskette in drive 2, you see the message:

```
INITIALIZING...
```

The next prompt lets you know the initialization process is complete:

PUT BACK ORIGINAL DISKETTES
THEN PRESS RETURN

This returns you to the Main Menu. The newly initialized diskette may now be used as a Lesson diskette.

It is a good idea to give each diskette a different name and write that name on the diskette's label. (Write lightly using a felt-tip pen to avoid causing damage to the diskette.) This is especially important if you want to use more than one disk drive in Lesson Mode. For details, see the Apple PILOT Language Reference Manual appendix on Using More Disk Drives.

A diskette is "write-protected" when the computer cannot write information on it. You can identify a write-protected diskette because it does not have a notch or cutout on the left side of the diskette's outer case, or the notch is covered with a small gummed sticker called a write-protect sticker.

If you try to initialize a diskette which is write-protected or there is some problem with the diskette itself or with the disk drive, you will get this message:

```
ERROR:  UNABLE TO FORMAT
        DISKETTE WRITE PROTECTED,
        BAD MEDIA, OR BAD DRIVE.
```

Check to make sure your diskette has been inserted properly and that there is nothing obstructing the cutout. If these are not the problems, try to initialize a different diskette. If you continue to have problems, your dealer may need to take a look at your Apple and disk drives.

DUPLICATING A LESSON DISKETTE

The last choice on the Main Menu is "Duplicate a lesson diskette". There are two reasons for duplicating diskettes: to protect your programs by keeping back-up copies of them, and to provide copies of finished programs for students' use.

This option lets you copy the contents of one lesson diskette onto a different initialized lesson diskette. This does not erase the contents of the original diskette; it simply creates a second diskette with the same contents as the original.

If you supply a diskette to become the duplicate copy, and that diskette does not start out as a blank but already contains some previously stored information, you have the option of keeping that old information or erasing it during the duplicating process.

The diskettes you use to store your lessons are similar to your stereo records; for the most part they are sturdy and reliable. Nevertheless, it is possible to lose or destroy all the information on a diskette. Diskettes can be damaged by heat, dirt, floods, earthquakes and other natural and unnatural disasters. And a diskette will eventually wear out: a lifetime of 40 spinning hours is about average.

It is important to keep a back-up copy of every diskette you use. There is nothing more discouraging than spending hours, even weeks, creating a program, only to lose all your work by accident! Also remember to label and date the back-up copies as carefully as you do the originals.

A truly cautious person will keep on hand two back-up copies of each original. That way you will need to use an original only in the very rare case when both of its back-up copies are lost. If one copy is lost or damaged, make another back-up copy from the surviving copy.

If a diskette is damaged or erased while in use, find out why before inserting another diskette. Do not insert the back-up copy: you could end up destroying it also. Instead, using diskettes for which you have back-ups, repeat the procedure that destroyed the first diskette. If you can't figure out what the problem is, bring your system to the dealer to make sure it is working correctly.

Two copies of the AUTHOR diskette accompany your Apple PILOT System. One of these is to be set aside as a back-up copy. As soon as you have finished reading this section, make back-up copies of the LESSON diskette that came with the Apple PILOT System. Store the back-ups in a safe place; diskette holders (often paper "sleeves") help protect your diskettes from dust.

When you are ready to make a back-up copy for yourself or copies for your students, type D for "Duplicate a lesson diskette" from the Main Menu. You are prompted to:

```
Insert original diskette in main drive
and new diskette in secondary drive.
Then type DUPLICATE to Duplicate
or press CTRL-C to return to main menu
```

==>

Place the Lesson diskette that you wish to copy in drive 1. Then place an initialized PILOT diskette in drive 2. To begin the duplication process, type DUPLICATE. When you press the RETURN key, this message appears:

```
The diskette in the secondary
drive has material on it already.
Do you want it removed?
```

You see this message whether you are using a newly initialized diskette with only the HELLO lesson on it or an initialized diskette

containing lessons from any of the PILOT editors on it. This message serves as a warning. If you are duplicating to a newly initialized diskette, then you can safely type Y for Yes in response to the prompt, since the material removed is of an administrative nature only and the duplicating process will replace any material needed for a correctly duplicated diskette. However, if you have previously used this diskette to store PILOT lessons or special effects files, you have two choices. Typing Y for Yes tells PILOT to erase all the old files stored on the diskette in drive 2, and then to copy every file from the diskette in drive 1 to the diskette in drive 2. At the end of this process, the diskette in drive 2 contains all the files from the diskette in drive 1 and ONLY those files.

If you type N for No, PILOT will try to copy every file from the diskette in drive 1 to the diskette in drive 2, without destroying any of the files previously stored on the diskette in drive 2. At the end of this process, the diskette in drive 2 contains all of its old files PLUS all the files from the diskette in drive 1. As soon as you type your answer (Y or N), the duplication process begins immediately and Apple PILOT displays the name of each file being duplicated from the original diskette in drive 1 to the new diskette in drive 2.

If there are too many files on the original Lesson diskette to copy onto the diskette in the secondary drive, you will see this message:

Not enough room to copy
all files.

The duplication process ends there. None of the files on the original diskette are lost.

Otherwise, when the duplication process is finished, the disk drives stop whirring, their lights go off, and you see this message at the bottom of the screen:

Put back original diskettes
then press RETURN

Reinsert the AUTHOR diskette and press the RETURN key.

DUPLICATION DIFFICULTIES

The following are situations in which the duplication process doesn't work.

* If you try to duplicate the AUTHOR diskette, you will get the this message:

You cannot duplicate
an author diskette.

* Each blank diskette must be initialized before files can be written on it. If the diskette you have inserted in the secondary drive has not been initialized, you see this message:

Your secondary drive does not
contain a PILOT lesson diskette.

* You cannot write lessons on write-protected diskettes. If you try to write a lesson on an initialized PILOT diskette which is write-protected, you are asked if you want to remove the material from the diskette; when you answer Y for Yes, you see this message:

I/O RESULT = 16

You will have to peel the write-protect sticker off the diskette if you wish the Apple to write onto this diskette.

DISKETTE FILE LENGTHS

An Apple PILOT diskette can store information in 280 separate areas called "blocks". After the initialization process places the necessary Apple PILOT System information on a new Lesson diskette, about 120 blocks remain. Those remaining blocks are gradually used up as you store lesson and special effects files on the diskette.

Each time you select one of the editors listed in the Main Menu, a message appears at the bottom of the screen, telling you how many blocks are currently available on the Lesson diskette in drive 2. For example, the message might say

198 file blocks used, 82 remaining.

This means that 82 blocks (out of the original 280) are still available for storing new files or expanding old ones. Of course, you do not have to use every available block on a diskette, and you can always elect to store a new file on a different diskette.

But if you want to know whether or not a file can be stored in the available space, you must first know the size of the file. The number of blocks needed to store a special effects file is relatively fixed:

Graphics file:	0 to 127 commands	= 1 block
	128 to 255 commands	= 2 blocks
	256 to 383 commands	= 3 blocks
	384 to 511 commands	= 4 blocks
Quick-Draw	0 to 127 commands	= 17 blocks
graphics file:	128 to 255 commands	= 18 blocks
	256 to 383 commands	= 19 blocks
	384 to 511 commands	= 20 blocks
Character Set file:	0 to 96 characters	= 2 blocks
Sound Effects file:	0 to 100 notes	= 1 block

A Lesson Text file occupies a minimum of four blocks and a maximum of eighteen blocks. When your lesson is stored on a diskette, it will occupy 4 blocks for the first 0 to 1024 characters and an additional 2 blocks for each 1 to 1024 characters beyond that. Each time you Quit the Lesson Text Editor, a brief message tells you how many blocks your lesson now occupies on the Lesson diskette. For example, it might say

YOUR FILE IS 8 BLOCKS LONG.

The length of a lesson is limited to 18 blocks by the amount of memory available for it in the Apple. The Apple can theoretically store up to 8192 characters for your lesson. The number of characters in a particular lesson can be determined by using the Memory command, discussed under Miscellaneous Commands in the chapter on the Lesson Text Editor. The Memory command tells you two things:

1. the number of characters you have already typed, and
2. the number of characters you may still add to this lesson before it exceeds the amount of Apple's memory available for the lesson.

If the Memory command shows fewer than 500 characters remaining, break the lesson into two smaller lessons. In no case should you leave fewer than 250 unused character spaces in a file. The editor needs these spaces for its own "scratch pad". The unused space is not stored on the diskette, so you are not being wasteful.

Dividing a file into two parts is explained under the Insert command in the chapter on the Lesson Text Editor. Lessons can be linked together, so that one automatically follows the other. See Link in the chapter on Control Instructions in the Apple PILOT Language Reference Manual.

If you use an editor to modify an existing file, the new version is stored on the Lesson diskette BEFORE the old version is removed. This is a safety feature, but it does require extra room on the diskette. Once the new version has been safely stored, the old version of the file is removed, and then all the files are moved to fill in the "hole" left by removing the old file. This process, called "compacting" the diskette, ensures that all the free blocks are in one place, and not scattered about the diskette in little "holes" here and there.

CHAPTER 2

START UP AND MAINTENANCE

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- 15 INITIALIZING A DISKETTE
- 17 DUPLICATING A LESSON DISKETTE
- 19 Duplication Difficulties
- 20 DISKETTE FILE LENGTHS

Each Apple PILOT editor is introduced by a menu that displays the names of the lessons created in that particular editor and offers you several options for using that editor. The Lesson Text Editor, the Character Set Editor, the Graphics Editor and the Sound Effects Editor all share a common set of procedures for using their editor menu options.

Although the internal workings of each editor are quite different, the process of saving and naming files and then leaving or "quitting" the editor work identically for each editor. In addition, the Graphics Editor, the Character Set Editor, and the Sound Effects Editor all include a Help Screen that summarizes the editor's commands. The specific Help screens are explained in detail in the chapters discussing each editor.

This chapter explains the common features of the four editors.

COMMON MENU OPTIONS

To use one of the editors from the Main Menu, type L for the Lesson Text Editor, C for the Character Set Editor, G for the Graphics Editor, or S for the Sound Effects Editor. The appropriate menu appears on the screen. In this section, the Lesson Text Editor is used as an example. The following photo is the Lesson Text Editor Menu. The menus for the three Special Editors are similar in format; only the names have been changed.



To use the Lesson Text Editor or any Special Editor, the AUTHOR diskette must be in drive 1, and a Lesson diskette in drive 2. Throughout this chapter, the words "lesson" and "file" are used interchangeably with regard to files created in the Lesson Text Editor.

Any lessons on the Lesson diskette are listed on the screen in alphabetical order. Each editor can display the names of 21 files. If the Apple has sufficient memory to store more than 21 files on the Lesson diskette, each additional file beyond the 21st will be stored,

but the name will not be displayed on the Editor Menu until one of the 21 files has been deleted. The procedure for deleting files is explained below.

Below the list of file names is a prompt line showing the menu options:

New, Edit, Run, Print, Delete, Quit

followed by an arrow and the cursor. The Run and Print options appear only on the Lesson Text Editor prompt line. In the Special Editors you do not need to "run" your files because you can see and/or hear what you've been working on while you are in the editor. A Print option is available in the Graphics and Character Set editors.

The response you type will appear where the cursor is. You need only type the first letter of the option name and the editor will complete the rest of the word for you. Then press the RETURN key. If you selected one of the first five options (three in the Special Editors), you will now be asked to type a lesson or file name.

The numbers of file blocks used and remaining on the Lesson diskette are displayed at the bottom of the screen. For more information regarding diskette file length see the chapter on Start-up and Maintenance.

The prompt line shows the six options available when you enter the Lesson Text Editor.

<u>Option</u>	<u>Result</u>
New	Begins a new lesson.
Edit	Reads in an existing lesson for editing.
Run	Runs a lesson as it will run in Lesson Mode, with the addition of error messages.
Print	Prints a lesson on paper (if a printer is available).
Delete	Deletes a lesson.
Quit	Returns you to the Main Menu.

The following explanation takes you carefully through each step in using the New option in the Lesson Text Editor. The other five options (three for the Special Editors) follow the same general steps as the New option. Explanations of these options contain only those details that differ from this general pattern, and pertain solely to that option.

Note: The phrasing in some of the prompt lines will differ by a word or two in each editor. For example, where the Lesson Text Editor asks you "Create which lesson?", the Graphics Editor asks "Create which graphic?"

NEW

If you want to begin a new lesson, select the New option from the Lesson Text Editor Menu by typing the letter N . When you see the message

```
==> New lesson
```

press the RETURN key. The following prompt appears:

```
Create which lesson?
```

Type the name you want your new lesson to have. Lesson or file names can contain any 10 characters except the following: dollar sign, colon, equals sign, right and left brackets, space, asterisk, pound sign (#), semicolon, and comma. When you press the RETURN key, you are in the Lesson Text Editor, ready to work on your new lesson. If you type the name of a lesson that already exists on the Lesson diskette--CARTOONS, for example--you will see the prompt:

```
CARTOONS already exists.
```

```
To continue, press the space bar.
```

You return to the Lesson Text Editor Menu when you press the space bar.

EDIT

When you want to add to or make changes in an existing lesson, or if you simply want to look at the lesson, select the Edit option by typing E and pressing the RETURN key. Then type the name of the lesson you want to edit, choosing from the alphabetical list presented on the editor menu screen, and follow the prompts. Notice that once you have typed enough of the file name to make it unique, the editor completes the rest of the name for you. If you type a lesson name that is not listed in the editor menu, a message will tell you that the lesson does not exist.

RUN

This option lets you Run a lesson which you have written in the Lesson Text Editor. It is available in the Lesson Text Editor only. In the three Special Editors there is no need for a Run option because you can see or hear the results of your work while you are still in that editor. To Run a lesson, type R for Run and press the RETURN key. Then type as much of the name of the lesson as is necessary to distinguish it, choosing from the list presented with the Lesson Text Editor Menu. Note that unlike the other options mentioned thus far, the Run option returns to the Main Menu rather than to the Lesson Text Editor.

When you Run a lesson from Author Mode, you are simulating Lesson Mode, except that you see error messages if you have made any mistakes in your program. The lesson you are running appears exactly as it would to a student (except for the error messages), and you are

required to interact with the program just as if you were the student. This is the way you test your lessons.

PRINT

The option to print a lesson or file on paper works differently in the Lesson Text Editor than it does in the Special Editors. Files created in the Graphics and Character Set editors can only be printed on paper using the Apple Silentype Printer. Lesson files from the Lesson Text Editor can be printed using any printer that can connect to the Apple.

Printing from the Lesson Text Editor

If you have a printer properly connected to your Apple, you may print a lesson on paper. Select the Print option by typing P for Print and pressing the RETURN key. Then type as many characters as necessary to distinguish the name of the lesson you want to Print, choosing from the list presented with the Lesson Text Editor Menu. If the printer is not available, or is not connected correctly, you get this message:

```
YOU HAVE NO PRINTER AVAILABLE.  
TO CONTINUE, PRESS THE SPACE BAR.
```

If the printer is properly connected but its power is turned off, PILOT will wait for the printer to be turned on. No message will appear.

Having a printed copy of your lesson is helpful when you are testing the lesson. You can mark any error messages directly on the printed copy, next to the appropriate line. A printed copy is helpful in giving you an overview of the lesson; sometimes it is difficult to maintain a sense of the whole lesson when you see only one screenful at a time.

Printing from the Special Editors

When you are using the Graphics Editor or the Character Set Editor, you can print whatever you have created on the screen onto paper using the Apple Silentype Printer. Make sure that your printer is connected correctly with the printer interface card in peripheral slot 1 inside your Apple and that the Apple's power is on. (For more complete instructions, see the the manual that accompanies the Silentype Printer.) Then type CTRL-P by holding down the CTRL key while you press the P key. Whatever image is on the screen will print immediately. Your file remains undisturbed and you may return to working on your file when printing is complete.

For the CTRL-P to work in the Character Set Editor, you must be out of the part of the screen labelled Letters Box and working in the unlabelled section of the screen called the Big Grid.

You cannot print the Help Screens in either the Character Set or the Graphics editors. It also is not possible to print on paper from the Sound Effects Editor.

DELETE

When you want to remove a lesson permanently from the lesson diskette, select the Delete option by typing D for Delete and pressing the RETURN key. Then type the name of the lesson you wish to Delete, choosing from the editor menu list. As a safeguard against deleting a file by mistake, the Delete option does not automatically complete the file name for you as the other options do. You must type the full file name correctly. When you press the RETURN key, you will see a message similar to this:

```
Are you sure you want to delete
CARTOONS? Type DELETE to confirm.
```

Type DELETE to confirm that you want to delete the file named CARTOONS and then press the RETURN key to delete the lesson or file permanently. If you change your mind before you have pressed the RETURN key to complete the final deletion, type CTRL-C to return to the editor menu. The file will not be deleted. Once a lesson has been removed, it cannot be retrieved. Use caution in deleting lessons!

QUIT

The Quit option listed in each editor's menu lets you return to the Main Menu. To use it, type Q and press the RETURN key.

NAMING AND SAVING FILES

When you enter an editor and use the New or Edit option, the system asks for the name of the file you will be working on. A file of that name, containing your lesson, picture, tune, or character set can later be saved on a diskette. Then the file can be read from the diskette and used or modified.

When you want to save the file you are working on in an editor, type Q for Quit, then press the RETURN key. This will begin the series of prompts described in the rest of this section. Note that this Q option works inside the editor and allows you to save a file. It is not the same as the Quit option listed in each editor's menu, which returns you to the Main Menu.

SAVING YOUR FILE

The examples in this section are written as if you were ending an editing session in the Graphics Editor. When you are saving any kind of file, the Lesson Text Editor, Character Set Editor and Sound Effects Editor work identically. When you are through editing, press

Q and the first Quit prompt appears. This prompt asks you if you want to save your file under the name you used when you invoked the file with the New or Edit option.

```
Save this graphic as MMOUSE?  
Type Y for Yes, N for No.  
==>
```

Enter Y, and you see this message:

```
Saving as MMOUSE
```

The file is saved and the files on the diskette are "compacted" so that unused areas of the diskette are consolidated. Next the system returns to the Graphics Editor Menu.

If MMOUSE was an existing file that you retrieved with the Edit option, and if you save it again as MMOUSE, the original MMOUSE file is destroyed and the one you just finished editing is stored on the Lesson diskette. If you want to keep both the original MMOUSE, and the just-edited version of MMOUSE, you will need to choose a different name for the new version. In this case, you respond to the first prompt with an N for No. If the new file is similar to the old one, you might want to call it MMOUSE-1. If you changed the file significantly you might choose an entirely different name, for example, MINNIE.

If you type N, you are prompted:

```
Save as what name?
```

Type the new name for the file, MINNIE, and you see this message:

```
Saving as MINNIE
```

The diskette is compacted and you return to the Graphics Editor Menu.

EXITING WITHOUT SAVING YOUR FILE

There may be occasions when you create or edit a file and then decide that you do not want to save it. Assume that you have just edited a file named MMOUSE but that you don't want to save the changes you have made during the current editing session. First type Q for Quit. Next you will be prompted:

```
Save as MMOUSE?
```

Now press the RETURN key. When you are asked

```
Save as what name?
```

Press the RETURN key instead of typing a different name. Then you will be asked,

Do you want to exit without
saving the file?
Type EXIT to exit without saving.
==>

Typing EXIT returns you to the Graphics Editor Menu without saving the file. Thus, the original MMOUSE is still on the Lesson diskette, but the newly edited version is not saved at all. Typing anything else returns you to the first Quit prompt:

Save this Graphic as MMOUSE?
Type Y for Yes, N for No.

RETURNING DIRECTLY TO THE EDITOR

If you have pressed Q by mistake and you want to return immediately to the editor you just left, press the RETURN key or CTRL-C. Nothing on the screen will remind you of this feature.

When returning to the Lesson Text Editor, you see the part of the lesson where the cursor was when you pressed Q. When returning to the Graphics Editor, you see the blank screen and then the image you were working on is redrawn. When returning to the Character Set Editor, you see the "scratch pad" display redrawn. There will be no letters in the Letters Box and no pictures in the Big Grid. However, you are in the file you were working on previously and can type a keyboard symbol that you previously designed to see the corresponding pictures constructed in that file. When returning to the Sound Effects Editor, you see the first 13 notes of your file.

BACKING UP YOUR FILES

Each time you Quit any of the four editors and Save your file, you ensure that the work you have done up to that point is stored safely on a Lesson diskette. As discussed earlier, it is important to make duplicate copies of your Lesson diskettes to protect the files stored on them. It is equally important that you back-up each file you are working on by Quitting and Saving your partly completed lesson or file every 30 minutes or so. If your electricity, the Apple or the Apple PILOT program should fail while you are working in any editor, you will lose all of the work you have done since the last time you Quit and Saved. It will take you an extra minute or so to Quit, Save and then recall your file with the Edit option. However, that minute is a small price to pay for ensuring that hours of work are not lost accidentally

CHAPTER 4

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A typewriter puts words on paper. The language whose words you use is separate from the machine. In order to write a book in the English language using a typewriter, you must learn the English language (at least as much as you need to write your book) and you must learn how to use the typewriter.

In learning Apple PILOT you must also learn about both a language (Apple PILOT) and a writing tool for the language. Your main writing tool is called the Lesson Text Editor. Just as a typewriter lets you type sentences in English, the Lesson Text Editor allows you to type a sequence of instructions in the Apple PILOT programming language. This sequence of Apple PILOT instructions is called a lesson. However, the Lesson Text Editor is a much more powerful and exciting tool than a typewriter. It lets you insert and delete lines wherever you wish, change or replace words or characters, and duplicate or move portions of your lesson from one place to another.

In the Lesson Text Editor, you write the text portions of PILOT lessons and integrate the products of the other editors into the lessons. This chapter explains the Lesson Text Editor commands. First there is a tutorial section, How to Use the Editor, which provides an elementary introduction to the Lesson Text Editor and encourages you to try out each step. Next there is some general information about this Editor that is applicable to several commands. Finally each command is explained in depth.

HOW TO USE THE EDITOR

This section gives you a quick idea of what is involved in using the Lesson Text Editor to create a new lesson, save it on the Lesson diskette, and run it to test the results. The specific Editor commands and PILOT instructions can be used with little or no explanation. To enhance your understanding of this editor, we encourage you to type each step into the computer as it is discussed. A full discussion of the Editor commands follows this overview; the PILOT programming language is discussed in the Apple PILOT Language Reference Manual.

A NOTE ON UPPER AND LOWER CASE

The way alphabetic characters are displayed on the screen in the Lesson Text Editor differs from how they are displayed when the lesson is run. In the editor, a true upper-case (capital) letter is shown in "inverse video", as a black capital letter on a white square.

A lower-case letter is shown as a capital letter in "normal video", as a white capital letter on black. But when a lesson is running, all letters are correctly displayed on the student's screen: upper-case letters appear as normal capital letters, and lower-case letters appear as normal lower case. When you print a lesson on paper, capital and lower-case letters also appear correctly, assuming your printer can print both types of letter.

When you start up your system by turning on the power or by pressing the RESET key, the keyboard at first responds as if it were a "lower-case-only" keyboard. Whether you press the SHIFT key or not, all your typed letters are taken as lower-case letters (shown as white capitals on black). Since the SHIFT key does not affect letters, PILOT offers two special ways to change the case of letters typed at the keyboard:

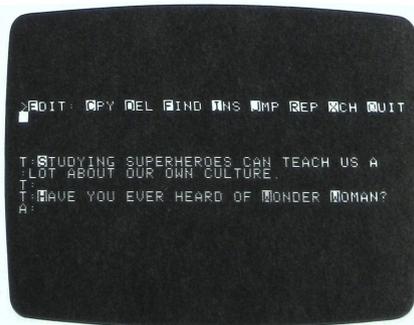
1. After you type CTRL-Z (type Z while holding down the CTRL key), the next single character you type (if it is a letter) will be a capital letter, and subsequent letters will again be lower-case letters. This works like the normal shift key on a typewriter.
2. CTRL-A reverses the case of subsequently typed letters. If you were typing lower-case letters before CTRL-A, subsequent letters that you type will all be capital letters. If you were typing capital letters before CTRL-A, subsequent letters will all be lower-case. This change remains in effect until CTRL-Z or another CTRL-A is typed, or until the system is re-started. CTRL-A works like the locking shift key on a typewriter.

In this manual, most examples show their capital and lower-case letters as they will appear to the student running a lesson in Lesson Mode. When you type these examples into the Lesson Text Editor, all letters will appear as capital letters, with the true capital letters shown in inverse video. The following example and screen photos show how the same example will look in this manual, in the Lesson Text Editor (Author Mode), and on the student's screen (in Lesson Mode).

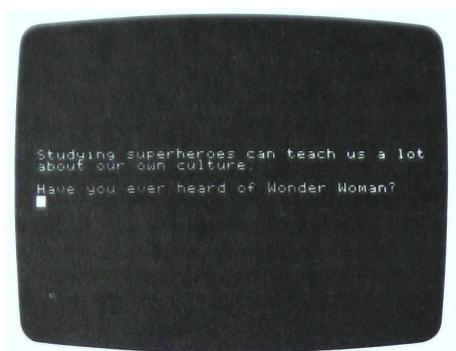
Here is an example as it looks in this manual:

```
t:Studying superheroes can teach us a
:lot about our own culture.
t:
t:Have you ever heard of Wonder Woman?
a:
```

This is how the same example will look when you type it into the Lesson Text Editor:



This is how the same example will look when a student runs it in Lesson Mode:



DO IT YOURSELF

Before beginning this section, you need to know a few things about the Lesson Text Editor. The cursor moves forward if > (greater than symbol) is shown to the left of a prompt line; it moves backward if < (less than symbol) is shown. Press the left-arrow and right-arrow keys to move the cursor one character at a time; the RETURN key moves the cursor one line at a time. When you have completed your Insert or Delete commands, press ESC to execute the changes you have made. Press CTRL-C to quit the command without incorporating the changes. You'll be reminded when to do each of these throughout this discussion.

Place the AUTHOR diskette in drive 1 and the LESSON diskette drive 2. Now start up your system by turning on the power. When you see the Main Menu, type L for Lesson Text Editor and press the RETURN key. When the Lesson Text Editor Menu appears on the screen, type N to start a New lesson, then press the RETURN key. In response to the message:

Create which lesson?

type the name SUPERHERO since you are going to write part of a PILOT program about American superheroes. Now press the RETURN key. Your disk drives will whirr for a moment, and then you will see a screen that is blank except for the Edit prompt line:

```
>EDIT: CPY DEL FIND INS JMP REP XCH QUIT
```

Now type I to use the Insert command. The Editor prompt line is immediately replaced by the Insert prompt line:

```
>INSERT: (TEXT), <=. ESC, CTRL-X, CTRL-C
```

When the Insert prompt line is showing, any characters you type will appear on the screen at the point marked by the white cursor square.

Start this lesson by typing the Type instruction

t:

Now use upper case to capitalize the word "Studying" which will be the first word in your beginning sentence. Press CTRL-Z and then press the S key. The S appears as a black letter on a white box. This is inverse video and reminds you that the S will be capitalized when this lesson is run in Lesson Mode. Now type the following sentence: Studying superheroes can teach us a lot about our own culture.

If you make a typing error, simply press the left-arrow key to erase the letters you have typed. Then type the correct letters.

Notice that as you type these words, the Editor breaks up the sentence into lines and puts a colon before the first word of each line so that the insertion looks like this:

```
t:Studying superheroes can teach us a
:lot about our own culture.
```

The process of putting text on a new line and placing a colon before the new line is called automatic formatting. If you type a word which makes the number of characters on the line exceed 39, then that word (with a colon placed before it) is automatically moved to the beginning of the next line. This automatic formatting feature is fully explained in the section on the Insert command in this chapter.

To make this lesson easier for the student to read, insert a blank line between this sentence and the next. To do this, press the RETURN key, then type t:, then press the RETURN key again. Now type t: and the following sentence: Have you ever heard of Wonder Woman?

To finish this lesson segment, type the rest of the following program sample exactly as it is shown in the left column below. The right column offers a very brief explanation of which PILOT command is used. These are all explained in detail in the Apple PILOT Language Reference Manual.

t:Studying superheroes can tell us a	(Display this text.)
:lot about our own culture.	(Continue text display.)
t:	(Insert blank line.)
t:Have you ever heard of Wonder Woman?	(Display this text.)
t:	(Insert blank line.)
a:	(Accept answers.)
m:yes!yeah!sure!yep!uhhuh	(Match to these answers.)
ty:Name one superhuman quality that she	(If a Match is successful,
:exhibits.	display this text.)
jy:part1	(If the Match is successful,
	jump to the label, *part1.)
t:Have you ever heard of a different	(If the Match is not success-
:superhero?	ful, display this text.)
a:	(Accept answers.)
m:yes!yeah!sure!yep!uhhuh	(Match to these answers.)

ty:Name a superhuman quality associated	(If the Match is successful,
:with that hero.	display this text.)
jy:part1	(If the Match is successful,
	jump to the label, *part1.)
t:I'll bet you don't watch much tv or	(If the Match is not success-
:read many comic books! Since you've	ful, display this text.)
:never heard of a superhero that	
:someone else has made up, make up your	
:own! Then name a superhuman quality	
:he or she possesses.	
j:part1	(Jump to the label, *part1.)
*part1	(This is the label, part1.)
a:	(Accept answers.)
t:Would you like to have that	(Display this text.)
:superhuman quality?	
a:	(Accept answers.)

Be sure to press the RETURN key after typing the last a:.

Press the ESC key to accept what you have typed. The Edit prompt line reappears at the top of the screen. You are no longer using the Insert command and can now move the cursor freely and choose which command you will use next.

EDITING YOUR LESSON

Now suppose you change your mind about the wording of this lesson and want to change the first sentence to read, "Studying superheroes can tell us a lot about American culture." Since you have accepted this insertion by pressing the ESC key, you can no longer erase with the left-arrow key. You need to use the Delete command to delete the words "our own" and then insert the word "American".

To make the required deletion, place the cursor on the first letter you want to delete. If the cursor is under the a: at the end of this lesson, it must be moved "up" 28 lines. Press the < (less than) key to indicate the direction the cursor will move. Then press the RETURN key until the cursor is at the beginning of the line in which you want to make your correction. Press the right-arrow key repeatedly to move the cursor to the right until it is sitting on top of the O in "our". If you go too far, back up by pressing the left-arrow key.

Once the cursor is sitting on the O, press D to begin using the Delete command. You see the Delete prompt line:

```
<DELETE: (MOVING COMMANDS), ESC, CTRL-C
```

This reminds you that you are using the Delete command. The message (MOVING COMMANDS) reminds you that you can use the left-arrow, the right-arrow, and the RETURN key to erase text. ESC accepts the deletion and CTRL-C returns to the Edit prompt line without executing the deletions.

To make your deletion, with the cursor sitting on the O of "our", press the right-arrow key. Each time you press the right-arrow key you see a letter disappear. When you have deleted the words, "our own", and the cursor is in the blank space preceding the word, "culture", press the ESC key to accept your deletion.

To insert the word, "American", press I for Insert and type the word "American". Then press ESC to accept. Use the same procedure to make other changes or corrections.

SAVING YOUR LESSON

The next step is to "save" this lesson, which means to make the Apple write the lesson onto the Lesson diskette.

Type Q for Quit. This message appears:

```
Save this lesson as SUPERHERO?  
Type Y for Yes, N for No.  
==>
```

Type Y for Yes and press the RETURN key. As the disk drives are whirring and writing your lesson onto the Lesson diskette, this message flashes on the screen telling you how long your lesson is:

```
Writing.  
Your file is 4 blocks long.
```

Then the Apple tells you that it is arranging the information on your Lesson diskette in the most efficient manner possible, by giving you the message:

```
Compacting diskette.
```

Finally you see the Lesson Text Editor menu appear on the screen with the name of your lesson, SUPERHERO, neatly arranged in alphabetical order.

RUNNING YOUR LESSON

Each lesson needs to be tested to see how it will work when the student runs it. This testing is done by using the Run option provided by the Lesson Text Editor Menu. When you Run your lesson in Author Mode, you will see the lesson as the student would, you may interact as a student would, and you will see error messages if there are any mistakes. Type R for Run, press the RETURN key, and you will get this prompt:

```
Run which lesson?
```

Type SUPERHERO (or as much as is needed for the editor to recognize the file name), and press the RETURN key. When the disk drives have completed their reading job, you see your lesson displayed on the screen. Type in some answers to your own questions. You may want to

run the lesson two or three times to try out different answers. At the end of the lesson, when you press the RETURN key, the lesson disappears and the Main Menu reappears. If you have typed the sample lesson exactly, you should not get any error messages. If you do get an error message, then you need to return to the Lesson Text Editor, retrieve the lesson with the Edit option, and make any necessary corrections. For further information on error messages, see the next section and the appendix on Error Messages.

Writing, editing, saving and running a lesson are the basic processes you will use whenever you write an Apple PILOT lesson.

TESTING YOUR LESSON

While you are developing your lessons, you must test them to see that they are programmed correctly and that the pieces all fit together the way you had planned. You do this while you are in the Lesson Text Editor by choosing the Run option, as discussed in the last section. The Error messages and Student Options, discussed below, help you test your lessons. In addition, it is important to elicit feedback from students who will be using the lessons.

ERROR MESSAGES

If there are any mistakes in your program, you will get an "error message." This is a brief message consisting of a letter and an explanation. Error messages are designed to locate PILOT instructions that are incorrectly written or improperly used. If there is an error in your program, the program stops running and an error message is displayed on the screen. Then the line containing the error is displayed with the cursor located beside the part of the instruction containing the error. You start the program running again by pressing the RETURN key or the space bar.

Each time you see an error message, write it down along with the line of the lesson that follows it. Note the letter on which the cursor sits. It is usually near that point that the error occurred. When your lesson has finished running, you can use this written information to make the appropriate changes to your lesson in the Lesson Text Editor.

The PILOT Language Error Messages and their explanations are found in the appendix on Error Messages in the Apple PILOT Language Reference Manual.

STUDENT OPTIONS

When you write PILOT lessons you can include a student option called GOTO. This allows the person running the lesson, be it you in Author Mode or a student in Lesson Mode, to jump to different parts of the lesson. When testing a lesson, it is helpful to include the GOTO option so that you do not have to answer over and over again questions with which you are satisfied. If you do not want to include the GOTO

option in your final lesson, you can simply remove it after you are done testing, and just before you finalize the lesson. Incorporating the GOTO option in your lesson is explained in detail under the PR: instruction in the Apple PILOT Language Reference Manual, in the chapter on Response Instructions.

GENERAL INFORMATION

This section provides general information used by many or all of the Lesson Text Editor commands. It covers moving, setting the direction of, and using repeat-factors with the cursor. And it explains how to accept or abort each command using the ESC key and CTRL-C.

The monitor screen in the Lesson Text editor displays 23 lines with 40 characters per line.

THE CURSOR-SET DIRECTION

The first character displayed on most edit prompt lines is a "direction indicator". The cursor-set direction is "forward" when you enter the editor. A "greater than" (>) character indicates "forward" direction. A "less than" (<) character indicates "backward" (or reverse) direction. When the Edit or the Delete prompt line is showing, you can type the < or > key (with or without the SHIFT key) to change direction. The + and - keys also affect the cursor-set direction. Pressing + (with the shift key) indicates the forward direction, pressing the - key indicates the reverse direction.

The Replace, Find and Page commands and certain cursor moves are affected by the cursor-set direction. If the cursor-set direction is forward, then they operate forward through the file, that being the standard direction of reading English. Forward operations begin at the current cursor position and proceed toward the end of the file from left to right. Backward is the reverse direction. Backward operations begin at the current cursor position and proceed toward the beginning of the file from right to left. Where the cursor-set direction affects a command, this is specifically noted in the detailed command description.

MOVING THE CURSOR

You may move the cursor in a variety of ways. The direction the cursor moves is determined by the direction indicator which is located at the left end of each prompt line in the Lesson Text Editor. A "greater than" (>) character indicates "forward" direction. A "less than" (<) character indicates "backward" direction.

The following commands move the cursor:

- * pressing the space bar moves the cursor one character in the current cursor-set direction.
- * pressing the RETURN key moves the cursor to the beginning of the next line in the cursor-set direction.

- * CTRL-O moves the cursor up one line; CTRL-L moves it down one line.
- * the left-arrow key moves the cursor one character to the left; the right-arrow key moves the cursor one character to the right.
- * CTRL-I tabs the cursor eight spaces in the cursor-set direction.
- * the = (equals sign) moves the cursor to the start of the last text Inserted, Found, or Replaced.
- * pressing J lets you Jump the cursor to the beginning, to the end, or to any label in the lesson. (See the section on the Jump command in this chapter for more detail.)
- * pressing P jumps the cursor one "page" or screen in the cursor-set direction. (See the section on the Page command in this chapter for more detail.)

To speed cursor movement, you can press the REPT (repeat) key while pressing any of the cursor-moving command keys except = or J .

REPEAT-FACTORS

Most of the cursor moves and the Find and Replace commands (see below) allow repeat-factors. A repeat-factor is a number that is typed immediately before initiating a cursor move or command. The cursor move or the command option is then repeated for the number of times indicated by the repeat-factor. For example, typing 2 followed by CTRL-L causes the cursor move to be executed twice, moving the cursor down two lines. Cursor moves and commands that allow a repeat-factor assume the repeat factor to be 1 if no number is typed. Typing a slash (/) before a cursor move or a command indicates an "infinite" repeat-factor, and causes the move or command to be repeated as many times as possible in the file.

ESC AND CTRL-C

When you are using the Insert, Delete, and eXchange commands, you tell the Apple whether or not you want to accept the change you have made in your text through the use of the ESC and ConTRoL-C keys. The ESC key is located at the far left side of the Apple keyboard. Pressing the ESC key tells the Apple that you're satisfied with what you've done, and the changes you've indicated should be made. The CTRL key is located at the far left side of the Apple keyboard just below the ESC key. Typing CTRL-C lets you abort a command. CTRL-C can destroy all you have typed in one easy stroke, so use it with caution.

For example, if you type I for Insert, you may type text into your lesson; if you type D for Delete, you may remove text from your lesson. Each time you use one of these commands, you must decide whether you are satisfied with what you have done. If you are satisfied (usually this is the case), you tell the computer to accept the addition or correction by pressing the ESC key. If you are not satisfied and wish to revert to the state of the text before you entered that command, press CTRL-C. During an Insertion, the cursor-moving commands do not work. Once you have pressed ESC or CTRL-C, however, you can move the cursor freely around the text again, just as you could before you entered your chosen mode.

A NOTE ON ERROR MESSAGES

When you are using various Editor commands, you may make a mistake by accidentally typing the wrong key or following a procedure incorrectly. If this happens, you will see a message at the top of your screen that begins with the word ERROR: which reminds you that you have done something wrong. To go back to working in the editor after you have seen one of these messages, press the space bar. The error message will remind you of this by displaying the words (PRESS SPACE) at the end of the message. If the error message is a long one and there is not enough room for the whole reminder, you will see (SP) as a reminder to press the SSpace bar.

LESSON TEXT EDITOR COMMANDS

When you enter the Lesson Text Editor, you see the Edit prompt line:

```
>EDIT:  CPY DEL FIND INS JMP REP XCH QUIT
```

You are at "Edit level" when you see these prompts. These commands: CoPY, DElete, FIND, INsert, JuMP, REplace, eXCHange, and QUIT as well as three others not mentioned in the prompt line (Page, Verify, and Memory) are described in the rest of this chapter.

Jump, Page and Find are described under Cursor-Moving Commands. They basically describe additional ways to move the cursor around within your lesson.

Insert, Delete, Copy, Exchange and Replace are described under Text-Changing Commands. These commands explain the intricacies of inserting and deleting text as well as moving words or blocks of text from place to place within your file or from another file.

Verify, Memory and Quit are described under Miscellaneous Commands.

CURSOR MOVING COMMANDS

Other ways to move the cursor are discussed in the General Information section of this chapter.

JUMP

To use the Jump command, type J for Jump while at the Edit level. The following prompt line appears:

```
>JUMP:  BEGIN, END, LABEL, CTRL-C
```

Typing B for Beginning moves the cursor to the beginning of the file, displays the Edit prompt line and the first page of the file. Typing E for End moves the cursor to the end of the file and displays the last page of the file with the Edit prompt line at the top of the

screen. Typing L for Label produces the prompt

```
>JUMP: TO WHAT LABEL? *
```

A label is used in the PILOT language to mark certain sections of a program. A label must be preceded by an asterisk and may contain six characters at most (for example, *Part1). Placing labels in the text is explained in the chapter on Control Instructions in the Apple PILOT Language Reference Manual.

If you respond to the above prompt by typing the name of a label that exists in the file and then pressing the RETURN key, the cursor is placed after the last letter of the label. If you type a label name that does not exist in the file, this message appears:

```
ERROR: LABEL NOT FOUND. (PRESS SPACE)
```

and the cursor is not moved. However, after you press the space bar, the system is ready to receive the next new command.

PAGE

The Page command is executed by typing P while at the Edit level. Depending on the cursor-set direction indicated at the beginning of the Edit prompt line, the Page command moves the cursor exactly one screenful of text up or down. The cursor always moves to the start of a line. A repeat-factor may be used before this command for moving several pages.

This command is not shown in the Lesson Text Editor prompt line.

FIND

To use the Find command, type F while at the Edit level. The following prompt appears:

```
>FIND[1]:
```

Find is used to locate a word, number, phrase or any combination of these in a lesson. Whatever you are looking for is called a "target string". A string is any sequence of letters, numbers, and other keyboard characters. For example: cat, Obi Knobi, and 42.3 are all strings. The target string is the one you are "aiming" to find. At any point during your response to the Find prompt, you can abandon this command and return to the Edit level by typing CTRL-C to abort.

The explanation of the Find command includes the following information:

<u>Topic</u>	<u>Explains</u>
Token and Literal Searches	Two methods used to search for words.
Upper and Lower Case	Capital or small letters in a search.
Delimiters	What delimiters are and their use.
Cursor-set Direction	The effect of the cursor-set direction on the search.
Repeat-factors	How to Find a specific occurrence of a word.
Same-string Option	An easy way of looking for the same word more than once.
Find Examples	How to use all the Find options.

TOKEN AND LITERAL SEARCHES

There are two different ways that the Find command can search for a specified target string in your lesson: a Token search and a Literal search. The default setting (the one Apple PILOT uses unless you specifically request a different one) is Token search.

In Token search, the Editor looks for ISOLATED occurrences of the target string. The Editor considers a string isolated if it is surrounded by any combination of "delimiters". A delimiter is any character that is not a number or letter (i.e., punctuation or space). See the Find command section on Delimiters for more detail. In Literal search, the Editor looks for any occurrence of a string of characters that exactly matches the target string regardless of what surrounds the character. In other words, it looks for the target literally, even if it is embedded in a word.

For example, in the sentence "Put the book in the bookcase.", using the target string "book", Token search will find only one occurrence of "book": the word "book" is isolated by the space delimiters. Literal search will find two occurrences of "book".

For the most part, when you use the Find command, you will want to find a particular word or string, and the default Token search will take you to the word or string you wish to find. However, suppose you have a file in which you wish to find every occurrence of all the words with a certain prefix or root word that may be embedded in other words. You need to use Literal search because it finds each occurrence of the target string whether it stands alone or is embedded in another word.

For example, suppose you wanted to find the prefix "psych". Using "psych" as your target string would find you psychology, psychiatry, psychosomatic, psychic, etc. In Token search you would have to search for each whole word separately.

To do a Literal search, type L after typing F. You will see the L appear at the top of the screen. Then follow the regular procedure for the Find command.

UPPER AND LOWER CASE

In both Token and Literal searches, an upper-case letter is not the same as the corresponding lower-case letter. If you are searching for all the occurrences of a word you know is capitalized sometimes and not others, you must make allowances for this in your search. In EXAMPLE 1, at the end of this section, where both Psyche and psyche are used, rather than doing two separate searches using a capital P and a lowercase p, you could look for "syche" using Literal search.

Note: It is good programming practice to be consistent in using either capitals or lower-case letters for your PILOT commands so that if you want to search for a certain kind of command you will not have to do both a lower-case and an upper-case search.

DELIMITERS

The target string must be set off by delimiters. A delimiter is a symbol (a special keyboard character) that you type before and after the target string. These symbols tell the Apple where the target string begins and ends. For example, if you are looking for the word "oboe", you might set it off with slashes for delimiters like this: /oboe/. Both delimiters of the target string must be the same character. One delimiter must precede the first character of the string, and the same delimiter must follow the last character of the string.

The Editor allows any character that is not a letter or a number to be a delimiter. This lets you choose the delimiter. For example, consider these examples of different delimiters for the string blip:

```
"blip"      'blip'      &blip&      /blip/
```

The most commonly used delimiter is the slash (/) because it is a lower-case character not often found in the text, and it is easy to type. If you forget to use a correct delimiter with the target string, you will be told:

```
ERROR: INVALID DELIMITER. (PRESS SPACE)
```

Just try again, this time beginning with a correct delimiter.

CURSOR-SET DIRECTION

The Find command searches for the specified occurrence of the target string beginning at the present cursor position and scanning through the text in the cursor-set direction (indicated by the arrow at the beginning of the prompt line). An occurrence of the target string will be found only if it appears in that portion of the text which lies between the cursor and the end of the file toward which the search is progressing. If you want to Find every occurrence of a string, make sure the cursor set-direction is "forward" (>) and that your cursor is

at the beginning of the file when you press F to start your search. See the section on the cursor-set direction (in this chapter, under General Information) in order to change the cursor-set direction arrow. If the required occurrence of the target string is not found by searching through the text in the cursor-set direction, this message appears:

ERROR: PATTERN NOT FOUND (PRESS SPACE)

Remember, however, the portion of the file between the cursor and the end of the file in the direction OPPOSITE the cursor-set direction is not searched.

REPEAT-FACTORS

Repeat-factors are legal with the Find command. You may specify which occurrence of the target string you wish to find by using the repeat-factor. If you wish to find the third occurrence of a string, type 3 before typing F for Find. The repeat-factor you type appears in square brackets, [], at the top of the screen. When the target is found, the cursor is placed on the character following the last character of the target string. If a repeat-factor of N is specified with Find mode, the cursor is placed after the Nth occurrence of the specified string. Specify the repeat-factor before typing F for Find. See repeat-factors in the General Information section of this chapter for an explanation of how they are used.

SAME-STRING OPTION

Typing S instead of the delimited target string tells the Editor to use the same string that was last specified for the target string. The target string may have been specified either with Find or with Replace. (The Replace command is explained later in this chapter.) From the Editor, typing the command

FS

will cause the cursor to jump to the next occurrence of the previously specified target string. If you wish to use the Same-String option in Literal search, type FLS and the editor will take you to the next occurrence of the specified string in Literal search.

When the cursor-set direction specifies searching through the text in the reverse direction (toward the beginning of the file), FS or FLS may appear to have no effect. This is because Find places the cursor just AFTER the found occurrence of the target string. Unless the cursor is moved beyond the FIRST character of the previously found occurrence of the target string, the command will just keep finding the same occurrence of the target string again and again.

FIND EXAMPLES

Suppose you are editing a file containing the following text:

```
t:Psyche is a Greek root meaning breath,  
: life or soul. Today the word psyche  
: means the soul or spirit as  
: distinguished from the body.  
t:  
t:Many of our words use the root psyche.  
: Can you list three words which do?  
a:  
m: psychi!psycho
```

EXAMPLE 1

In the above lesson, with the cursor at the first P in the first line and the cursor-set direction "forward" (>), type F to select Find. When the Find prompt line appears, type

```
/Psyche/
```

The two slashes MUST be typed. The prompt line should now appear as:

```
>FIND[1]: /Psyche/
```

When you type the last slash, the cursor jumps immediately to the first character following the final character e in the first occurrence of the Token target string

```
Psyche
```

When you type FS to find the next occurrence of Psyche in your lesson, you will get the error message

```
ERROR: Pattern not found (press SPACE)
```

because the only other subsequent occurrence is not capitalized as was your target string. In order to find all of the occurrences of all the words using the root psyche, you could use /sych/ as your target string in Literal search.

EXAMPLE 2

In the sample lesson above, with the cursor at the last character of the last line (o), type

```
<2FL
```

The system searches in the reverse direction (you changed the cursor-set direction by typing <), for the second occurrence (you typed a repeat-factor of 2), in Literal search. When the prompt line appears, type

```
/sych/
```

The prompt line should read:

```
<FIND[2]: L/sych/
```

When you type the last / , the cursor will move immediately to the i of psychi in the last line of the lesson. This is the first character following the h in the second occurrence (searching backward through the file) of the Token string /sych/.

TEXT CHANGING COMMANDS

Insert, Delete, Copy, eXchange and Replace allow you to move text in various ways.

INSERT

There is an introduction to the Insert command in the section titled Do It Yourself located at the beginning of this chapter. This section on the Insert command provides you with a brief overview of the command and then focuses on Automatic Formatting and File Length.

Overview

Type I for Insert while at the Edit level. On entering Insert, the following prompt line appears:

```
>INSERT: (TEXT), <=. ESC, CTRL-X, CTRL-C
```

Insert allows you to type new text into the lesson you are creating or editing. The characters that you type are inserted between the character on which you placed the cursor and the character that is immediately to the cursor's left.

In order to maximize speed, the Editor does not constantly re-write the entire screen as you insert each new character. Instead, it makes a gap in the text, just where your insertion will appear, and then waits for you to type. Often you will have to terminate your insertion (by pressing the ESC key) in order to see exactly how the insertion will look in its final form.

If you make a mistake while using Insert, just use the left-arrow key to backspace over your inserted characters. You can use CTRL-X to delete an entire line of 39 characters. To delete the entire line you are inserting back to the end of the previous line, type CTRL-X. If you type CTRL-X while typing the first line of an insertion, you will see this message

```
ERROR: No insertion to backover (SP)
```

The Insert prompt line shown at the beginning of this section displays <== to remind you how to erase the last character you typed; it displays CTRL-X to remind you how to erase the last line. While inserting, you can erase only text you have typed since beginning the current insertion.

Text stored in the Copy buffer can be used to duplicate your last insertion repeatedly. See the section on the Copy buffer under the Delete command in this chapter.

Automatic Formatting

The Lesson Text Editor provides you with "automatic formatting", which makes typing your lesson more convenient. The Editor limits insertions to 39 characters per line. The instant a new word (as you are typing it) exceeds the righthand (39 character) margin, a RETURN character and a colon are automatically inserted before the word. The entire word (or as much of it as you have typed at that point), preceded by a colon, is placed at the beginning of the next line. A colon is required at the beginning of continued instruction lines of the PILOT language; see the Apple PILOT Language Reference Manual chapter on the Overview of the PILOT language for more details. In the Lesson Text Editor, a "word" is any character or characters bounded by any two "word delimiters", where a word delimiter is a space, a hyphen, a RETURN character, the beginning or end of the file, or the beginning or end of the current insertion (before the ESC key is pressed).

When you insert the text to be displayed by a Type instruction, that text can be continued on succeeding lines (up to 250 characters, or about six lines) by starting each continuing line with a colon. The Lesson Text Editor automatically breaks this text into lines, as you insert, so it looks approximately the way it will look on the student's screen. However, even if you change the arrangement and lengths of these lines of continued text in the Text Editor, the Apple will still display all the words of that continued Type instruction correctly formatted as a nice, neat paragraph on the student's screen. Suppose you typed and accepted the following text in the Editor:

```
t:"I'll risk forty dollars that he can
:outjump any frog in Calaveras County."
:So wrote Mark Twain in a famous short
:story about California during the gold
:rush days. To complete this
:assignment, choose one of the
:following topics:
t:
t: 1. Write a complete set of rules
t:    for the Calaveras County frog
t:    jumping contest.
```

t: 2. Investigate and write a
t: description of the controversy
t: currently surrounding the
t: Calaveras County frog jumping
t: contest.
a:

If you do not make any changes, this text will be displayed on the student's screen (when the lesson is run) approximately as it appears in the Lesson Text Editor, with the standard upper- and lower-case changes and reformatting changes to compensate for the space taken up by the instruction name and colon in Author Mode. However, if you wish to insert additional words or delete existing words, you may do so without ruining the appearance of the text on the student's screen. If you insert text which places more than 39 characters on a line, an exclamation point will appear at the far right end of the line as a warning that there is additional text in the Apple's memory but not shown on the screen. For example, let's change the last sentence so it reads, "To complete this assignment, write one page on one of the following topics:". First, delete the word "choose" in the sixth line. (See the section on Delete in this chapter.) Then insert the words, "write one page on" between the words "assignment," and "one". When you do so, the line in the Editor will look like this:

```
t:assignment, write one page on one of t!
```

But when the text is displayed on the student's screen in Lesson Mode, all the words in the long, continued Type instruction (including the words which disappeared beyond the !) will appear, rearranged as necessary to form a normal paragraph, as long as the entire paragraph does not exceed the 250-character limit. However, it is good programming practice and certainly makes more sense to rearrange your text so that you can see on the screen all that you have written. To see the text that has been "shuffled offstage" beyond the exclamation point, place the cursor at the beginning of the word just to the left of the exclamation point and type I for Insert. Now, press the RETURN key to start a new line, type a continuation colon, and press the ESC key to accept your insertion. The hidden text will now appear on the next line, like this:

```
t:assignment, write one page on one of  
:the  
:following topics:
```

This may look strange in the Lesson Text Editor, but don't worry: it will be displayed in correct paragraph form when the lesson is run. Here's a more graphic example. Type the words, THE NOTORIOUS JUMPING FROG, in the format shown below. (Be sure to type a space after each new word you insert.)

The text now reads:

```
t:I'll risk forty dollars that he can
:out jump any frog in Calaveras County."
:So wrote Mark Twain in
:THE
:NOTORIOUS
:JUMPING
:FROG,
:a famous short
:story about California during the gold
:rush days. To complete this
:assignment, write one page on one of
:the
:following topics:
```

When you run this in Lesson Mode, you will still see a well-formatted paragraph followed by the questions just as you typed them. Unfortunately this well-formatted paragraph is incomplete; the paragraph ends with the word fragment "followi". The "ng topics:" is missing because we have exceeded the 250 character limit for an automatically formatted paragraph. We can remedy this problem by using another t: instruction.

Let's create a new paragraph from the sentence explaining the assignment, and leave a blank line between the two paragraphs. To do this, place the cursor on the T in the word To. Type I for Insert, and press the RETURN key. Now type t:, press the RETURN key again, type t: again and press the ESC key. Your text will look like this:

```
:a famous short
:story about California during the gold
:rush days.
t:
t:To complete this
:assignment, write one page on one of
:the
:following topics:
```

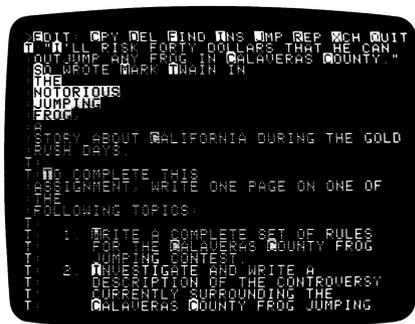
To delete text, follow the instructions in the section on Delete in this chapter. Deleting text shortens lines. In the example above, try deleting the words "famous short" in the eighth line so the line looks like this:

```
:a
:story about California in the gold
```

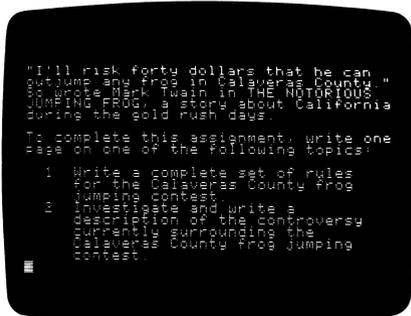
Even though this deletion has left only one word on the eighth line, there is no need to fill it in with other words: automatic formatting will do that for you in Lesson Mode.

If you do not want a line of text to be formatted in paragraph form, just make sure that line begins with the T instruction name, and not with an instruction-continuing colon. That line will be displayed exactly as you have typed it in the Editor. In the above example, we do not want the assignment topics displayed in paragraph form, so we put a t: before each one to ensure that they are displayed on separate lines and are indented as we wanted.

When we are finished making all the changes in our text, the photograph below shows what the insertion looks like in the Lesson Text Editor.



And this is what it looks like when it is run in Lesson Mode.



If you have written your program using the student's name (see the Apple PILOT Language Reference Manual chapter on Hints for Beginners), this automatic formatting feature assures that the text will be correctly formatted in paragraph form, whether the student has a long or short name.

FORMATTING AND DELIMITERS

If a line of characters does not include any word delimiters, then the line will break at the 39th character. You may find it difficult to

think up a line of text that you would seriously insert in a PILOT lesson that would not have any spaces between words. However, with the PILOT Match command, this situation could arise easily. If you are typing several Match possibilities separated by exclamation points, you will have just such a line. For example, in answer to the question, "Can you name one of the planets which revolves around the sun?" the Match would be

```
M: MERCURY!VENUS!EARTH!MARS!JUPITER!URAN
:US!SATURN!NEPTUNE!PLUTO
```

The Lesson Text Editor ignores the breaks and continuation colons in the instruction as if the instruction were written on one long line. Because the Lesson Text Editor did not recognize any word delimiters, it did not format URANUS as a whole word at the beginning of a new line. Nevertheless, the PILOT Language System considers URANUS a word because ! (an exclamation point) is a delimiter for the Match command.

File Length

The maximum size of a file is 18 blocks or 8192 bytes. When your file can hold only another few hundred keystrokes, you may receive this warning as you begin using Insert:

```
ERROR: PLEASE FINISH THE INSERTION (SP)
```

When you respond by pressing the spacebar, you will still be using Insert. You can continue your insertion, but you have been warned that your file is almost full. Once you have room for less than 250 characters, it is imperative that you stop inserting text and break your file into two parts. Although the Editor will allow you to insert more text with only 250 characters remaining, it will not be able to read in the entire file once you have saved the file on your diskette. (To check the exact number of characters you have left available, type M for Memory. See the section on the Memory command in this chapter for a full explanation.) If you continue using Insert, you will soon receive this more urgent message, when your file has exceeded the amount of text it can hold:

```
ERROR: BUFFER OVERFLOW!!! (PRESS SPACE)
```

Pressing the spacebar terminates your insertion, and you are not allowed to add any more text to your file. To continue writing this lesson, you may start another lesson file, delete unwanted sections of this file, or divide your file into two parts (explained below).

DIVIDING A FILE IN TWO

When your file nears or reaches its maximum length, you need to divide it into two parts. This division entails a three step process:

1. Type Q to Quit the Editor. When asked if you wish to save your file under its original name, for example, GARDEN, type Y for Yes. The file is saved on the Lesson diskette, and you are returned to the Lesson Text Editor Menu.

2. From the Lesson Text Editor Menu, type E for Edit, type the name of your file, GARDEN, and press the RETURN key. Now delete the end of your lesson. Don't worry about losing the portion you are erasing; all of the information is already safely stored on the original file GARDEN. The portion of your file which you erase now will be the portion that you will place at the beginning of your new file. So start erasing at a logical breaking point in the file. See the section on Cursor Moves and Delete in this chapter for more information about deleting information from your files. When you have finished deleting, type Q to Quit. When the first prompt asks you if you want to save this file as GARDEN? Respond by typing N for No. Then you are asked

Save as what name?

It's a good idea to give the first portion of your file a name which you associate with the original file, such as GARDEN-A. When you press the RETURN key, you are returned to the Lesson Text Editor Menu where you see both GARDEN and GARDEN-A displayed in alphabetical order.

3. From the Editor Menu, type E for Edit, then the name of the original file, GARDEN. Now you can erase all of the first part of the file up to the point where you started erasing in step 2. When this erasure is complete, you have lots of room in your new file and can continue writing your lesson. When you have finished this editing session, type Q to Quit. When the first prompt asks you if you want to save this lesson as GARDEN? Respond by typing N for No. When you are asked

Save as what file?

name your file GARDEN-B. If you wish, you may now remove the original file GARDEN from your Lesson diskette since the information on it has all been stored in GARDEN-A and GARDEN-B.

DELETE

Type D for Delete while at the Edit level. On entering Delete, the following prompt line appears:

>DELETE: (MOVING COMMANDS), ESC, CTRL-C

In order to delete, the cursor must be in the correct position to begin the deletion. If you are going to delete to the right (forward through the text), place the cursor directly on the first character to be deleted. If you are going to delete to the left (backward through the text), place the cursor on the first character-position to the right of the first character to be deleted.

When you use the Delete command, the Editor remembers where the cursor is. That position is called the "anchor". As the cursor is moved away from the anchor in any direction, using the normal cursor-moves, all text between the cursor and the anchor disappears. When the cursor is moved toward the anchor, the "erased" characters reappear.

To accept your deletion, press the ESC key. To abort your deletion, press CTRL-C, and all of the deleted text will reappear.

REPEAT-FACTORS

The repeat-factor may be used to delete or restore several lines at once. To do this, type D, then the number of lines you wish to delete, then press the RETURN key. For example, typing D9 deletes nine lines of text in the cursor-set direction already set. The slash (/) repeat-factor which indicates an unlimited number of repeats cannot be used.

RESTORING DELETED TEXT

All the text between the cursor and the anchor position is stored in a temporary storage area in the Apple called the Copy buffer. This text is ready for use by the Copy command, not only if you accept the deletion by pressing the ESC key, but also if you reject the deletion with CTRL-C. This is important when you want to duplicate some text in another location, or when you are moving some text to another location but wish to keep a back-up copy of the text until the move is successfully completed. In this case, you can delete the text, reject the deletion with CTRL-C (so that all the text reappears) and then move the cursor to a new location. Now type

CB

and the stored text will reappear at the new location. C stands for Copy, and B stands for Buffer.

The maximum amount of text you can place in the Copy buffer at one time varies somewhat, depending on how large your file is at the moment. If you attempt to delete more text than the Copy buffer can hold, when you press the ESC key to accept the deletion this message appears:

NO ROOM TO COPY. DELETE ANYWAY? (Y/N)

If you type Y for Yes, the text between the cursor and the anchor position is deleted, but that text is not placed in the Copy buffer so it is lost for good and cannot be used elsewhere. If you type N for No, the deletion is not carried out, and the text is not placed in the Copy buffer. After a response of either Y or N, the Copy buffer still contains the same text it held before the Delete command was initiated.

Another way of rejecting a deletion is to press CTRL-C. In this case, no message is given. However, if you then attempt to Copy from the Copy buffer this message appears:

ERROR: NO ROOM (PRESS SPACE)

DELETE EXAMPLES

Suppose you are editing the following text and wish to delete the word telescope:

```
t: Galileo's telescope, which used a
:lens to gather and focus the light
:from a star, is known as a refracting
:telescope.
```

1. Move the cursor one space to the right of the period (.) in ":telescope." on the last line.
2. Press D to use the Delete command.
3. Press the left-arrow and hold down the REPT (Repeat) key until the cursor is sitting to the right of the G in "refracting". If you erase too much, press the right-arrow key and your erasures will reappear.
4. Now press the ESC key to accept this deletion.

You have completed a deletion, and ":telescope." is stored in the Copy buffer.

To delete a line at a time:

1. Place the cursor to the right of the G in "refracting" on what is now the last line in the lesson. The cursor-set direction should be < or backwards.
2. Type D to use the Delete command.
3. Press the RETURN key twice. After the first RETURN, the line ":from..." disappears. After the second RETURN, the line ":lens..." disappears.

The program after deletion appears as shown:

```
t: Galileo's telescope, which used a
```

The two deleted lines have been stored in the Copy buffer and the cursor has returned to the anchor position. Now you may move the cursor to any desired position and then type CB: the two deleted lines will reappear.

Note: After pressing the ESC key, if you immediately press CB to Copy the deletion without moving the cursor, the deleted material is replaced exactly where it was. This gives you one more chance to recover from an inadvertent deletion.

COPY

To use the Copy command, type C for Copy any time the Lesson Text Edit prompt line appears. On entering Copy, the following prompt line is displayed:

```
>COPY: B(BUFFER), F(FILE), CTRL-C EXITS
```

COPYING FROM THE COPY BUFFER

Each time text is inserted or deleted, that text is also stored in the "Copy buffer", a temporary storage area in the Apple's memory. The amount of text that can be stored varies with the length of the file. To use the text in the Copy buffer, type C for Copy and then type B for Buffer. The editor immediately copies the contents of the Copy buffer into the file at the current location of the cursor. Use of the Copy command does not change the contents of the Copy buffer.

After an Insertion has been made, the Copy command can be used to duplicate the section of text just inserted repeatedly. An even more common use of the Copy command is to move text from one location in the file to another. Just Delete the text from its present location, press the ESC key to accept the deletion, move the cursor to the text's new location and Copy the deleted text by typing CB.

The contents of the Copy buffer are affected by the following commands:

1. Delete: When you accept a deletion (by pressing the ESC key), the Copy buffer is loaded with the deleted text. When you reject a deletion (with CTRL-C), the Copy buffer is loaded anyway, with the text that would have been deleted had you accepted the deletion.
2. Insert: When you accept an insertion (by pressing the ESC key), the Copy buffer is loaded with the inserted text. After you reject an insertion (with CTRL-C), the Copy buffer is empty.

The Copy buffer is of limited size. Whenever the proposed deletion is greater than the amount of space available in the Copy buffer, the Editor will issue this warning:

NO ROOM TO COPY. DELETE ANYWAY? (Y/N)

If you respond by typing Y for Yes, the deletion is carried out in the normal way, but the deleted text is not stored in the Copy buffer. If you respond by typing N for No, the deletion is rejected, but the rejected deletion is not stored in the Copy buffer. After either response, the contents of the Copy buffer remain what they were before you deleted.

If you change your mind and do not want to carry out the Copy command, use CTRL-C to cancel the copy operation.

COPYING FROM A LESSON FILE

To Copy text stored in another file on the Lesson diskette, type C for Copy, then F for File, and another prompt line appears:

COPY FROM WHAT FILE?

Type the name of a lesson on the Lesson diskette in drive 2. The text will appear between the character on which the cursor sits and the first character to the cursor's left.

You may Copy from a file that is on a different Lesson diskette from the one which contains your current file. For example, suppose you had a diskette named TABLES: on which you had several math tables one of which was called MULTIPLY. Currently you are writing a multiplication exercise called PRACT3 on a diskette named MATH1: . You would like to include the file MULTIPLY in the lesson PRACT3 so the students can have access to the tables while doing their practice problems. To do this follow these steps:

1. Start at the Edit level (where you see the Edit prompt line) in PRACT3.
2. Place the cursor where you want MULTIPLY to appear.
3. Remove the Lesson diskette, MATH1, containing the file you are currently working on, from drive 2.
4. Insert the Lesson diskette, TABLES:, containing MULITPLY into drive 2. Press C for Copy, then F for File, and you see this message:

>Copy: From What File?

6. Type MULTIPLY. All the contents of MULTIPLY will be copied into the PRACT3 file. The first character of MULTIPLY will appear where the cursor is located.
7. Remove the diskette TABLES and reinsert the diskette MATH1.
8. Shut the disk drive door.

If your present file cannot contain all the additional text you are attempting to Copy into it, you will see this error message:

ERROR: BUFFER OVERFLOW. (PRESS SPACE)

As much of the file as there was space to copy will have been inserted into your file.

EXCHANGE

To use the eXchange command type X for exchange while at the Edit level. On entering eXchange, the following prompt line appears:

>XCHANGE: (TEXT) <=, ESC, CTRL-C, TO EXIT

The eXchange command is used to replace the character on which the cursor is sitting with a different character that you type once you have initiated the eXchange command. If you have inverted two letters in a word, such as "bahtttub", eXchange makes it easy to correct your mistake. Instead of having to Delete the incorrect letters and Insert the correct letters, you can simply eXchange the correct ones for the incorrect ones. This saves you time since you only have to use one command instead of two.

As you type using eXchange, the cursor moves to the right along the line of text, replacing one character in the line each time you press a key. The left-arrow key, shown as <= in the prompt line, can be used to move the cursor back one character, causing the character

originally in that position (before the eXchange) to reappear. The cursor-set direction does not affect eXchange: the command always moves the cursor to the right.

As with many other commands in the Editor, a text eXchange is made final by pressing the ESC key. Pressing CTRL-C leaves eXchange without making any of the changes indicated since initiating the command.

Note: eXchange does not allow you to type beyond the end of the line, nor does it allow you to replace a text character with a carriage return.

EXAMPLE:

Suppose you wish to correct the spelling mistake in this line of text by changing the letters HC to CH:

```
T: A STITHC IN TIME SAVES NINE.
```

Place the cursor over the H in STITHC. Now type an X to enter eXchange mode. Type the letter C and notice how it replaces the letter H. Now type H, leaving the line of text as follows:

```
T: A STITCH IN TIME SAVES NINE.
```

Pressing the ESC key will make this change final. Typing CTRL-C will cause the original line to be retained. If you make a typing mistake while using the eXchange command, you can erase your mistake with the left-arrow key.

REPLACE

Type R for Replace while at the Edit level. This gives you the Replace prompt line:

```
>REP[1]
```

The Replace command replaces one string of characters with a substitute string of characters. For instance, suppose you had spelled the word "precede" incorrectly throughout your file by spelling it "preceed". You could replace every occurrence of preceed with the correctly spelled "precede" by using the Replace command.

Strings are any group of letters, numbers, or any other characters. For example: doggie bag, size 42, and $4+4=2$ are all strings. The Replace command has two string-storage areas. The first storage area contains the target string to be searched for by the Replace command. The second storage area contains the replacement string. It is the sequence of characters which will replace the target string. If your replacement string is a different length from the original, the Editor will not reformat the text, but when you run the lesson in Lesson Mode, the text will be formatted correctly.

At any time during your response to the Replace prompt, you can abandon this command and return to the Edit level by pressing CTRL-C.

The following chart gives an overview of the explanation for the Replace command:

<u>Topic</u>	<u>Explains</u>
Verify Option	How you can check each replacement before the Replace command carries it out.
Same-string Option	A method for making successive replacements easier.
Similarities with Find	Token and Literal searches Cursor-set Direction Delimiters Repeat-factors
Replace Examples	How to use all the Replace options.

VERIFY OPTION

The Verify option is not shown on the Replace prompt line. However it is an important option, available to you in the Replace command. It lets you examine each target string as it is found, before the replacement is carried out. You can then decide whether this occurrence of the target string is to be replaced or not.

Suppose in writing a lesson you decided you had used the word "interesting" too many times for it to be interesting. You could check your usage of this word in your text with the Verify option of the Replace command, substituting "fascinating" for the word "interesting" in occurrences where you wanted such a change. Using the Verify option you can read the surrounding text before deciding whether or not the change would be suitable. To select the Verify option when using the Replace command, type V before typing the target string. You see a V appear on the screen. Type the beginning delimiter, the target string, the ending delimiter for that string; then, the beginning delimiter, the replacement string, and its ending delimiter. The following prompt line appears whenever the Replace command has found an occurrence of the target string in the file and Verify has been requested:

```
REP: R REPLACES, SPACE DOESN'T, CTRL-C
```

Typing an R at this point will cause the specified replacement to be carried out and then causes the Replace command to search for the next occurrence of the target string, provided the specified repeat-factor (or the end of the file) has not been reached. Pressing the spacebar indicates the replacement is not to be made. The repeat-factor specifies the number of times an occurrence of the target string is to be found, not the number of times you actually type R to cause its replacement. Use / as the repeat-factor in order to examine every occurrence of the target string in the cursor-set direction. CTRL-C aborts the command: the replacement in question is not made, the cursor stays where it was when you pressed CTRL-C, and you return to Edit level.

SAME-STRING OPTION

Typing S in the place of the delimited target string tells the Replace command to use the same target string that was last specified. The target string may have been specified either by the Find command or by a previous use of the Replace command. Similarly, typing S in the place of the delimited substitute string tells the Replace command to use the same substitute string that was last specified by a previous use of the Replace command. For example, in Replace, typing

```
S/any-string/
```

causes the Replace to use the previous target string (and a new substitute string), while typing

```
/any-string/S
```

causes the previous substitute string to be used (and a new target string). From the Editor, typing the command

```
RVSS
```

says, "Do it again" after verification: it causes the next occurrence of the previously specified target string to be replaced (after verification) with the previously specified substitute string.

Note: When the cursor-set direction specifies searching through the text in the reverse direction (toward the beginning of the file), RVSS may appear to have no effect if you chose NOT to replace the last-found occurrence of the target string. This is because the Replace command places the cursor just AFTER the found occurrence of the target string. Unless the cursor is moved beyond the first character of the currently found occurrence of the target string, or unless that occurrence is changed to a different string, RVSS will just find the same occurrence of the target string again and again.

SIMILARITIES WITH FIND

Token and Literal searches, the cursor-set direction, and delimiters all work identically in the Replace and Find commands. Repeat-factors work the same except that if a repeat-factor of N is specified with Replace, the first N occurrences of the specified string are all replaced with the second specified string. For explanations of these aspects of the Replace command, see the Find command and General Information sections in this chapter.

REPLACE EXAMPLES

Suppose you wish to replace the next three occurrences of the target string APPLE with the substitute string BANANA :

From Edit, you type

```
3R
```

to indicate a repeat-factor of 3 and then select the Replace command. In response to the Replace prompt line:

```
>REP[3]:
```

```
type
```

```
/APPLE/)BANANA)
```

In this example, first the character / is used as the beginning and ending delimiter for the target string, and then the character) is used as the beginning and ending delimiter for the substitute string. In the example, two different delimiters were used for clarity in explaining this process. In practice you would be more likely to use

```
/APPLE//BANANA/
```

Please note that the APPLE and BANANA both have a set of delimiters. Trying to type

```
/APPLE/BANANA/
```

will result in this message:

```
ERROR: Invalid delimiter (press SPACE)
```

If you now wish to Replace 5 more occurrences of the target string APPLE, but this time with the substitute string PAPAYA, just type (from Edit)

```
5RS/PAPAYA/
```

As you type the second slash, the requested replacements will be carried out.

MISCELLANEOUS COMMANDS

VERIFY

The Verify command is executed by typing V for Verify while at the Edit level. There is no indication of the Verify command on the Edit prompt line. Sometimes what you see on the screen and what you have typed get out of sync: an insertion leaves an extra word or two dangling beyond the right end of a line. The Verify command is used to make sure the information in the Apple's memory is correctly displayed on your monitor screen. This command can be psychologically helpful. Type it whenever you are unsure that what you see on the screen really corresponds to what is in the computer's memory.

MEMORY

The Memory command is executed by typing M for Memory while at the Edit level. Using the Memory command gives you this prompt line:

```
MEMORY = 124 USED, 8068 FREE (SP)
```

There is no indication of the Memory command on the Edit prompt line. There are 8192 characters that can be used in each file. A character is any keystroke. The Memory command tells you exactly how many characters you have used and how many are left free.

When the Memory command indicates that you have only 250 characters remaining in your file, it is imperative that you STOP INSERTING TEXT. The Editor will let you insert more text, however, once you have saved this file onto your Lesson diskette, the Editor will not read the entire file back in. When you see that you are approaching the last 250 characters of your file, start a new file, delete part of your file or break your file into two parts: see Dividing a File In Two, under the Insert command in this chapter.

QUIT

Type Q to Quit while at the Edit level. Quit is used to end an editing session, to give you a chance to rename the lesson, and to save the lesson onto the Lesson diskette. Naming and saving files is explained in the chapter on Common Editor Features.

CHAPTER 5

- 64 GETTING INTO GRAPHICS
- 65 The Rubber Band Cursor
- 65 Using the Paddle Controls

- 65 DESIGN IT YOURSELF
- 66 Drawing Lines and Skipping to Points
- 66 Frames, Boxes and Circles
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- 69 GRAPHICS ADMINISTRATION
- 70 Getting Information
- 71 Quit
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- 71 Length of Graphic Files

The Graphics Editor lets you draw and save graphic images which you may use in your lessons. This editor provides a high resolution screen with 280 dots horizontally and 192 dots vertically. Six basic colors are available. You can draw lines, boxes, circles and ovals, and fill these areas with color. If you wish, you may use the paddle controls to help draw these pictures. This chapter explains how to use all of the features of the Graphics Editor to draw your own pictures, charts, or graphs. Trying out each command will make it more fun to learn, and help you better understand how to use the editor. A summary of the Graphics Editor commands is found in the Reference Summary appendix.

GETTING INTO GRAPHICS

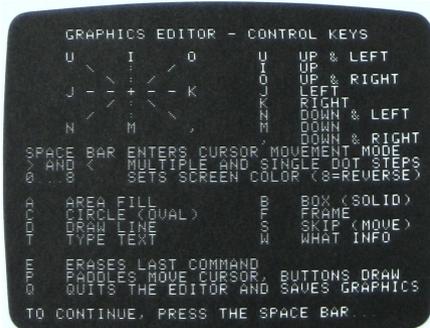
To reach the Graphics Editor from the Main Menu: type G and press the RETURN key. The Graphics Editor Menu displays the names of Graphics files on the Lesson diskette in alphabetical order and offers you four options:

New, Edit, Delete, Quit

These four options and the Print option are explained in the chapter on Common Editor Features. The other Quit option, which allows you to name and save files, is included in this chapter.

To use the Graphics Editor, type N for New, then press the RETURN key. Now type a file name of your choice, for example, BEAUTY. (A file name may contain up to ten characters excluding dollar sign, colon, equals sign, right and left brackets, space, asterisk, pound sign (#), semicolon, and comma.) Press the RETURN key, and soon you will see a blinking-dot cursor in the middle of an otherwise empty screen. You're now ready to learn to draw white pictures on a black screen. Later in this chapter we explain how to draw in color; see the Color Graphics section.

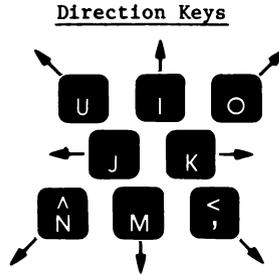
There is no prompt line in the Graphics Editor so the entire screen can be used for drawing. However, a Help Screen, which displays a brief summary of all Graphics Editor commands, is available any time you are using the editor, except when you are inserting text. Press the ? key to see the Help Screen shown below.



THE RUBBER BAND CURSOR

The blinking dot acts as a "rubber band" cursor: you can lengthen the cursor to make it easier to draw pictures. You stretch the rubber band cursor with the direction keys U,I,O,J,K,N,M, and comma as indicated below.

<u>You type</u>	<u>Result</u>
U	up, left
I	up
O	up, right
J	left
K	right
N	down, left
M	down
,	down, right



Press J a few times, and you will see the cursor "stretch" to the left. The rubber band "blinks" or flashes so you can distinguish it from the background on a complicated drawing. Now press the U key a few times and the cursor stretches upward to form a diagonal cursor. Because of the way in which the Apple uses color, the diagonal cursor often appears as a blue-green line.

The cursor stretches only one dot at a time when you press a direction key. Press the > key to make the cursor move in larger steps. Now when you use the cursor direction keys the cursor will stretch seven dots horizontally and eight dots vertically (the size of one text character). This makes it easier to move the cursor quickly and to use text and graphics in combination. Press U again and watch your diagonal cursor increase by seven dots at once. To go back to one-dot-at-a-time movement for fine control, press the < key. (You must use the shift key to make these work.)

USING THE PADDLE CONTROLS

The game-paddle controls let you move the cursor around very quickly. Press P to transfer cursor control from the direction keys to the paddle controls. Paddle control Ø controls horizontal motion; paddle control l controls vertical motion. The button on paddle Ø advances the cursor from one point to another without drawing a solid line, so that you can draw an image somewhere else on the screen. The button on paddle l draws a solid line along the cursor's path. All the usual keyboard commands, except the direction keys, work when you are using the paddle controls.

DESIGN IT YOURSELF

The rubber band cursor forms the basis for drawing in the Graphics Editor. This section explains how to make shapes, insert text and erase either or both if you wish.

DRAWING LINES AND SKIPPING TO POINTS

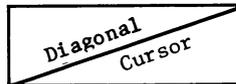
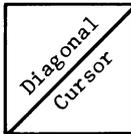
To make a solid line appear where the rubber band cursor is located, type D for Draw. A solid white line appears with a blinking-dot cursor at its end. The blinking-dot cursor is now ready to be stretched into the next part of your graphic image. This is equivalent to pressing the button on paddle 1.

You can draw an image at an entirely different point on the screen without having that image connected to your current image by stretching the cursor to the point where you wish to begin drawing. Now press the S key for Skip: the cursor will "skip" to the new point without making the rubber band cursor permanent. After pressing the S key, the cursor shrinks back to its blinking-dot size. This is equivalent to pressing the button on paddle 0.

FRAMES, BOXES AND CIRCLES

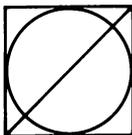
You can draw rectangular frames using four lines, and you can draw curved shapes by using very small line segments and shaping them into curves. The word "legends", which introduces the demonstration lesson titled LEGENDS, was drawn in the Graphics Editor by taping a sheet of tracing paper over the screen with the word "legends" handwritten on it and then using dots and small lines to draw the word.

However, the Graphics Editor gives you an easier way to draw frames, boxes, and curves. To use this feature, think of the rubber band cursor as forming the diagonal of an imaginary rectangle:



For example, use the direction keys to make a diagonal cursor. Now press F for Frame. The editor will draw the rectangular frame defined by your diagonal cursor, using the color you have chosen. Make another diagonal cursor and type B for Box. The editor will draw a solid colored box which fills the rectangle defined by your diagonal cursor.

Make a third diagonal cursor and press C for Circle. The editor will draw a circle or oval which fits within the imaginary rectangle defined by your diagonal cursor. For example:



FILLING AREAS WITH COLOR

Once you have made a diagonal cursor, pressing B for Box gives you a rectangular shape filled with the color you have chosen. You could also fill any shape or area with color by drawing colored lines in the area one at a time. However, the Graphics Editor makes it easy to fill an enclosed area of any shape with color using the A for Area Fill command.

Draw an enclosed area of any shape on the screen. Now place your cursor anywhere within the boundaries of the enclosed shape. Choose the color with which you want your shape to be filled, then press A for Area Fill. Colored lines slowly fill the area.

What happens if you try to fill an area that is not completely enclosed? Try it and see. Draw a V shape, then place the cursor in the base of the V. Choose a color, press A for Area Fill, and see what happens. The Area Fill command works as if it were pouring liquid paint into the the shape. If your area is not completely enclosed, the Area Fill will fill only to the point where the paint would "spill" out and start covering the entire screen. If the open shape you are filling has a border around it, all of the area inside the border will be filled.

ERASING

To erase the most recently executed graphics command, type E for Erase. The screen will clear, and the image will be redrawn except for the last command you executed. When constructing complicated graphic images, it is important to remember that commands can be erased only in the reverse order from which they were drawn. If there is a possibility that you will want to change a certain part of a picture, the names of labels for example, be sure to type the text for those labels last. Otherwise, you will have to erase all of the picture which was drawn after a particular label was inserted, change that label, and then redraw the picture. It's wise to plan out a complicated graphic image in advance. (See the next section for information on placing labels in your graphics images.)

Note: If you have used more than the allotted 511 commands, typing E will erase all commands since the 510th command. See the section in this chapter on Length of Graphic Files for a more complete explanation.

COLOR AND TEXT

Up to now, most of the discussion has assumed you are drawing white lines or shapes on the screen's black background. This section tells you how to select different colors for your drawings and backgrounds. Later in the section, you will find out how to add text to your graphics images, for labels or explanations.

CHOOSING THE COLOR

The color already selected for drawing graphics when you enter the Graphics Editor is White1. The background color is black. You may choose a different color for drawing by pressing one of these keys:

<u>Key</u>	<u>Color</u>	<u>Key</u>	<u>Color</u>	<u>Key</u>	<u>Color</u>
Ø	Black1	4	Black2	8	Reverse
1	Green	5	Orange		
2	Violet	6	Blue		
3	White1	7	White2		

To try using color, type 5. Then create a diagonal cursor. Type D, and your blinking diagonal cursor becomes a solid orange line. To become familiar with Apple color graphics, try Drawing in different colors.

Background color can be changed by drawing a large filled box of a particular color. See the section on Frames, Boxes and Circles in this chapter.



Lines or shapes drawn in the same color as the background color will not show up on the screen. For example, if you choose the color black1 or black2 for drawing on the screen's original black background, you may think something has gone wrong with the editor because you cannot see black images drawn on a black background.

Color 8 (Reverse) is not really a color; it serves to reverse the color of the background over which it passes. Black becomes white, green becomes violet, orange becomes blue. If you want to draw a line across backgrounds of many different colors, use Reverse as your color choice, and the line will show up no matter what the background color.

You may want to take some time to experiment with drawing different shapes and lines of different colors. When your screen is full of your drawings, skip the cursor to one corner of the screen by typing S. Now stretch the cursor to the opposite corner to make a diagonal which crosses the whole screen. Type 8 to select the color Reverse, and then type B for Box. Are you surprised at the effect? Try reversing different parts of your drawing by using the diagonal cursor to mark off rectangular sections.

Drawing lines through backgrounds of different colors may give surprising results. Often diagonal lines are drawn as stair-steps, and overlapping colors may cause colors to change or shaded areas to appear. These results stem from the way color monitors produce their colors, combined with the technique Apple uses to store color information. Further explanation of these unusual color effects is found in the chapter on Special Effects Instructions in the Apple PILOT Language Reference Manual.

TYPING TEXT

You may type words on the screen by using the T for Type Text command. Place the cursor wherever you would like to type some text. Now type T, and then type the text you wish to use. (The use of upper-case and lower-case letters is controlled by CTRL-Z and CTRL-A as explained in the section on Upper and Lower Case in the Lesson Text Editor chapter.) If you make a mistake, press the left-arrow key to erase the characters one at a time. You can type only one line of text at a time. When you have finished typing your text, or when you have reached the end of a line, press the ESC key to accept your line of text.

Once you press the ESC key to accept your line of text, the rubber band cursor reappears on the screen. Its beginning is at the point where the text insertion started, and its end corresponds to the end of the text insertion. To insert another line of text, place the cursor at the point where you want the insertion to begin.

To position one line of text directly below another, where the lines begin in the same column, press > to use the multi-dot cursor feature: the cursor will now move the size of one text character each time you press a direction key. Use the direction keys to decrease the cursor length until it becomes a single dot at the base of the first text insertion. Then press M to move the cursor seven dots below its current position. Press T for Type Text, and you are ready to insert your next line of text.

If you type text on a non-black background, each letter appears in a white typeface on a black background. Pressing the space bar or the RETURN key produces a plain black square. While using the T command, you can use the left-arrow key to erase letters, but the black background squares will still be on the screen. To erase the black boxes (and any text in them), you must end this text-entry session by pressing the ESC key. You can now erase the whole line of text entry by pressing E for Erase. This will cause the whole picture to be reconstructed except for the last graphics command, which in this case was the T command. Thus the black boxes disappear.

GRAPHICS ADMINISTRATION

This section provides you with information that will help you better utilize the Graphics Editor. The What Information command gives you a constant update on what features you are using in the Graphics Editor. The Quit command lets you store the graphics image you have created in the Graphics Editor, for later use in your lessons. Quick-Draw explains an alternate way of storing and using graphics files in your lessons. The section on the length of graphics files is well worth reading to ensure that you do not make files too long or too complex to store and readit.

GETTING INFORMATION

Press the W key for What Information to get a continuously updated description of

- * the color you are currently using,
- * whether you are using the keyboard direction keys or the paddle controls to move the cursor,
- * your current x (horizontal) and y (vertical) position on the screen,
- * the closest corresponding text row and column, and
- * the number of commands used and the number you can still type before the Apple stops saving them.

This information is displayed at the bottom of your screen. The part of the graphic image that it displaces has not been destroyed: it is simply "shuffled offstage" to make room for the information. To remove this information, type W again. You may use the W command any time you are in the Graphics Editor, except when inserting text.

If your lessons use the PILOT language's Accept Point instruction to let the student point to different areas of a graphics image, you will need to know the correct x and y coordinates of those areas. The What Information display lets you discover and write down those coordinates for later use in your lessons.

If your lessons display text in a viewport (a "window" for text that is smaller than the whole screen) while a graphics image is on the screen, you will need to make sure your graphics image stays away from the character positions used by the text viewport. Again, the What Information display tells you what your text-character position is at all times. See the Apple PILOT Language Reference Manual chapter on Special Effects Instructions for more details.

PILOT will save up to 511 commands used in making a Graphics Editor image. After the 511th command, additional commands continue to add to the image on the screen, but the Apple beeps to warn you it is not saving those commands for later use. The number of graphics commands used so far, and the number of commands you can still issue before the Apple starts beeping, are both revealed by the What Information display. Only the first 511 commands are counted by the display.

Cursor moves, color changes, and the commands W, E, P, Q, ?, and space bar do not count as commands. Any number of consecutive Skip commands (which move the cursor without drawing) are not counted as commands, but the next drawing command is considered a two-stroke command which moves and then draws. Other commands, such as typing text characters, may count as two or more commands. Pressing the E key Erases the effect of the last command or set of commands, and subtracts those from the command count shown by What Information.

Note: While the information made available by the What Information command is displayed, you can draw "behind" the information; you just won't see what you've drawn until the information is removed from the screen. Also note that while the What Information display is on the screen PILOT responds much more slowly to the keyboard and paddles.

QUIT

When you have finished working on your graphics image, and you are ready to save that image on the lesson diskette, type Q for Quit. If you've been working on a file named BEAUTY, for example, you'll see

```
Save this graphic as BEAUTY?  
Type Y for Yes, N for No.  
==>
```

Type N for No if you wish to save the file under a different name. If you type Y for Yes, you will soon see the Graphics Editor Menu, with your file BEAUTY neatly stored for future use.

QUICK-DRAW

When you save an image created in the Graphics Editor, PILOT normally stores only the sequence of commands which you used in drawing that image. Later, when a lesson's GX: instruction specifies that stored image, PILOT redraws the image command by command on the student's screen, just as you originally drew it. This process does NOT first erase the screen, but instead superimposes your graphic image over whatever is already on the screen.

If you have a complex picture with a lot of area filling, redrawing the picture command by command can take a great deal of time. For this reason, PILOT offers you an alternative way of saving a graphics image: as a "Quick-Draw" graphic. To save an image as a Quick-Draw graphic, simply include an exclamation point (!) anywhere in the name of the graphic. After an image has been saved as a Quick-Draw graphic, a lesson's GX: instruction can flash that image on the screen all at once, rather than redrawing it. The Quick-Draw image completely replaces the contents of the student's screen, erasing any previous text or graphics.

LENGTH OF GRAPHIC FILES

Every graphic image stores a record of the steps you followed, command by command, in creating the image. This command file occupies from 1 to 4 blocks on the diskette, as follows:

<u>Number of Commands Used to Create Image</u>	<u>Number of Diskette Blocks Occupied by Command File</u>
1 through 127	1
128 through 255	2
256 through 383	3
384 through 511	4
more than 511	4 (Commands after 511 not saved.)

Commands beyond 511 are not saved in a command file and therefore cannot be edited. Beginning with command 512, a "beep" at each command warns you that the command will not be available for editing. The screen image created by commands beyond 511 can be saved as a Quick-Draw graphic, but the extra commands themselves will be lost.

Note, however, that displaying a normal, slow-draw graphic does NOT clear the screen: it just adds the graphic to whatever is already on the screen. This means that you can combine on the student's screen any number of images stored as separate, slow-draw graphics.

An image saved as a Quick-Draw graphic can be placed on the student's screen very quickly, but a Quick-Draw graphic uses up much more space on the Lesson diskette than a normal graphic uses. A Quick-Draw graphic is actually saved as two files: the usual command file (from 1 to 4 blocks, as described in the previous table), and an additional 16-block file which stores a complete dot-by-dot image of the screen. Thus, the simplest Quick-Draw graphic uses 17 file blocks compared to 1 for the same image saved as a conventional graphic.

Depending on the number of commands in the command file, a Quick-Draw graphic can occupy from 17 to 20 blocks on your Lesson diskette. Before saving an image as a Quick-Draw graphic, be sure there is enough free space on your diskette to store the necessary files. If there is only enough room on the Lesson diskette to store the command file, only that file will be saved.

A Quick-Draw graphic stores a dot-by-dot image of the screen, exactly as it looked when you typed Q to Quit the Graphics Editor, regardless of how many commands you used in creating that image. This means, for example, that you could store and use in a lesson an image which required 650 commands to create. However, if you use more than the allotted 511 commands to create the image, only the portion of the image created by the first 511 commands will appear in the Graphics Editor when you later try to edit this image. Also, when you are using commands beyond the 511th command, if you press E to Erase your last command, all of your image produced since the 510th command will disappear from the editor screen.

CHAPTER 6

THE CHARACTER SET EDITOR

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The Character Set Editor lets you create a set of new or different characters corresponding to the keys on the keyboard. Using this editor, you may construct the letters of a different alphabet such as Russian, Hebrew, or Japanese, make symbols to use on a map or chart, and make drawings.

Normally, when you type the letter C, you know that a configuration of dots that looks like a C will be displayed on your monitor screen. Using the Character Set Editor, you can change the symbols that will appear on the screen when you type any regular keyboard symbol. For example, you can redesign the picture that goes with the letter C so that in a PILOT program using the new Character Set, you will type C, and see a ~ or a ^ or the picture of a cat!

Each character set file uses two blocks regardless of the number of characters designed.

Designing a Character Set is the most direct way to learn the Editor commands. Before you begin, it's helpful to take a look at a Character Set that has already been completed in order to get an overview of the Editor and its general procedures; your LESSON diskette contains sample Character Sets. The next section explains how to look at the sample Japanese Character Set; the rest of the chapter explains how to use all the features of the Character Set Editor.

A SAMPLE CHARACTER SET

To reach the Character Set Editor, type C from the Main Menu and press the RETURN key. The Character Set Editor Menu displays the names of the Character Set files currently on the Lesson diskette in alphabetical order, and offers you four options:

New, Edit, Delete, Quit

These options, as well as the Print option, are explained in the chapter on Common Editor Features. The other Quit option, which allows you to name and save files, is discussed in this chapter.

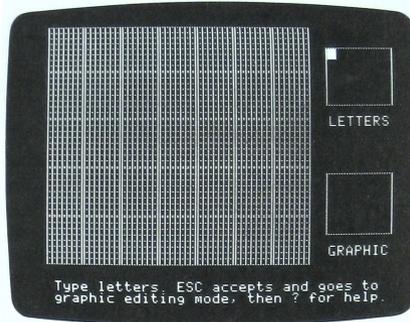
On the LESSON diskette, the Character Set Menu lists KATAKANA, a file containing a Japanese Character Set. This file is used as a sample character set in the next two sections, The Editor Screen and Japanese Characters. Type E for Edit and press the RETURN key. You'll be asked

Edit which character set?

Type K and you see the rest of the word KATAKANA completed for you. Press the RETURN key again, and the Character Set Editor Screen appears.

THE EDITOR SCREEN

The Character Set Editor Screen in the photograph below shows the three work areas that form a "scratch pad" where you make new designs for the Apple keyboard characters. Briefly, you type a letter in the Letters Box, redesign its corresponding image in the Big Grid, and watch the results appear in the Graphic Box. You can make alternate designs for up to 96 characters for each Character Set. You can create different designs for shifted and unshifted keyboard characters such as A and a.

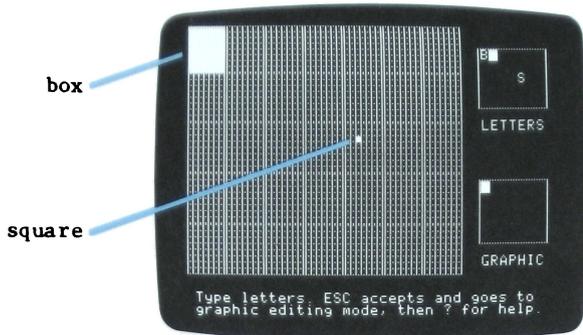


The Letters Box (upper right corner of the screen) displays keyboard characters; if a picture that matches a character has already been designed, it will appear in the corresponding position in the Big Grid. The Letters Box has room for 35 letters or symbols at one time, 7 across and 5 down, corresponding to the 35 boxes in the Big Grid. Once you have filled all 35 boxes, you can add new symbols by typing the new symbol over an existing one. The former, with its design intact, is "shuffled offstage" while the new symbol appears in the Letters Box and its corresponding picture or an empty box appears in the Big Grid.

The Big Grid (center of the screen) is where you draw your new character or picture. This grid consists of 35 large boxes, each divided into 56 small squares (8 squares high by 7 wide). You use one box in the Big Grid to make the design for one letter. The design in the Big Grid is four-times larger than when displayed on the monitor screen during a PILOT lesson. In the photo on the next page, a white box is shown at the upper left corner of the Big Grid, first row, first column. One white square is shown in the Big Grid box in the third row, fifth column.

The Graphic Box (lower right corner of the screen) displays each design in the Big Grid in the exact size and shape that it will appear when used in a lesson.

This photograph shows the difference between a box and a square in the Big Grid.



JAPANESE CHARACTERS

To begin looking at the KATAKANA Character Set, type A: an A will appear in the upper left corner of the Letters Box. Simultaneously, a KATAKANA character appears in the upper left corner of the Big Grid and in the upper left corner of the Graphic Box. Continue typing all the rest of the alphabet slowly, and watch the corresponding KATAKANA characters appear in the Big Grid. When you have finished typing the alphabet, type in the numbers 1 through 9.

You must type slowly for the Letters Box to register each character. If you make a typing error, press the left-arrow or right-arrow key until the cursor is over the error, then type the correct character. (If you type the space bar, the picture will disappear from the Big Grid, because the space bar is used to erase characters. Don't worry if this happens: the design is still intact, and will reappear if you type the letter you erased.)

Now the Letters Box is full. But there are designs lurking offstage for other keyboard characters. To see these, continue typing. Type Ø as the 36th character, and you will see it replace the A. The design for the A has not been destroyed, it has simply been "shuffled offstage" to give you space to look at or design new letters. The moment you type the A again, it will reappear.

When you have explored the KATAKANA Character Set as much as you like, press the ESC key to exit from the Letters Box and then Q to Quit. It is appropriate to exit without saving the file since no intentional changes were made: you just looked at the file. When you see

```
Save this character set as KATAKANA?  
Type Y for Yes, N for No.  
==>
```

Type N for No, and press the RETURN key. In response to the question,

Save as what name?

press the RETURN key.

You will then see

Do you want to exit
without saving the file?
Type EXIT to exit without saving

At this point, type EXIT, press the RETURN key, and in a moment you will see the Character Set Editor Menu.



If you have made any changes in the KATAKANA Character Set, do not answer Yes when asked by the Editor if you wish to save the Character Set as KATAKANA. Answering Yes will destroy the original KATAKANA file and replace it with the one containing your changes. If you want to keep your new file with the changes, save it under a new name.

DESIGN IT YOURSELF

If you have looked at the sample character set KATAKANA, then you're ready to explore the mysteries of this Editor by designing a Character Set of your own. Actually using the Editor to make the new Character Set will familiarize you with the Editor and should be well worth the effort. The rest of this chapter focuses on designing two pictures for a new Character Set, CHESS, whose pictures look like the chess pieces called a knight and a rook. A horse picture will represent the knight; a castle will represent the rook.

When designing any Character Set, it is important to write down each letter and its corresponding design as you create it. Otherwise, when you begin a new editing session, you may have to press several keys before you remember which keys you made new designs for.



If you design an alternate character that matches the space bar, you will be unable to use the space bar in the Letters Box to erase other symbols. In such a case, if you press the space bar while in the Letters Box, the character will disappear from the Letters Box and the picture corresponding to the space bar will appear in the Big Grid.

To start, place the AUTHOR diskette in drive 1 and the LESSON diskette in drive 2, then turn the computer's power on. From the Main Menu, press C and the RETURN key, and you see the Character Set Editor Menu. Type N for New and press the RETURN key. Now type the name of your new Character Set, CHESS, and press the RETURN key.

THE LETTERS BOX

With the Character Set Editor scratch pad on the screen you'll see this prompt at the bottom of the screen:

Type letters. ESC accepts and goes to graphic editing mode, then ? for help.

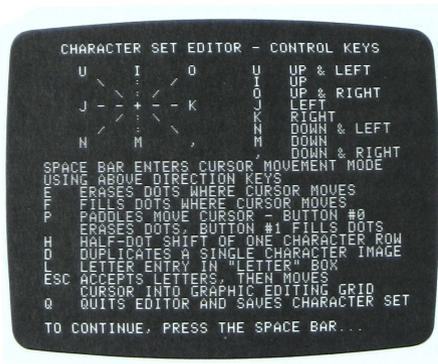
First type K for knight: the picture of the knight that we'll create will correspond to the K on the keyboard. The K will appear in the Letters Box. Nothing appears in the Big Grid because we have not yet created the new design. Now press the ESC key to accept the letter and to enter graphic editing mode, so you can start your design in the Big Grid.

THE HELP SCREEN

Leaving the Letters Box changes the screen in two ways. First, you see a tiny blinking cursor in the upper left corner of the Big Grid; with this cursor, you can design new pictures for the symbol you have typed in the Letters Box. Second, the prompt at the bottom of the screen changes to:

Erase, Fill, cursor keys, ? for help

reminding you how to use the Big Grid and how to get to see the Help Screen. Use of the Big Grid is described in the next section. Type ? to see the Character Set Editor Help Screen as shown below.



The information on the Help Screen is explained in this chapter. Whenever you are working in the Big Grid, type ? to see the Help Screen as a reminder of the Editor commands. If you are working in the Letters Box and want to see the Help Screen, you must press ESC to leave the Letters Box before you type ? to see the Help Screen. The Letters Box prompt line reminds you of this.

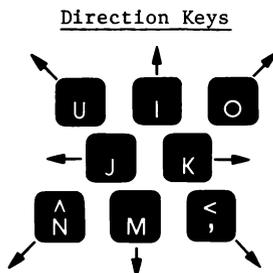
When you are through looking at the Help Screen, press the space bar to return to the Editor Screen.

THE BIG GRID

The Big Grid is used to create the pictures that replace the standard ASCII images associated with each key.

In the Big Grid, press the following direction keys to move the cursor. Pressing the REPT key while holding down a direction key speeds up cursor moves.

<u>Key</u>	<u>How Cursor Moves</u>
U	up and left
I	up
O	up and right
J	left
K	right
N	down and left
M	down
,	down and right
P	moves with paddle controls



Now try moving the cursor around the Big Grid by pressing the keys shown above (and also displayed on the Help Screen). Type M while holding down the REPT key. Notice that when the cursor comes to the edge of the Big Grid, it disappears off the bottom and reappears at the top, and vice versa. Try a key which moves the cursor on the diagonal while holding down the REPT key. Note what happens when the cursor reaches the edge of the grid: when it disappears off the right edge, it reappears at the left edge and down a line and vice versa.



Pressing certain keys by mistake can cause unexpected results.

<u>Letter</u>	<u>Comments</u>
L	Returns you to the Letters Box. Press ESC to return to the Big Grid.
P	Causes the cursor to be controlled by the paddle controls. Press the space bar to return to keyboard cursor control.
D	Allows you to Duplicate a character; a prompt appears at the bottom of the screen. To return to editing in the Big Grid, press the RETURN key or CTRL-C twice.

Use of the Letters Box, paddle control of the cursor, and duplication of characters are discussed in more detail elsewhere in this chapter.

You make each picture by filling in the small squares with white. To fill squares with white, type F for Fill: now each small square over which you move the cursor will be filled with white. To erase the white, type E for Erase: now the white will be erased from each small square over which the cursor moves.

To leave Fill mode or Erase mode, press the space bar: now you can use the direction keys to move the cursor freely around the Big Grid without filling or erasing.

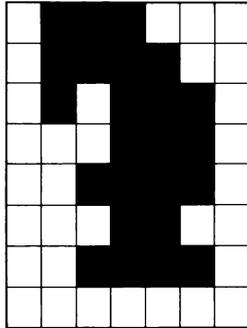
Before designing your knight, experiment with the Fill and Erase commands. For example, use the direction keys to return the cursor to the upper left corner of the Big Grid. Type F, then the M key three times: FMMM. You should see the three top squares in the far left column fill with white. Now erase those three squares: type EIII to make the white disappear.

Notice that the cursor Fills only when it is located in the box in the upper left corner. This is because we defined only this one box as a drawing box by typing only one letter in the Letters Box.

The Knight

Now let's design the knight chess piece, a horse that will correspond to the K key. The design will be created in the Big Grid's top left box, which is composed of 56 small squares. The picture you create looks four times larger on the Big Grid than it will be when displayed on the monitor screen in a lesson. The size of the finished image is shown in the Graphic Box in the lower right corner of the screen.

Below is a graph paper pattern for the knight.



When you are ready to draw your knight, erase any dots you have drawn, and bring the cursor to the upper left corner of the Big Grid. Press the comma key. The tiny blinking cursor should now be in the second small square from the left in the second row. Press the F key for Fill, and the box Fills with white. Now press the K key twice. Two more squares fill with white. To continue with the horse, type this:
,JJM

Now you need a blank box: you have to move the cursor using the direction keys, without Filling. Press the space bar to exit from the Filling mode, and then press the K key twice to move the cursor two squares to the right. Now go back to Filling mode by pressing F and continue the design by pressing the K key twice more.

Using the graph paper drawing above as your guide, finish the horse. Remember to watch the Graphic Box to see how your finished product will actually look on the screen.

Bigger Designs: The Castle

You can use the Character Set Editor to draw larger pictures: just assign letters to different parts of the drawing. In this section, we will design a rook, a chess piece that looks like a castle, and is sometimes called a castle. But instead of using one 56-square box, we will use four of them, two rows of two.

Let's use the letters CASL for the four boxes designating the castle. These letters must be inserted in the Letters Box two on top of the other two like this:

```
CA  
SL
```

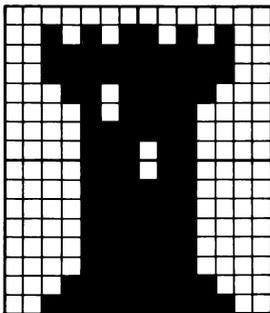
For ease in designing the castle, leave a couple of empty boxes between the knight we have just designed and the castle we are going to design.

Begin by typing L to enter the Letters Box. Press the right-arrow key twice to move the cursor in the Letters Box two spaces to the right. Now type C, then A. Now press the RETURN key and the right-arrow key three times. Then type S and L. Press the ESC key and you are ready to design your castle in the Big Grid.

The blinking cursor is in the upper left corner. Move it to the fourth box in the top row, where the picture you design will correspond to the C in the Letters Box.

Paddle Controls

Instead of using the cursor direction keys to design the castle, let's design the castle using the paddles. Type P to transfer cursor control to the paddles. Having already designed the horse, you should have no trouble designing the castle shown below.



Paddle 1 controls vertical movement: turn its knob slowly in one direction then the other to see how it works. Press the button on paddle 1 to Fill. As long as the button on paddle 1 is depressed, squares over which the cursor moves fill with white. Turn the control slowly to fill.

Paddle 0 controls horizontal movement. Press the button on paddle 0 to Erase. As long as the button on paddle 0 is depressed, white will be erased from each small square over which the cursor moves. Turn the control slowly to erase.

Typing L for Letters Box, ESC to accept and Q to Quit all work while the paddles control cursor movement. The D for Duplicate and H for Half-dot shift (described later in the chapter) also work under paddle control. F for Fill and E for Erase have no effect while the paddles are controlling cursor movement.

Press P, and move the cursor around with the knobs on the paddles to get an idea of how they work. Now, looking at the graph-paper drawing of the castle shown above, design your CASL using the paddles.

QUIT

To save the two chess pieces, type Q for Quit. When you see the prompt

```
Save this character set as CHESS?
Type Y for Yes, N for No.
==>
```

type Y for Yes and the designs you created will be permanently saved on your Lesson diskette. When you call in this file again, you will see the Character Set Editor Screen with its blank scratch pad. Your knight and rook are waiting offstage. But when you type K and CASL into the Letters Box, these new pictures will appear on the Big Grid, their designs complete.

Although the letters you associated with your designs are fresh in your mind now, you may forget them after a certain time interval; this is why we encourage you to write down the symbol and its new picture as you design it. Recording the information now may save you some effort later, since you will have a handy directory available next time you want to use CHESS.

USING A CHARACTER SET

To see your Character Set CHESS used in an Apple PILOT Lesson, type this program into the Lesson Text Editor using an appropriate lesson name such as SEECHESS.

```
t:Here are the characters in the
:Character Set file named CHESS.
t:
tx:CHESS
t:      K          CA
t:          SL
t:
tx:
t:You can type K and CASL to see
:them yourself. You can also
:look at any other designs you
:saved in CHESS: just type the
:corresponding letter.
t:
t:Press the RETURN key to end the
:program and return to the
:Main Menu.
t:
tx:chess
t:
a:
tx:
```

When you have finished typing the lesson, Quit and save the file. From the Lesson Editor Menu, type R for Run and your lesson name, SEECHESS. In a few moments you will see your newly designed characters!

The ASCII Character Set

When you type a character on the Apple's keyboard, the screen displays a configuration of dots that form a picture corresponding to the character you typed. The character-pictures which usually appear are taken from a standard set of pictures called the ASCII character set. On the LESSON diskette which came with your Apple PILOT System is a Character Set file named ASCII. This file contains the standard ASCII character set, just like the character set Apple normally uses.

The ASCII file can be very useful if you wish to design new pictures for just a few keyboard characters, while leaving the usual pictures for all the other characters. Simply edit the ASCII file and design substitute pictures for a few characters you would not use normally, such as *, #, or @. Then save the file under a new name such as ASCIPLUS--not ASCII. This step is very important: if you save the edited file under the name ASCII, you will lose all of the original, standard pictures for the characters you changed! Later, when you use this revised ASCIPLUS file in a PILOT lesson, your typing will display most of the normal ASCII pictures along with your substitute pictures.

MAXWELL and BIGLETTER

The demonstration lesson, LEGENDS, uses two alternate Character Sets: MAXWELL and BIGLETTER. The little man who appears on the screen to introduce the lesson is MAXWELL. You see him in one pose, greeting you with one arm pointing toward the word "legends". The figure of MAXWELL was designed in the Character Set Editor. He has other poses, with his arms and legs in different positions. A list of the character combinations that display MAXWELL in different poses is included in the appendix on Demonstration Programs.

At the end of the LEGENDS lesson, the program displays THANKS! in very large letters. These over-sized letters and the Apple logo were also designed in the Character Set Editor. The character combinations that display different BIGLETTER pictures are shown in the appendix on Demonstration Programs. The Character Sets BIGLETTER and MAXWELL are both provided for you on the LESSON diskette that came with your Apple PILOT System and may be studied in the Character Set Editor.

DUPLICATING A CHARACTER

After creating a picture for display by a certain keyboard character, you may wish to change the character which displays that picture or to have several characters display the same picture. Luckily, you do not have to redraw the picture: you can duplicate any character's picture so the same picture is also displayed by a second character.

In making symbols for a map legend, suppose you have designed a cow picture to be displayed by the keyboard character C. But now you want the character C to display a picture of corn and the character O to display the cow picture. From the Big Grid, type D for Duplicate, and you see this prompt at the bottom of the screen:

Duplicate which character?

Type C and you see the message

Duplicate "C" to which character?

Then type O and the cow picture you originally designed for display by the character C is duplicated for display by both characters C and O. If the character O already has a picture associated with it, you see this message

"O" occupied-type Y to overwrite.

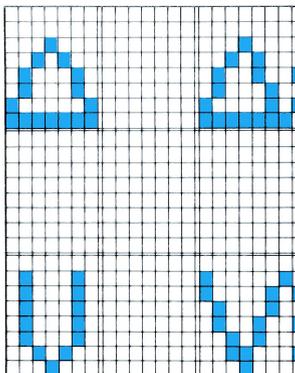
If you type Y, the character O will display the picture of a cow and the picture previously associated with character O will be lost. If you do not type Y, you will be returned to the Big Grid prompt line.

To design your picture of corn for display by the character C, you must now go to the box in the Big Grid which contains the original cow picture corresponding to the character C. First, erase character C's cow picture or duplicate a blank to character C. Then you can start afresh to design a corn picture.

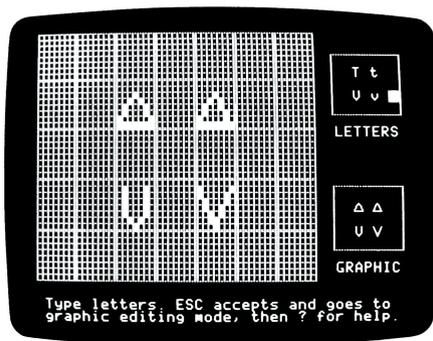
THE HALF-DOT SHIFT

Drawing letters or pictures which require diagonal lines can be difficult when you use a grid of limited size. For example, if you were trying to draw a triangle, or the letters Y or V, you would find it impossible to make perfectly diagonal lines you needed in the space provided by the box in the Big Grid. The Character Set Editor provides you with a half-dot shift feature which helps you make diagonal lines by allowing you to shift any row of dots one-half space to the right.

The following illustration shows a triangle and the letter V drawn in the Character Set Editor with and without the half-dot shift feature. Drawings using the half-dot shift feature are on the right and show black markers at the right end of each row where the dots have been shifted half a square.



The photograph below shows the Character Set Editor screen with the finished images of the triangles and V's in the Graphic Box. Notice how much more exact are the designs on the right, using the half-dot shift, than are those ones on the left without it.



To use the half-dot shift marker, move the blinking cursor to any square in the line of dots that you want shifted. Press the H key, and the half-dot shift "marker-bar" appears as a slender white bar directly on the line which separates the boxes. The dots themselves are not shifted in the Big Grid, but the result of shifting shows up immediately in the Graphic Box.

To undo the half-dot shift, place the blinking cursor in any square of the line of dots you want to un-shift, and press H again. The half-dot shift and the marker-bar disappear.

CHAPTER 7

- 88 COMPOSE IT YOURSELF
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- 95 DISPLAYING A COMPOSITION
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- 96 SPECIAL EFFECTS

The Sound Effects Editor lets you compose short pieces of music or sound effects to use in your lessons. Using this Editor requires only very basic music skills: reading notes, recognizing note length, and identifying octaves. You write your musical composition by typing the name, length, and octave of each note. You can listen to your composition in the editor while composing it.

You have room for 1000 notes in each composition. Each sound effect file occupies one block when it is stored on the Lesson diskette.

COMPOSE IT YOURSELF

This section gives you a brief idea of what is involved in using the Sound Effects Editor, with little attempt to explain the specific notation used. If you try each step of this section now, you will better understand the discussion of the Sound in Depth section, which discusses notation and how to create more complicated sound effects.

Type S for Sound Effects from the Main Menu, and the Sound Effects Editor Menu appears. Type N for New and press the RETURN key. Now type a file name of your choice (up to ten characters). For our example, type the name BEET5. Now press the RETURN key and soon you see

```
INSERT DELETE PLAY QUIT ?(HELP)
```

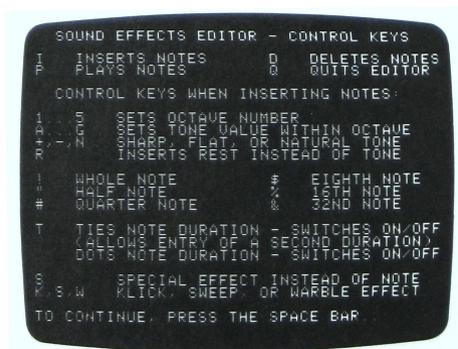
```
NOTE
```

```
1 THE END
```

Insert, Delete, and Play are commands you use in creating sound effects to type, remove, and listen to your notes. Typing Q for Quit causes an end to this editing session and provides you with the prompts to name and save your file. For more information on naming and saving your files, see the chapter on Common Editor Features.

THE HELP SCREEN

Press the ? key to see the Help Screen shown below.

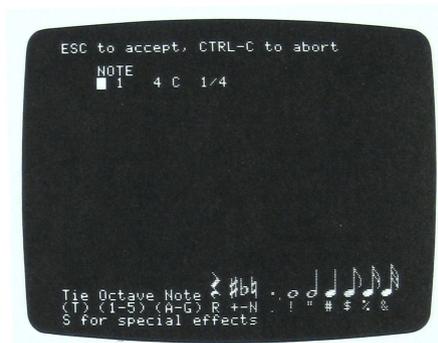


This Help Screen presents a summary of all the Sound Effects Editor commands. It is available to you whenever you see the Editor prompt line with the ?(HELP) reminder displayed at the top of your screen. The information displayed on the Help Screen is explained in detail later in this chapter.

When you have finished looking at the Help Screen, press the space bar and you see the Editor prompt line again. The cursor and a greater than (>) sign are positioned to the left of note number 1. The location of the cursor indicates which note will be affected by your next insertion or deletion.

INSERT

Type I for Insert, and the screen will look like this:



The top line is called the Insert prompt line and reminds you that pressing the ESC key accepts the body of notes you have typed into your composition during this insertion. Pressing CTRL-C aborts your insertion: the composition will appear exactly as if you had never begun that particular insertion. The cursor appears next to the note you will be working on, in this case note number 1.

Whenever you begin inserting into a new file, you see the "dummy" note:

```
NOTE
  1   4 C   1/4
```

This is a sample note that is intended as a placeholder for you to change into whatever note you wish to start your composition with. It is named note number 1, its pitch is a 4th octave C (middle C), and its length is a quarter note (1/4). This dummy note shows only the note number, octave, pitch within that octave, and length. These are the most elementary parts of a note, and many simple tunes can be composed using only notes such as the dummy note. At the bottom of the screen, there is a mini-Help Screen to remind you how to use the Sound Effects Editor notation. Notice that you do not have access to the full Help Screen while you are in Insert mode. The notation on the

mini-Help Screen is explained in the Sound in Depth section of this chapter.

To begin writing your composition, BEET5, you can make changes to the dummy note, or you can use a quarter note C in the fourth octave (the dummy note) as the first note of your composition. For this exercise, try the second alternative by pressing the RETURN key to accept the dummy note as the first note. This also tells Apple PILOT to play the note and to present the new dummy note, in this case, note 2.

The new dummy will always be the note you have just written minus any ties and dots you may have added. Since you chose to start your composition by writing 4 C 1/4, the dummy for the second note is 4 C 1/4. Following in the footsteps of a great musical genius, press the RETURN key two more times. So far your composition looks like this

NOTE		
1	4 C	1/4
2	4 C	1/4
3	4 C	1/4
4	4 C	1/4

However, since one-tone music is a bit monotonous, let's change the fourth note to a whole note G sharp in the third octave. Type 3, then G, then +, then the !. Now note number 4 should look like this

4	3 G+	1/1
---	------	-----

Once again press the RETURN key and listen to the Apple play the note. If you make an error, for example, typing an octave number not recognized by PILOT, you will hear a warning beep when you press the RETURN key. Now type a quarter note rest for your fifth note. Press R for Rest and the " and you see

5	3 R	1/4
---	-----	-----

The 3 in the octave position is irrelevant; it is left over from the octave of the dummy note. Now press the RETURN key and "hear" the note you have written. Of course there's nothing to hear since a rest is a length of time during which no music is played. But you know that the Sound Effects Editor has entered this rest into your composition because you are given no warning beep and the new dummy note number 6 appears. When you complete the insertion of a rest by pressing the ESC key, the octave number preceding R changes to 1 (in this case the 3 becomes a 1).

Your composition has five notes that you have "written" and a sixth dummy note which is awaiting changes. It looks like this:

1	4 C	1/4
2	4 C	1/4
3	4 C	1/4
4	3 G+	1/1
5	3 R	1/4
6	3 R	1/4

Before you can play your composition, you must incorporate the notes inserted so far as a permanent part of your file by pressing the ESC key. The dummy note disappears and the sixth note is identified as THE END.

1	4 C	1/4
2	4 C	1/4
3	4 C	1/4
4	3 G+	1/1
5	1 R	1/4
6	THE END	

Only the notes you have completed by pressing the RETURN key become part of your file when you press the ESC key to accept the insertion.



When you are inserting notes, the prompt line at the top of the screen reads

ESC to accept, CTRL-C to abort

This reminds you that pressing the ESC key accepts all the notes you have "written" during this insertion. Each individual note must be completed by pressing the RETURN key. If you accidentally press the ESC key before completing an individual note with the RETURN key, that note will not be accepted into your composition.

PLAY

You can now listen to your composition by pressing P for Play. Already you are well on your way to composing Beethoven's 5th Symphony!

Sound Effects files are listed on the Sound Effects Editor Menu. To listen to one of the compositions listed, type E for Edit and select a file. Once you see the Sound Effects Editor prompt line, type P for Play to hear the composition.

A file name BEETHOVEN on the LESSON diskette accompanying your Apple PILOT System contains a more complete segment of Beethoven's Fifth Symphony which is the composition you started in the exercise described above. To hear BEETHOVEN, from the Sound Effects Editor Menu, type E for Edit, then BEETHOVEN and press the RETURN key. When the display with the first thirteen notes appears, press P for Play to

hear the 64-note composition. The notes for the BEETHOVEN file are listed in the appendix on Demonstration Programs.

QUIT

If you want to save this file, type Q for Quit. When you are asked

Save these sound effects as BEET5?

Type Y for Yes, N for No.

==>

type Y for Yes, and you will see your new file BEET5 appear in alphabetical order on the Sound Effects Editor Menu.

When you Quit the editor, you also have the options of renaming the file on exiting without saving the file.

SOUND IN DEPTH

This section explains how to "write" more complicated notes containing accidentals (sharps or flats), dotted lengths, or ties to other notes of the same pitch. After reading this section, you will understand the mini-Help Screen you see when Inserting notes. A complete note in the Sound Effects Editor, exercising all the possible options, has the following structure:

Note Number	Octave Number	Pitch Name	Accidental Sign	Note Length	Dot on Length	Tied To	Note Length	Dot on Length
1-100	1-5	A-G	+,-,N	1-1/32	.	T	1-1/32	.
		R						

There can be from 1 to 100 notes in any composition. There are three complete octaves and two partial octaves. These range from F at the bottom of the bass clef to F above the C above high C of the treble clef as shown below:

Pitch F G A B C D E F G A B C D E F G A B C D E F

Octave 1 2 3 4 5

Pitch names range from A to G. To get any pitch name from A to G, simply press the corresponding keyboard letter. Note that the pitch name of an octave's lowest note is usually C, not A. The B below that C is thus the highest note in the next octave below. To register a rest, instead of a sounding note, type R as the pitch name. Pitches can be modified by accidentals. An accidental is a sharp, flat or natural. All pitches are assumed to be naturals unless they are specifically accompanied by a sharp or flat sign. The following chart shows these pitch modifiers and the traditional musical notation for them.

<u>Key</u> <u>Press</u>	<u>Musical</u> <u>Notation</u>	<u>Results</u>
N		The letter N for Natural appears next to the pitch it modifies. This reminds you that the note is to keep its natural, written pitch, in places where a sharp or flat would be expected. As soon as this insertion is accepted, however, the N disappears.
+		The + (plus sign) for Sharp shows on the screen next to the pitch it modifies. This raises the written, natural pitch one half-step. If the next-higher natural pitch is one half-step higher than the natural pitch of the note you have sharped, the equivalent natural pitch is substituted for the sharped pitch when the note is accepted. Thus E+ becomes F, and B+ becomes C in the next-higher octave.
-		The - (minus sign) for Flat shows on the screen next to the pitch it modifies. This lowers the written, natural pitch one half-step. If the next-lower natural pitch is one half-step lower than the natural pitch of the note you have flatted, the equivalent natural pitch is substituted for the flatted pitch when the note is accepted. Thus F- becomes E, and C- becomes B in the next-lower octave. All remaining flatted notes are converted to the equivalent sharped note of the pitch one step below. Thus B- becomes A+, and so on.

Since your accidentals and naturals do not remain as you typed them, it may be difficult to tell at a glance in what key a piece was composed. But don't worry, your piece will sound correct when it is played.

Note lengths range from a whole note to a 32nd note and are inserted by using the following keyboard characters:

Press	Length of Note or Rest	Musical Notation Note	Rest
!	1/1		
"	1/2		
#	1/4		
\$	1/8		
%	1/16		
&	1/32		

A note can be dotted (making the note half again as long as already specified) and can be tied to one other note of the same pitch. For example, if you specified note 45 to be a third-octave F#, lasting for a dotted half-note tied to a dotted quarter-note, it would appear like this:

45 3 F+ 1/2 . T 1/4 .

In normal musical notation, the note would look like this



To dot a note, type . (a period). To remove the dot, simply type the . (a period) again and it disappears. To tie the written note to another note of the same pitch, type T for tie and you will see

T 1/1

added on to the end of the note you are working on. This provides you with a dummy whole note tied to your existing note. To change the length of the tied note, type the correct length using the keyboard symbols for note length. To remove a tied note, press T and both the tie and the tied note's length will disappear. The length of any note, including the original note's length plus the length of any note tied to it, cannot exceed two whole notes.



Suppose you have written a dotted whole note. For example:

```
12    3 C  1/1 .
```

If you then wish to tie this note to another note, you press T for tie, and you see

```
12    3 C  1/1 . T 1/1
```

You know that the T stands for tie and the 1/1 is the length of any "dummy" tied note. In this instance, if you pressed the RETURN key to accept the note, you would get a warning beep telling you that this note is unacceptable, and the dot and tie would disappear. This is because the length (two and a half notes) exceeds two whole notes which is the maximum note length allowed in the Sound Effects Editor. So, although you are always presented with a dummy whole note length when you press T, this length is not necessarily acceptable to the Apple.

DISPLAYING A COMPOSITION

You can edit an old file by typing E for Edit and then the name of the old file. When you do, the first 13 notes (or fewer if the entire file contains fewer than 13 notes) of the composition are displayed on the Sound Effects Editor screen. The rest of the notes are still in your file and you can hear all of them by typing P for Play. However, there is only room on the display screen for 13 notes at a time.

You use the cursor to see the rest of the notes. Move the cursor forward or "down" the file with the right-arrow key, and backward or "up" the file with the left-arrow key.

Move the cursor to note number 13 and press the right-arrow key again; the Editor will display a new set of 13 notes. The new display is centered around note number 13, the last note the cursor was placed on in the previous group of notes. Moving the cursor backward through the file produces the same results, with the new display centering around the note found at the top of the old display. You cannot back up behind the first note, nor can you go beyond the last note, THE END.

There are two ways to speed up cursor movement: by pressing the REPT key while holding down one of the arrow keys, or by using a repeat-factor. To use the repeat-factor, type the number of notes you wish to advance (or backup) then press the RETURN key. Repeat-factors are fully explained in the chapter on the Lesson Text Editor.

When you type I to Insert notes, the note on the same line with the cursor and all the notes above it remain on the screen. All the notes below it disappear. They have not been lost or destroyed; they have simply been "shuffled offstage" to make room on the screen for you to

see the new notes you are writing. The note on the same line with the cursor becomes your dummy note, awaiting changes. You may add new notes to your composition by making changes in each dummy note and pressing the RETURN key. However, only 13 notes will fit on the display screen. When you complete the changes to the 13th note on the screen (which is not necessarily numbered 13), press the RETURN key. The following note, the new dummy note with the cursor beside it, is then displayed alone at the top of your screen.

When you finish your insertion and press the ESC key, you will see only the last seven notes of your insertion displayed on the screen. Nevertheless, all of the new notes have been accepted and automatically renumbered if necessary.

DELETING NOTES

To delete a note, place the cursor on the line with the note you want to delete. Press the D key to begin a deletion. The delete prompt appears on the screen:

USE CURSOR, ESC ACCEPTS, CTRL-C ABORTS

Press the right-arrow key or the RETURN key and the note is deleted. Press the left-arrow key and the note reappears. You cannot delete backwards or "up" in a file. You may speed up your deletions (and replacements of deletions) in two ways: press the REPT key while holding down one of the arrow keys, or use a repeat-factor. To use the repeat-factor, type the number of notes you wish to advance (or replace), then press the RETURN key. You cannot delete past the last note.

Pressing the ESC key makes the deletion final. Pressing CTRL-C cancels the deletion; your file appears as if you had never begun the deletion.

SPECIAL EFFECTS

There are three Special Effects you can use in your musical compositions: Klick, Sweep and Warble. You specify the octave, note, and duration for each effect.

- * Klick produces a note which "clicks" once at the pitch indicated by note options.
- * Sweep produces a sound that starts at one pitch, and sweeps up or down the scale to a second pitch within a given duration.
- * Warble produces a sound that alternates between two pitches for a given duration--similar to Tarzan's yell: aaa-eee-aaa-eee-aaa.

You insert Special Effects in Insert mode, complete them by pressing the ESC key or abort them by pressing CTRL-C as you would any regular note. From the Sound Effects Editor display, type I for Insert. The

last note in your composition is the dummy note. Your Special Effect will replace that dummy note. Once you have made any change in the dummy note, you cannot use the Special Effects option with that note. To insert a Special Effect, type S. The dummy note disappears and this prompt appears at the top of the screen:

Klick Sweep Warble

Type the first letter of the Special Effect you wish to insert. In this case when you type K for Klick, a dummy "note" appears with a K in front of it like this:

NOTE

3 K4 C 1/4

and you see this message:

Enter octave, note, & length
Then press RETURN

When you press the RETURN key you hear a short click. The length of each click is always the same. The note length determines the length of time between the click and the next note or Special Effect. The new dummy note has the same octave, pitch and length as the Klick but does not have a K preceding it and is not a Special Effect.

To add another Special Effect note, you must again type I for Insert then S to get the Special Effects prompt.

Instead of K you may type S for Sweep or W for Warble. Both Sweep and Warble follow a common procedure using the same prompts but producing different sounds. We will cover only Sweep, but you will want to experiment with both. Once you type S for Sweep, your dummy note will look like this

NOTE

3 S4 C 4 C 1/4

and you see this prompt at the top of the screen:

Enter starting octave & note,
Then press RETURN

Type the octave number and the pitch letter, then press the RETURN key. A new prompt appears at the top of the screen:

Enter ending octave, note, & length
Then press RETURN

Follow these directions, and when you press the RETURN key, you will hear the Sweep between the two notes for the length of time you indicated.

You may include tied and dotted notes in all of these Special Effects.

APPENDIX A

PILOT DEMONSTRATION PROGRAMS

- 100 LEGENDS
- 111 BEETHOVEN
- 112 MAXWELL
- 114 BIGLETTER

LEGENDS

This is what the text file for the demonstration program, LEGENDS, looks like when printed out on paper. Notice that the printer shows the PILOT instructions in true upper and lower case. In the Lesson Text Editor, you see upper and lower case differentiated only by regular type and inverse video.

```
r:LEGENDS: (C) 1980 Apple Computer Inc.
```

```
:
```

```
pr:lw
```

```
d:n$(20)
```

```
g:v;es;cl;m0,0;d0,511;d559,511;d559,0
```

```
;;d0,0;v1,38,7,22
```

```
r:(color border)
```

```
s:50,10;50,10;50,10
```

```
r:(sound effect)
```

```
gx:legends
```

```
r:(title drawing)
```

```
tx:maxwell
```

```
r:(special character set)
```

```
t:DAW
```

```
t:EB
```

```
t:FC
```

```
t:
```

```
r:(picture of maxwell)
```

```
tx:
```

```
r:(back to standard character set)
```

```
g:v1,38,11,22
```

```
t:Hi. I'm Maxwell.
```

```
t:
```

```
th:What's your name?
```

```
s:50,10
```

```
a:$n$
```

```
m:#!$!/? !1!2!3!4!5!6!7!8!9!0
```

```
r:(test for illegal characters)
```

```
jn(n$<>""):start
```

```
j3:human
```

```
tl:
```

```
tl:Sorry, I didn't quite catch that.
```

```
s:10,50
```

```
r:(low note)
```

```
w:l
```

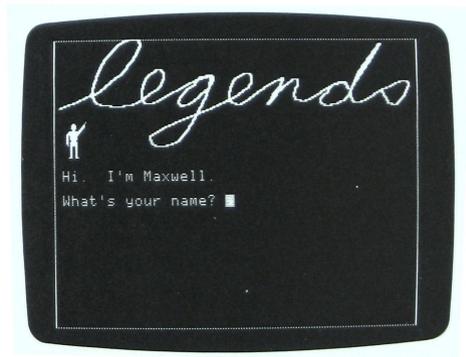
```
t:
```

```
t>Please type just your first name.
```

```
t:
```

```
th:What's your name?
```

```
j:@a
```



```

r:(try it again)

*cont
r:(pause subroutine)
t:
th:Press the space bar to continue...
as:
e:

*human
c:n$"human"
r:(default name for bozos)

*start
c:/n$ /"/ /' / /, / ./ /? / c
r:(edit student's name)
g:es
t:Hi, $n$ !
s:32,10;44,10;56,10
t:
t:Do you know what a LEGEND is?
t:
a:

m:%ye!may!%per!think!%try!cert!%bet
:!absolposit!sure!right!of&%co
jn:no
m:. !, !; !: !-
r:(more than one phrase?)
jy:scan
t:
t:Ok, $n$ . What is it?
t:
a:
r:(get another answer)

*no
mj:%no!n't%!nt%
t:
t:Well, let's find out, shall we?
t:
a:
j:map

*scan
mj:stor!tale!tell!myth!exag!fab
t:
t:Well, that's very true, $n$ ,
:but the word LEGEND has another
:important meaning:
t:
w:2
t:a legend also explains how to read a
:map or chart. That's what we'll look

```

:at in this lesson. Maybe we can share
:some tall tales some other time.
t:
th:Ok?
a:
j:map

mj:map!char!sym!exp!gra!sym
t:
t:Yes, that's right!
s:32,20;44,20
t:
t:You must've been studying this stuff.
t:
w:2
t:Well, let's take a look at the
:lesson anyway. Ok, \$n\$?
t:
a:
j:map

m:*
t:
t:Well, I haven't heard of that one,
:but this lesson is about MAP legends.
w:2
t:
t:Let's take a look at it, shall we?
t:
a:

*map
g:v;es
gx:map
g:v0,39,17,23

t:
t:This is a map of an imaginary
:country called Zaarb. In this
:lesson, we will discover some
:interesting facts about this country
:by studying its map.
w:3
u:cont

g:es
t:
t:Just as a key unlocks a door, a
:LEGEND is used to explain, or
:"unlock" a map.
t:
w:1
t:In fact, a legend is also called a
:KEY.

gx:products

g:es

t:Without a legend, for example,
:you couldn't tell that the symbol "<"
t:shows us where Laf birds are found.

t:

w:3

t:What's a "Laf bird", you say?

t:

s:5Ø,1Ø;5Ø,1Ø;5Ø,1Ø

w:1

th:Press the space bar to find out...

as:

gx:lafbird!

g:v22,39,Ø,23

t:Laf birds are

t:

t:raised in the

t:

t:northwest of

t:

t:Zaarb for export.

t:

w:2

t:

t:Their worldwide

t:

t:popularity stems

t:

t:from the fact

t:

t:that people feel

t:

t:happy when Laf

t:

t:birds are around.

t:

t:

sx:lafbird

th:Press the space bar to continue.

as:

g:es

t:

t:

t:Remember the "&"

t:

t:symbol on the map?

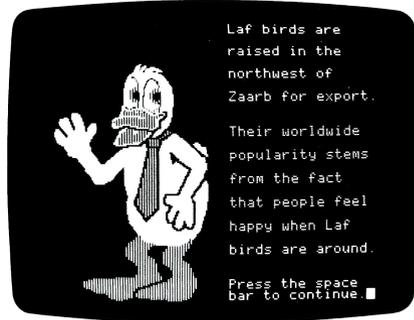
t:

t:

w:1

t:

t:A legend would




```

g:es
t:Looking at the legend in the upper
:right hand corner, $n$, what would
:you say the blue circles on the map
:represent?
t:
a:
t:
ms:water!h2o!lake!sea!ocean!river
tn:No, a blue circle stands for water,
:such as a lake or a sea.
wn:2
tn:
tn:Notice the blue dot in the legend.
ty:Very good. A blue circle stands
:for water, such as a lake or a sea.
w:3

```



```

*laf
t:
t:What symbol stands for laf birds?
a:
t:
m:<!less!left!arrow
ty:That's right.
jy:laf3
j3:laf3
j(%b="&"):laf1
r:(sorry, can't match to a "&")
mj:!,comma
t:Almost, but don't forget about the
:shift key! What symbol is a comma
:when it's shifted?
j:@a
mj:>!great!right!arrow
t:Almost right. What symbol looks
:like that but points the other way?
j:@a
mj:amper
*laf1
t:No, that's the symbol for Flobies.
t:What's the one for Laf Birds?
j:@a
mj:@!%at
t:No, that's the one for Aluminum.
t:What symbol stands for Laf Birds?
j:@a
m:*
t:Look at the legend in the upper
:right corner, $n$, and try again.
j:laf
*laf3
t:It's a "less than" sign (<).

```

w:3
u:cont

g:es
t:The map legend also gives us more
:information about Zaarb's products.
t:Of the products shown, Zaarb exports
:oranges, sugar cane, aluminum and
t:(of course) Laf birds.

w:3
u:cont
g:es

*alum
t:What does the "@" symbol stand for?
a:
t:
ms:%alumi!metal
thy:Right.
jy:alum3
j3:alum3
mj:floob
t:No, that would be a "&". Try again.
j:alum
mj:laf!bird
t:No, that's the "<" symbol.
j:alum
m:*
t:Sorry. Try again, \$n\$.
j:alum
*alum3
t:It stands for aluminum.
w:2

*agri
t:
t:Name one of Zaarb's agricultural
:products that's shown on the map.
a:
t:
ms:%alumi!metal
mn:laf!bird
jy3:agri3
ty:That's a product, but it is not
:part of a plant, so it's not an
:agricultural product. Try again.
jy:agri
ms:orange!sugar!cane
jn3:agri3
tn:Sorry, that's not a product.
jn:agri
th:OK!
*agri3
t:Actually, both oranges and sugar

```

:cane are agricultural products.
t:
wn:3

*notag
t:Now, $n$, name an export
:that isn't an agricultural product.
a:
t:
ms:orange!sugar!cane
jy3:notag3
ty:That's an agricultural export.
ty:
jy:notag
ms:%alumi!metal
mn:laf!bird
jn3:notag3
tn:That's not a product. Try again.
tn:
jn:notag
t:Excellent!
*notag3
t:Zaarb's non-agricultural exports
:are aluminum and laf birds.
u:cont

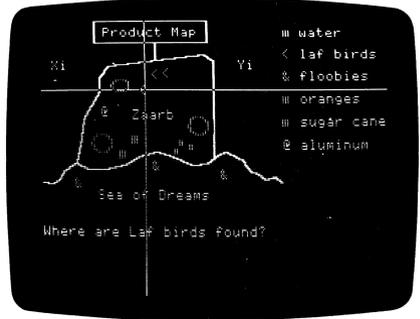
```



```

*grafix
j(btn(0) and btn(1)):end
g:es
th:Let's try something new, $n$.
w:2
t:I'll ask you about one of Zaarb's
:products on the legend, and you can
:point it out on the map, using the
:Apple's built-in game paddles.
u:cont

```



```

g:es
t:To select your answer, just move the
:crosshairs (the thin crossed lines)
:across the map by turning the knobs
:on the game paddles. Push the button
:on one of the paddles to point it out.
u:cont

g:es
t:
t:Where are Laf birds found?
*apl
ap:
r:(z tells which problem we're on)
c:z=1
r:(check if paddles are in range)
j(%x>135 and %x<225 and %y>355 and

```

:%y<435):okbird

j:rongpl

*okbird

s:32,10;36,10;39,10;44,10

t:

t:Great! Now, \$N\$, where are the Floobies?

*ap2

ap:

c:z=0

j(%x>50 and %x<350 and %y>150 and

:%y<250):aok

r: check for wrong places

*rongpl

t(%x>360 and %y>200):

tc:No, that's in the legend area.

tc:Please point it out on the map.

jc:prompt

t(%x<70 or %x>280 or %y<150 or %y>435):

tc:You're not even on the map!

jc:prompt

t(%y<250):

tc:That's where Floobies are found.

jc:prompt

j(%y>305):zone2

*zone1

t(%x>180):

tc:That's where the oranges are grown.

jc:prompt

t:

t:That's where sugar cane is grown.

j:prompt

*zone2

t(%x<135 and %y<355):

tc:That's where aluminum is found.

jc:prompt

t(%x>135 and %x<225 and %y>355):

tc:No, that's where the Laf birds are.

jc:prompt

t:Sorry, that's not the right area.

*prompt

t:

t(z):Where are the Laf birds found?

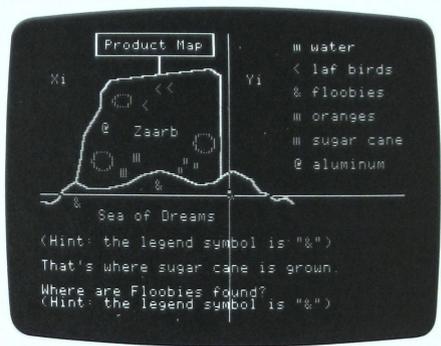
tc:(Hint: the legend symbol is "<")

jc:apl

t:Where are Floobies found?

tc:(Hint: the legend symbol is "&")

j:ap2



```

*aok
s:32,10;36,10;39,10;44,10
t:
t:I think you've got it, $n$ !
u:cont

*end
g:v;es
t:
t:
t:This lesson, along with all the others
t:
t:
t:   on this diskette, was created using
t:
t:
t:     the Apple PILOT Author system.
t:
t:
t:
t:
t:
t:
t:
s:50,10;50,10;50,10
w:3
t:
t:   We hope you enjoyed it
t:
t:
t:           as much as we did.
w:3

```

```

tx:bigletter
r:(custom picture character set)
g:es
t:
t:
t:
t:   23  23  23  23  23  23
t:   45  45  45  45  45  45
t:
t:   23  ABEFIJMNQRUVYZ  23
t:   45  CDGHLKLOPSTWX01 45
t:
t:   23  23  23  23  23  23
t:   45  45  45  45  45  45
tx:
t:
t:
t:
t:
t:
t:

```



s:44,20;0,30;39,10;38,10;39,10;40,30
s:0,10;39,30
t: That's all, folks!
s:0,20;43,20;0,30;44,20
w:5
e:

BEETHOVEN

These are the notes for the fragment of Beethoven's Fifth Symphony that is found in the Sound Effects Editor under the file name BEETHOVEN.

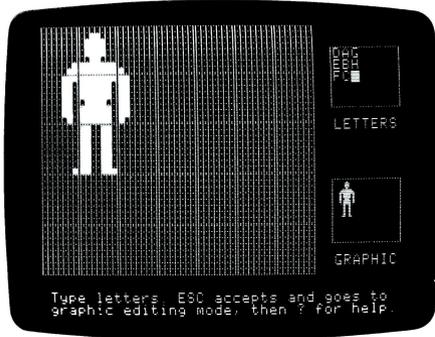
1	4 C	1/4	33	4 A+	1/4
2	4 C	1/4	34	4 A+	1/4
3	4 C	1/4	35	4 G	1/1
4	4 C	1/4	36	1 R	1/4
5	1 R	1/4	37	5 C	1/4
6	3 A+	1/4	38	5 C	1/4
7	3 A+	1/4	39	4 A+	1/4
8	3 A+	1/4	40	4 G+	1/8
9	3 G	1/1	41	1 R	1/16
10	1 R	1/4	42	3 G+	1/4
11	4 C	1/4	43	3 G+	1/4
12	4 C	1/4	44	3 A+	1/4
13	4 C	1/4	45	4 C	1/4
14	3 G+	1/4	46	1 R	1/32
15	4 C+	1/4	47	5 C	1/4
16	4 C+	1/4	48	5 C	1/4
17	4 C+	1/4	49	4 A+	1/4
18	4 C	1/4	50	4 G+	1/8
19	4 G+	1/4	51	1 R	1/16
20	4 G+	1/4	52	3 G+	1/4
21	4 G+	1/4	53	3 G+	1/4
22	4 F	1/1	54	3 A+	1/4
23	1 R	1/4	55	4 C	1/4
24	4 C	1/4	56	1 R	1/32
25	4 C	1/4	57	5 C	1/4
26	4 C	1/4	58	5 C	1/4
27	3 G	1/4	59	4 A+	1/4
28	4 C+	1/4	60	4 G+	1/4
29	4 C+	1/4	61	1 R	1/1
30	4 C+	1/4	62	4 F	1/4
31	4 C	1/4	63	1 R	1/1
32	4 A+	1/4	64	5 C	1/1

MAXWELL

At the beginning of the LEGENDS demonstration lesson, you see Maxwell, a little man, who introduces the lesson. You see him in one pose, greeting you with one arm pointing toward the word "legends". This figure was designed in the Character Set Editor file named MAXWELL. You can use MAXWELL in your lessons too. The following information indicates which regular keyboard symbols can be combined to form corresponding MAXWELL images.

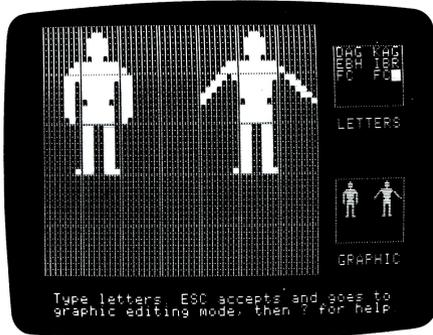
This pattern

DAG
EBH
FC



displays a picture of Maxwell standing with his arms at his side. The following patterns from left to right

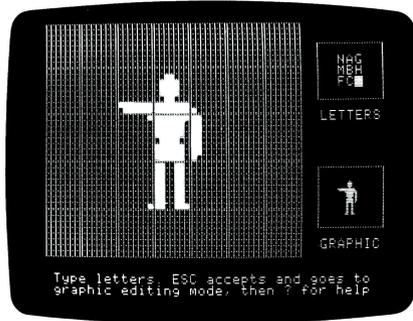
KAG	LAS	NAU
IBR	JBT	MB
FC	FC	FC



show Maxwell in the process of flapping his arms. You will note that the second column of each of these patterns is composed of the same letters (ABC); these letters correspond to Maxwell's head, torso, and part of his legs.

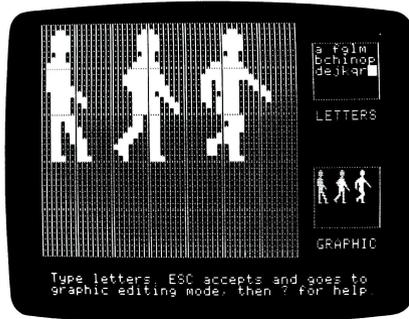
You can show Maxwell with just his left arm raised with this configuration:

NAG
MBH
FC



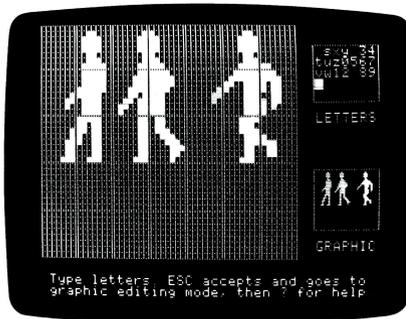
You can show him walking to the right in profile with these patterns:

a	fg	lm
bc	hi	nop
de	jk	qr



or walking to the left with these:

s	xy	34
tu	z0	567
vw	12	89

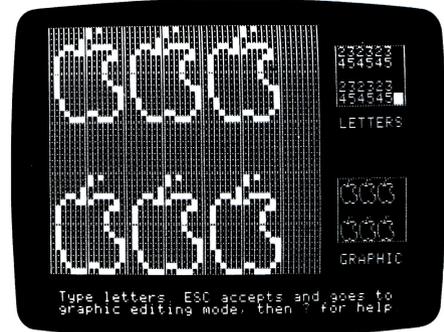
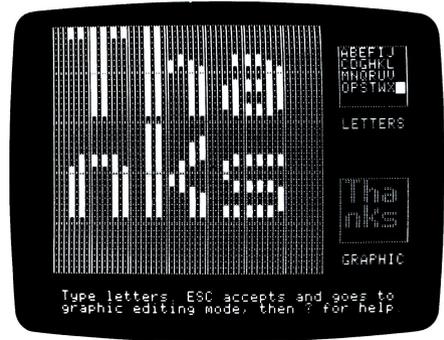


The above list does not include every possible Maxwell pose. All of the capital letters except Y and Z have corresponding patterns. Try your hand at combining these patterns and see what you can make Maxwell do.

BIGLETTER

At the end of the LEGENDS demonstration lesson you see the large word "Thanks!" and the Apple Logo. These were created in the Character Set Editor file named BIGLETTER. You can use these as building blocks for a whole alphabet of oversized letters. The following information indicates which regular keyboard symbols can be combined to form corresponding BIGLETTER images.

AB CD	big "T"
EF GH	big "h"
IJ KL	big "a"
MN OP	big "n"
QR ST	big "k"
UV WX	big "s"
YZ Ø1	big "!"
23 45	Apple Computer logo



APPENDIX B

116 INPUT/OUTPUT MESSAGES

117 LESSON TEXT EDITOR MESSAGES

 Insert

 Jump

 Repeat

 Copy

 Delete

 Find and Replace

INPUT/OUTPUT MESSAGES

These errors may be encountered when reading a file from a Lesson diskette or when storing a file on a Lesson diskette.

ERROR: Reading file

The file header, containing information about your text file, could not be read properly.

ERROR: Disk error

The Apple cannot read in all of the text portion of your file properly. It reads in as much of the file as possible.

ERROR: File too big for memory

You are editing a text file that wasn't created by Apple PILOT. Apple PILOT limits you to 8192 characters per text file.

ERROR: Writing the file

There is not enough unused space left on your Lesson diskette to store this file. Insert a different Lesson diskette in drive 2 and start the exiting procedures again. Note: You cannot transfer a file from one Lesson diskette onto another Lesson diskette directly. However, you can do so indirectly by using the following procedure.

Suppose you could not fit lesson GEOTHERM onto the Lesson diskette called GE01 and you had to save it onto GE02. If you want to make room for the lesson GEOTHERM on the Lesson diskette GE01, you will have to delete unwanted files from GE01 by using the Delete option in one or more of the four editors. Then you can read GEOTHERM into the Lesson Text Editor from GE02 and save it onto GE01. The same procedure can be used for files created by the Special Editors.

** WARNING - MORE THAN 21 FILES **

You have saved more than 21 different files created in a single Editor. Only the first 21 existing files created in this Editor will be displayed in the Editor's Menu, and only those files displayed can be selected for further editing. The files after the 21st file are saved correctly, and will be displayed when you have deleted enough of the visible files to reduce the total number of files for that Editor to 21.

ERROR: UNABLE TO FORMAT
DISKETTE WRITE PROTECTED,
BAD MEDIA, OR BAD DRIVE.

You will get this message if you try to initialize a diskette which is write-protected (there is no notch or cutout on the left side of the diskette's outer case, or the notch is covered), or there is some problem with the diskette itself or the disk drive.

Check to make sure your diskette has been inserted properly and that there is nothing obstructing the cutout. If these are not the problems, try to initialize a different diskette. If you continue to have problems, you may have to have your dealer take a look at your Apple and disk drives.

LESSON TEXT EDITOR MESSAGES

INSERT

ERROR: Please finish the insertion (SP)

This message appears when you are nearing the end of the allotted space in a lesson file. A lesson file may contain at most 8192 characters. Finish this lesson or divide it into two parts.

These four steps explain how to divide a file:

1. Save the current file as is, for example, GEOTHERM.
2. Invoke GEOTHERM and delete the last half (or so) of the file.
3. At the end of the remaining portion of GEOTHERM-1 use the Link command (see the Language Reference Manual chapter on Control Instructions) to connect this portion of the lesson to the next portion which will be called GEOTHERM-2.
4. Now save the first half as GEOTHERM-1.
5. Invoke GEOTHERM again and delete the first half of the lesson. Continue working on the last half. When you have finished this editing session, save this portion of the lesson as GEOTHERM-2.
6. You may now Delete the original file, GEOTHERM.

ERROR: No room to insert.

This message appears when there is room for fewer than 127 more characters in your text file. It is your final warning that you are running out of space in the lesson. You cannot insert any more text.

ERROR: Buffer Overflow!!!! (press SPACE)

The text you have most recently inserted in your lesson will not fit in the Copy buffer. You can continue to insert text at this point in your lesson, but you will not be able to copy this full insertion elsewhere in your file using the Copy buffer command.

ERROR: No insertion to back over. (SP)

After pressing I for insert, you have pressed CTRL-X, CTRL-Q, or the left-arrow key in an attempt to back-up past the beginning of the current insertion. To do this press ESC or CTRL-C to end the current insertion. Then place the cursor where you want it in the text.

JUMP

ERROR: Label not found

The label you specified when using the Jump command to search for a Label cannot be found in the file.

REPEAT

ERROR: Too many (Press SPACE)

You have used too large a repeat-factor. Repeat-factors must be from 0 through 10000. To continue, press space bar twice after this message.

ERROR: Integer Overflow (Press SPACE)

You have tried to tab (CTRL-I) with a repeat count of more than 4095.

ERROR: Repeatfactor>10000 (Press SPACE)

You have used too large a repeat-factor. Repeat factors must be from 0 through 10000. To continue, press space bar twice after this message.

COPY

ERROR: Invalid copy (Press SPACE)

The Copy buffer has been overwritten by an insertion.

ERROR: No room (press SPACE)

There is not enough space remaining in your lesson file to insert the complete contents of the Copy buffer. As much of the contents of the Copy buffer as will fit in you file will be copied into your current lesson (starting from the beginning of the text in the Copy buffer).

ERROR: Buffer Overflow! (Press SPACE)

There is not enough memory space in the Apple to store the file read by the Copy command, in addition to the lesson already in memory. You can create the space needed by dividing the lesson you are working on into two parts before using the Copy command to read the other file. See the beginning of the section on Insert in this appendix for details on how to divide your lesson file.

ERROR: Disk error (Press SPACE)

The Apple is unable to copy text from another file.

DELETE

No room to copy. Delete Anyway (Y/N)

Your complete deletion will not fit in the Copy buffer. If you press Y to delete anyway, you will not be able to copy your deletion correctly from the Copy buffer.

FIND AND REPLACE

ERROR: Invalid delimiter (Press SPACE)

Find and Replace delimiters must not be letters or numbers.

ERROR: Pattern too long (Press SPACE)

Neither the original pattern nor the replacement pattern can exceed 1023 characters.

ERROR: Buffer full (Press SPACE)

Your lesson is too long to allow the specified replacement to be carried out throughout the entire lesson file. As many replacements as can fit into the maximum possible lesson length (8192 characters) will be carried out and shown on the screen when you press V for Verify.

ERROR: No old pattern (Press SPACE)

You have typed FS, FLS, RS, RLS for Find or Replace Same but there is no previously specified pattern.

ERROR: Pattern not found (press SPACE)

The Find and Replace commands are unable to find the pattern specified.

APPENDIX C

- 122 LESSON TEXT EDITOR COMMANDS
 - Cursor Moves
 - Repeat-Factor
 - Set Direction
 - Upper and Lower case
 - Cursor Moving Commands
 - Text Changing Commands
 - Miscellaneous Commands

- 124 GRAPHICS EDITOR COMMANDS
 - Keyboard Commands
 - Paddle Commands

- 126 CHARACTER SET EDITOR COMMANDS
 - Letter Box Commands
 - Big Grid Keyboard Commands
 - Paddle Commands

- 129 SOUND EFFECTS EDITOR COMMANDS
 - Notes
 - Special Effects

LESSON TEXT EDITOR COMMANDS

CURSOR MOVES

<u>You Press</u>	<u>Cursor Moves</u>
right-arrow key	Moves repeat-factor spaces right. †
left-arrow key	Moves repeat-factor spaces left. †
CTRL-O	Moves repeat-factor lines up. †
CTRL-L	Moves repeat-factor lines down. †
space bar	Moves repeat-factor spaces in cursor-set direction.
CTRL-I	Moves repeat-factor tab positions in cursor-set direction.
RETURN key	Moves to start of line that is repeat-factor lines away, in cursor-set direction.
=	Moves to start of latest text found, replaced or inserted.

† These commands work independently of the cursor-set direction.

REPEAT-FACTOR

An integer from 0 through 10000 typed before a move or command. If repeat-factor is / the move or command is repeated as many times as possible in the direction indicated in the file.

CURSOR-SET DIRECTION

< , -	All change cursor-set direction to backward.
> . +	All change cursor-set direction to forward.

UPPER AND LOWER CASE

CTRL-Z:	Causes the next single letter to be typed in uppercase, and subsequent letters to be in lowercase.
CTRL-A:	Reverses the case from upper to lower case or lower to upper case.

CURSOR MOVING COMMANDS

Jump:	Jumps to file's Beginning or End, or to previously set Label.
Page:	Moves the cursor repeat-factor pages in the cursor-set direction.
Find:	Looks in the cursor-set direction for the repeat-factor-th Literal or Token occurrence of the target string, which

must be typed with delimiters. S means use the same string as before.

TEXT CHANGING COMMANDS

- Insert:** Inserts text. Use left-arrow key to backspace over insertion. CTRL-X deletes the last line inserted, back to the end of the previous line. Automatic formatting breaks lines between words so lines do not exceed 39 characters and puts colon at the beginning of each line.
- Delete:** Deletes all text moved over by the cursor. Reverse direction of cursor to undelete.
- Copy:** Copies either another diskette file or contents of Copy buffer into the file at the position of the cursor.
- eXchange:** Replaces the character under the cursor with the character typed. Each line must be done separately. Pressing the left-arrow key causes the original character to re-appear.
- Replace:** Looks in the cursor-set direction for the next Token occurrence of target string, and replaces it with a substitute string. Continues repeat-factor times. Both strings must be typed with delimiters. Literal option looks for every occurrence of target string regardless of delimiters. Verify option asks for permission to replace. S means use the same target or the same substitute string as before. Replace format is:
nR [L][V]/target string//replacement string/
where the items in square brackets are optional.

MISCELLANEOUS COMMANDS

- Verify:** Redisplays the screen with the cursor centered.
- Memory:** Displays prompt line telling how many characters used in current file and how many remaining.
- Quit:** Leaves the Lesson Text Editor; returns to the Main Menu. Provides prompts on naming and saving the lesson.

GRAPHICS EDITOR COMMANDS

When you enter the Graphics Editor, you see a blank screen with a flickering-dot cursor in the center. This is the end point of the rubber band cursor. This cursor can be moved by the following commands. Press the ? key to see the Help Screen.

KEYBOARD COMMANDS

<u>Key</u>	<u>Help Screen Reads</u>	<u>Results and Comments</u>
S	Skip (move)	Cursor skips from beginning point to end point of rubber band cursor without drawing a line.
D	Draw Line	Draws line from beginning point to end point of rubber band cursor.
F	Frame	Draws outline (frame) of a rectangle defined by diagonal cursor.
C	Circle (oval)	Draws a circle or oval inscribed in an imaginary frame. Frame is defined by diagonal cursor.
B	Box (solid)	Draws box defined by diagonal cursor and fills it with chosen color.
A	Area fill	Typing A when cursor is inside any enclosed or partially enclosed area fills that area with color chosen. If area is not enclosed, filling stops at point where color would start filling whole screen.
T	Type Text	Allows text to be inserted into graphic. Left-arrow key to backs up over text; ESC accepts text.
W	What Info	Displays information on current color in use, whether paddle or keyboard control is in use, x and y coordinates of cursor, row and column coordinates of cursor, number of keystrokes used, and number of keystrokes remaining.
P	Paddles move cursor, buttons draw.	See Paddle Control chart (next page).
Q	Quits the editor and saves graphic	Ends current editing session. Prompts to change file name and Save on diskette. Returns to Main Menu.

E	Erases last command	Erases last command. Graphic is redrawn piece-by-piece, excluding last command.
---	---------------------	---

PADDLE COMMANDS

The paddle controls can be used to control the cursor in the Graphics Editor. All the keyboard commands still work as described in the last table.

<u>Action</u>	<u>Results and Comments</u>
Press the P key	Causes cursor to be controlled by paddles. Deactivates keyboard direction keys.
Press the Space Bar	Returns control from paddles to keyboard. Reactivates keyboard direction keys.
Turn Paddle 0	Controls horizontal movement of cursor.
Turn Paddle 1	Controls vertical movement of cursor.
Push Button 0	Causes cursor to Skip from beginning point to end point of rubber band cursor without drawing. Same as keyboard S command.
Push Button 1	Draws solid line from beginning point to end point of rubber band cursor. Same as keyboard D command.

CHARACTER SET EDITOR COMMANDS

LETTER BOX COMMANDS

Upon entering the Character Set Editor, letters you type are inserted in the Letters Box at the cursor position until you press the ESC key to go to the Big Grid. If you are in the Big Grid, type L to enter the Letters Box.

<u>You Type</u>	<u>Results</u>
Any Character	Character is displayed in Letters Box; if corresponding design exists, it is displayed in the Big Grid.
Right-Arrow Key	Moves cursor to the right.
Left-Arrow Key	Moves cursor to the left.
RETURN Key	Moves cursor to beginning of next line down.
New Letter Over Old	Replaces the old letter with the new letter.
Space Bar	Erases old letter.
CTRL-A	Reverses the case from uppercase to lowercase or vice-versa.
CTRL-Z	Causes the next single typed letter to be uppercase.
ESC key	Exits Letters Box; starts action in Big Grid.

BIG GRID KEYBOARD COMMANDS

These commands allow you to create designs for new Character Sets in the Big Grid. Once you are in the Big Grid, press ? to see the Help Screen. Press the space bar to leave the Help Screen and reenter the Big Grid.

<u>Command</u>	<u>What Help Screen Says</u>	<u>Results and Comments</u>
F	Fills dots where cursor moves	Squares over which cursor moves are filled with white.
E	Erases dots where cursor moves	Cursor erases white from any filled square over which it moves. If cursor moves over a blank square while E is active, nothing happens.
D	Duplicates a single character image	Asks for the name of the character whose picture will be duplicated; then the name of the new character will correspond to the old picture.
H	Half-dot shift of one character row	Shifts all dots in the row containing the cursor one-half space to right.
L	Letter entry in "letter" box	Leaves Big Grid; enters Letters Box.
ESC	Accepts letters, then then moves cursor into graphic editing grid	Begins work in Big Grid.
P	Paddles move cursor- Button #0 erases dots, Button #1 fills dots	Moves cursor with paddles; buttons control Fill and Erase.
Q	Quits editor and saves character set	Ends current editing session. Prompts to rename file, Save on diskette. Returns to Main Menu.
Space Bar	Enters cursor movement mode.	Returns cursor control to keyboard from paddles.

PADDLE COMMANDS

The paddles can be used within the Big Grid as described below. D for Duplicate, H for half-dot shift, and L to enter the Letters Box work with paddles the same way as described in the Big Grid Keyboard Commands table. The keyboard commands F and E (for Fill and Erase) do not work while the paddles control the cursor: use the paddle buttons instead.

<u>Action</u>	<u>Results and Comments</u>
Press the P key	Causes cursor to be controlled by paddles. Deactivates keyboard direction keys.
Turn Paddle Ø	Controls horizontal movement of cursor.
Turn Paddle l	Controls vertical movement of cursor.
Push Button Ø	Erases white from squares over which the cursor moves. For continuous erasing, move cursor SLOWLY while holding down button Ø. Equivalent to keyboard Erase command.
Push Button l	Fills with white any square over which the cursor moves. For continuous filling, move cursor SLOWLY while holding down button l. Equivalent to keyboard Fill command.

SOUND EFFECTS EDITOR COMMANDS

NOTES

This chart defines each part of a note, gives its options and indicates whether that part is optional or required

<u>Part</u>	<u>Definition</u>	<u>Optional or Required</u>	<u>You can type</u>
Note Number	Number designating the note's position in numerical sequence with other notes.	Supplied by PILOT	(Automatically provided.)
Octave Number	The 8 named pitches are in each of 5 different ranges. This number indicates which range the named pitch falls in.	Required	1 (lowest) through 5 (highest)
Pitch Name	Name of the pitch of the designated octave range.	Required	C, D, E, F, G, A, B, correspond- ing to do, re, mi, fa, sol, la, and, ti or R for a rest.
Accidental	Sharp (raises the named pitch a half-step), flat (lowers the named pitch a half-step), or natural (no change to named pitch).	Optional	+ sharp - flat N or space bar for natural.
Length of Main Note	A number indicating how long the note or rest is to last. Shown as the fraction of a whole note or rest.		! whole note " half note # quarter note \$ eighth note % sixteenth note & thirty-second note
			Whole note plays for about 1 second.
Dot on Main Note	Makes the note last half as long as the "length" indicates.	Optional	.
Tie to Another Note	Joins the main note to another note of the same pitch.	Optional	T

Length of Tied Note	Indicates how long tied note is to last.	Optional	See "Length" above.
Dot on Tied Note	Makes the tied note last half again as long as the tied length indicates.	Optional	. after T Total length of any note cannot exceed two whole notes.

The note's pitch is made up of its octave, pitch name, and accidental (if any). The note's duration is the sum of the main note length, main note dot (if any), tied note length (if any), and tied-note dot (if any).

SPECIAL EFFECTS

Type I for Insert, then type S for Special Effects. Type the initial letter of the desired special effect: it will replace the dummy note. Then you will be prompted to provide the octave, note and duration for each effect.

<u>Special Effect</u>	<u>You Type</u>	<u>Action and Comments</u>
Klick	K	Produces a note which "clicks" once a the pitch indicated by note options. Note length determines length of time between click and next note or special effect.
Sweep	S	Produces a sound that starts at one pitch, and sweeps up or down the scale to a second pitch during a given duration.
Warble	W	Produces a sound that alternates between two pitches for a given duration.

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Apple PILOT

Editors Manual

Quick Reference Guide

LESSON TEXT EDITOR COMMANDS

CURSOR MOVES

Right-Arrow key	Moves cursor right. *
Left-Arrow key	Moves cursor left. *
CTRL-O	Moves cursor up. *
CTRL-L	Moves cursor down. *
Space Bar	Moves cursor in cursor-set direction. *
CTRL-I	Moves cursor tab positions in cursor-set direction *
RETURN key	Moves to start of line that is repeat-factor lines away, in cursor-set direction.
=	Moves to start of latest text found, replaced or inserted.

* Repeat-factors are valid with all these commands.

REPEAT-FACTOR

An integer from 0 through 10000 typed before a move or command. If repeat-factor is / the move or command is repeated as many times as possible in the cursor-set direction.

CURSOR-SET DIRECTION

The first character (either > or <) displayed on most editor prompt lines is the cursor-set direction indicator and shows which direction the cursor will move through the file.

<	,	-	Change direction to backward.
>	.	+	Change direction to forward.

UPPER AND LOWER CASE

CTRL-Z: Causes the next single letter to be typed in upper case, and subsequent letters to be in lower case.

CTRL-A: Reverses the case from upper to lower case or lower to upper case.

ESC AND CTRL-C

When you are using the Insert, Delete, and eXchange commands, use ESC to accept additions or changes to the text; use CTRL-C to abort changes.

CURSOR MOVING COMMANDS

JUMP: (Type J) Jumps to file's Beginning or End, or to previously set Label.

PAGE: (Type P) Moves the cursor repeat-factor pages in the cursor-set direction.

FIND: (Type F) Looks in cursor-set direction for the next Token or Literal occurrence of the target string, which must be typed with delimiters. Continues repeat-factor times. S means use same string as before.

TEXT CHANGING COMMANDS

INSERT: (Type I) Inserts text. Use left-arrow key to backspace over current insertion.

CTRL-X deletes the last line inserted, back to the end of the previous line of current insertion. Automatic formatting breaks lines between words so lines do not exceed 39 characters and puts continuation-colon at the beginning of each line.

DELETE: (Type D) Deletes all text moved over by the cursor. Reverse direction of cursor to undelete.

COPY: (Type C) Copies either another diskette file or contents of Copy buffer into the file at the position of the cursor.

EXCHANGE: (Type X) Replaces the character under the cursor with the character typed. Each line must be done separately. Pressing the left-arrow key causes the original character to re-appear.

REPLACE: (Type R) Looks in the cursor-set direction for the next Token or Literal occurrence of target string, and replaces it with a substitute string. Continues repeat-factor times. Both strings must be typed with delimiters. Verify option asks for permission to replace. S means use the same target or the same substitute string as before. Replace format: [n]R [L][V]/target string//replacement string/ items in square brackets are optional.

MISCELLANEOUS COMMANDS

VERIFY: (Type V) Redisplays the screen with the cursor centered.

MEMORY: (Type M) Displays prompt line telling how many characters used in current file and how many remaining.

QUIT: (Type Q) Leaves the Lesson Text Editor; returns to the Main Menu. Provides prompts on naming and saving the lesson.



10260 Bandley Drive
Cupertino, California 95014
(408) 996-1010