

USING

IBM Microcomputers

Second Edition

With

Wordstar
Lotus 1-2-3
dBASE II/III

RANDOM HOUSE

PROFESSIONAL

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M. Pitter
I L. Pitter

Using IBM Microcomputers,

2nd Edition

with

WordStar

Lotus 1-2-3

dBASE II & III

Keiko M. Pitter

Richard L. Pitter



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Preface

Using IBM Microcomputers was first published in 1984, as *Using Microcomputers: An IBM PC Lab Manual*. It was designed for use in the lab of a microcomputer applications course or as a supplement in an introductory computer course. It presents several popular software programs spanning applications of word processing (WordStar), spreadsheet (Lotus), and file management (dBASE), in a manner that greatly reduces the need for instructor intervention to assist students.

It is our firm belief that, by using this manual, students can learn a marketable skill with these full-feature software packages, which are widely used by businesses. Also, if students so desire, they can experiment with the capabilities of the software beyond the coverage of this manual.

As time passes, some interesting phenomena occur in Computerdom. For one thing, software comes and goes. VisiCalc has become a thing of the past, whereas dBASE is gaining popularity. Then, there is the problem of software vendors coming out with a newer version of software, called an upgrade. Lotus 1-2-3, Release 1A, has been upgraded to Release 2, and dBASE II has seen two significant upgrades to dBASE III and dBASE III Plus.

Our attempts have always been to teach some of the most popular software packages. Hence, it became time to write this second edition of the manual—one that has more up-to-date coverage and that accommodates users of the different versions of Lotus 1-2-3 and dBASE.

MANUAL DESIGN

The manual answers most questions asked by students in a manner which is neither technical nor too elementary. It uses many screen displays and is written in such a way that students are either told or shown at every step what response to expect from the computer and what entries to make next. Wherever possible, the reason for the response or the entry is given. Intermittently, a PRACTICE TIME exercise is given to test the student's understanding of the material. The solutions for these are not given. If students cannot do any one of them, they should review the material given immediately before the exercise.

SPECIAL FEATURES

The strengths of this book are:

- the keystroke-by-keystroke instructions
- it's written for the beginner
- it's practical—covers the most popular software packages
- the modular format is adjustable to your course
- it's a complete package
- it's well illustrated
- it includes interesting applications
- it's flexible—it can be a supplemental or core text

Introduction

You walk into a computer store and the salesperson says, "Sit down and try it." You wave your hand and walk away. You are at a computer demonstration and you are asked to come up and press some keys. You shake your head. You are envious as you watch other people work with the computer. You know that computers are here to stay. You know that one of these days you have to learn how to use one. Yet, you won't even try. Why? Are you afraid of making a fool of yourself? Do you think people will laugh if you admit that you are actually afraid of computers? Do you think you don't have what it takes to work with a computer? Welcome to the club. You are one of many such people.

The way to get over these fears is to actually use a computer. You will soon realize that a computer is just a machine like the washing machine and microwave oven. Whereas the washing machine only washes and the microwave oven only emits microwaves, however, the function of a computer can be changed. You can change a computer's function by putting in a new set of instructions, called a program or software, and connecting appropriate attachments, called peripherals. With word processing software and a printer, the computer becomes a word processor; with video game software and possibly a joystick, it becomes a video machine; and with graphics software and a graphics printer, it becomes a machine with which you can draw.

However, just as you cannot operate the microwave oven with the operating instructions, or commands, for the washing machine, you cannot, in general, use the commands of one software system to operate another. Each program comes with its own, often unique, set of commands; you need to learn what they are and what they do. It does not take a super electronics-oriented mind to learn how to use a computer. Think about it--you don't have to understand how an engine works to drive a car or how xerography works to make photocopies.

One skill that may help, however, is typing. A lot of information is entered into a computer by typing on a keyboard. If you have to spend time hunting and pecking for a key, you will not have time to think about the commands you are entering. One of the advantages of using a computer is its speed, and if you cannot type, you are not taking full use of this advantage.

As you proceed with the lessons, you might remember that there is no one correct way of using software to derive the end product. The commands must be used correctly, of course, just as in driving a car: you have to step on the accelerator to go and the brake to stop. The object in driving a car is to get from one place to another safely. You may take one route while someone else takes another, and one route may be shorter or

Using the IBM PC

In this module you will need:

1. A disk containing IBM PC DOS (either the IBM DOS disk that comes with the computer or a disk that has DOS installed on it).
2. An unformatted (blank or scratch) disk.

SOFTWARE REQUIREMENTS

Each student will need a disk containing DOS (Disk Operating System) and a scratch disk. A scratch disk is a disk that either is blank or contains information no longer needed.

Three software packages are covered in this manual: Module 2 discusses WordStar for word processing; Module 3 discusses Lotus 1-2-3, Releases 1A and 2, which is an integrated software package, that has features of electronic spreadsheet, database management (file management), and graphics; and Module 4 discusses dBASE (versions II, III, and III Plus), a powerful relational database management system.

For each module, a student will need the disk or disks containing the appropriate software (installed according to the user's manual, configured to that particular setup) and at least one scratch disk that has been formatted so it can hold your data. If you are using Lotus Release 2, you will also need the DOS disk.

HARDWARE REQUIREMENTS

The hardware configuration required is an IBM PC with 256K bytes of RAM memory (or 310K if you are using dBASE III Plus). You will also need a monochrome or color monitor, two floppy disk drives, and either a printer or access to an IBM-PC with a printer. The graphics in Lotus 1-2-3 require a graphics card if a monochrome monitor is used, and access to a graphics printer in order to get hard copies of your graphs.

LAB SESSION STRUCTURE

Everyone using the manual should go through Module I first. After that, it is up to each individual (or instructor) to decide which modules to study and in what order. Each module is completely independent of the others. Each contains projects for students to do on their own, a glossary, and a summary of commands (appendices).

In addition, implementation changes needed for Lotus Release 2 and dBASE III Plus are found in the respective modules. A student using the version of software whose implementation changes are offered in the appendix should mark the appropriate sections of text as a reminder to look at the appendix for information.

dBASE II and dBASE III are presented side by side or one after another within the main text. Here again, a student might mark or highlight the appropriate text to avoid confusion.

ACKNOWLEDGE- MENTS

For this manual, we acknowledge Keiko's computer literacy classes of Spring, 1986, the first group to use Truckee Meadows Community College's brand new IBM PC lab. They used the first edition of this manual along with changes for Lotus Release 2. We also acknowledge the attendees of our 4-week minicourse on dBASE, who tested the dBASE module. Both groups gave us many invaluable suggestions. We extend much appreciation to Darlene Fiecoat, who tested the accuracy of the manual; to our son Gregory, for staying on his Commodore 64 and leaving Keiko's IBM PC alone; and to our daughter Jackie, who served us very strong coffee while we were working.

*Keiko Pitter
Richard Pitter
Reno, Nevada*

PROCESSING COMPONENTS

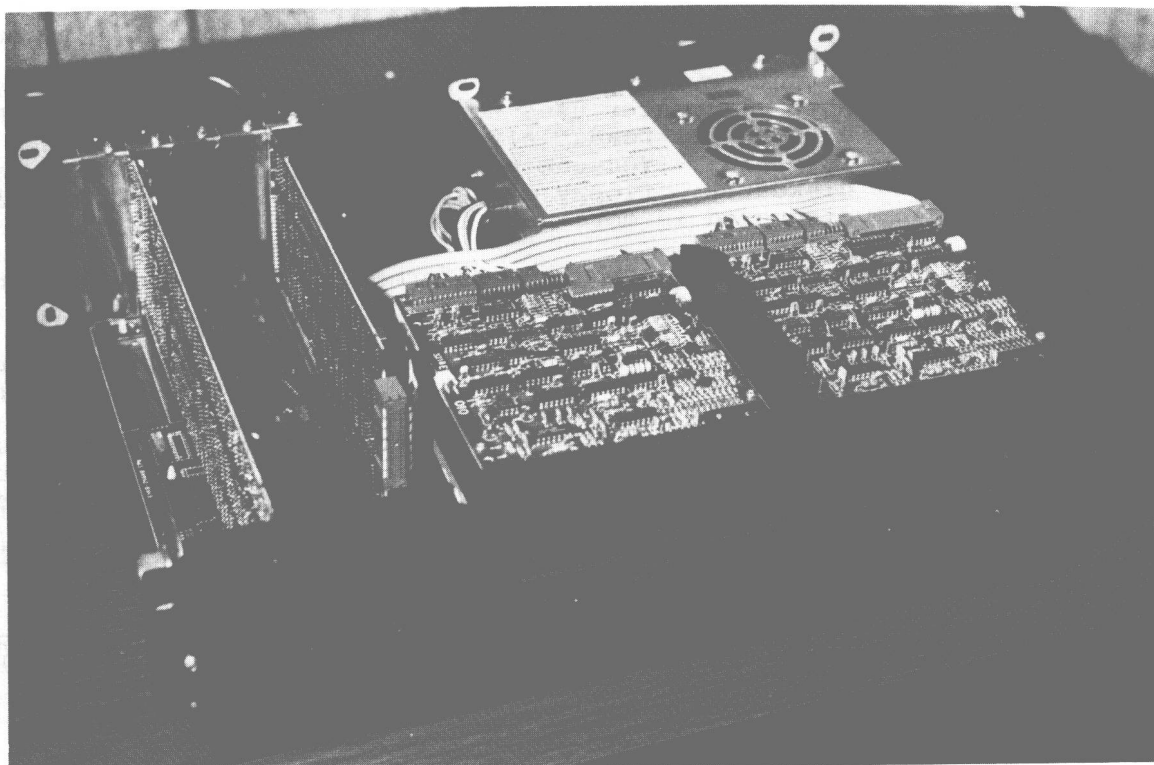
The component of the IBM PC that processes data is inside the computer case. The inside looks something similar to that shown in the photograph below. There are a variety of options available for the IBM PC, so the way your computer is configured may not be identical to that in the photograph.

MPU

The large box at the back right corner of the case is the power supply. What you see most are little black rectangular boxes arranged over several boards. The large board on the bottom is known as the motherboard, and it electronically connects all the individual pieces. Those black rectangular boxes are called integrated circuits, or chips. One of the larger chips on the motherboard is the microprocessing unit, or the MPU. In the IBM PC, this is an 8088 chip. The number refers to the design of the chip. Other microcomputers use different chips: for example, the Radio Shack TRS-80 uses the Z80, and the Apple IIe uses the 6502. Inside the MPU is all the circuitry needed to do the addition, subtraction, comparison, and so on that a computer does. It is the calculator of the computer.

STORAGE RAM ROM

A computer also needs a place to store information while data is being processed. That place is called main memory. The main memory is on chips. The random access memory, or RAM, is also located on the motherboard. RAM stores what you enter into the computer as well as the intermediate results from the calculations. What you enter may be a program or data. Information in RAM is volatile, meaning its contents are erased when the power



Inside of IBM PC

is turned off. The IBM PC RAM holds from approximately 64,000 characters, or 64K bytes, to 256K bytes or more. A character is a single letter, digit, or special symbol. The read only memory, or ROM, is another kind of memory. This comes already loaded with the information that the computer needs to perform some of the Disk Operating System commands. The information on ROM is not volatile; you can use the information but you cannot erase or change it.

In order for a program to be executed on a computer, that is, for its instructions to be carried out, it must be brought into the main memory. Any data that is to be processed must also be brought into the main memory first. The MPU fetches from the main memory as needed both instructions of a program and data to be processed.

EXPANSION SLOTS

At the back left of the motherboard are five expansion slots. Your monitor and your printer, if you have one, is connected to a board in one of these slots. These boards are called interface boards. They allow the IBM PC to be connected, or interfaced, to peripherals.

POWER SWITCH

On the back right side of the computer is the power switch. On the back panel, there are places to plug in the power cord, a keyboard connection, and places to plug the interface boards into various peripherals.

OUTPUT COMPONENTS Printer Monitor Disk Drive

The information produced by the computer must be on a medium that a person, a computer, or other machines can use. The medium that can be used by noncomputer machines will not be discussed here. When a person uses the output, it must be in a readable format. The output can be printed on paper or displayed on the screen. The output devices, then, are the printer and the monitor. When a computer uses the output, the output has to be in a computer-readable format. The medium discussed here is a disk. You can put the output on disks (also called diskettes, floppy disks, or floppies). Disks will be discussed in more detail later.

Another reason why information should be put on an output medium is that the main memory, the RAM, is volatile. When the machine is turned off, the information is erased. Thus, RAM is temporary storage. If you want to save the information for later use or for historical purposes, you have to put it somewhere more permanent. If you put the information on paper, you can reenter it later as needed; better yet, if you put it on a disk, the information can later be entered directly into the computer's memory using a disk drive. A disk is a permanent storage medium, one form of auxiliary memory.

The way in which the information is put on an output device depends on the software being used and will be discussed in each module.

* * * * *

INPUT COMPONENTS

Keyboard

The last item is the input. There must be a way to input data to the computer. You can enter the data through the keyboard. As you type the information on the keyboard, it is displayed on the monitor. For some information you enter, you must press the ENTER (or RETURN) key to have the computer process the typed data; for other information you do not need to. It all depends on the software you are using.

Disk Drive

If the information you want to process is on a disk, you use a disk drive. The use of disks and the disk drive will be explained later.

* * * * *

SUMMARY

So, there you have it. The components are:

> Computer

- Keyboard
- Random Access Memory (RAM)
- Read Only Memory (ROM)
- Power Supply
- Peripheral Interfaces or Expansion Boards
- Microprocessor

> Disk Drive(s)

> Monitor

> Printer

The Keyboard

In order to see how the keyboard works, your IBM PC should be turned on. This way you can see that the characters you type on the keyboard are displayed on the screen. The computer messages will be explained later in this module, so don't worry about what they mean. Just follow these steps.

1. Turn the monitor switch ON. The monitor switch is usually located to the right of the screen. Its exact location and the type of the switch depends on the model.
2. Place a DOS disk in drive A. (Drive A is the drive on the left.) A DOS disk is either the IBM Disk Operating System disk, or a disk that has DOS placed on it.
3. Turn the computer switch ON. The computer switch is located on the right side of the computer case, at the back.
 - > It takes about 15 seconds for anything to happen. The IBM PC goes through a diagnostic routine each time it is turned on. Be patient.
 - > The red light on the disk drive lights up and the disk drive starts to operate.
 - > The message:

```
Current date is Tue 1-01-1980
Enter new date:
```

appears on the screen. Usually, you will enter the date. For now, you will press the ENTER key to leave the date unchanged.

4. Press the ENTER key.

The ENTER key is the gray down left arrow key between the main keyboard and the numeric keyboard on the right. The ENTER key is referred to as the RETURN key in some software.

- > The message:

```
Current time is 0:00:41.24
Enter new time:
```

appears on the screen. Again, usually you will enter the new time. However, this time, you will again press the ENTER key to accept the current time.

5. Press ENTER.

- > The screen displays the following message:

```
The IBM Personal Computer DOS
Version 1.1 (C) Copyright IBM Corp 1981,1982
```

```
A>
```

This is the IBM PC DOS copyright notice. A> is the DOS prompt. It indicates that the A drive is the logged drive. You will learn about disk drives later in this module.

- > The flashing underscore character to the right of the prompt is the cursor.

The cursor shows the position on the screen where your entries are made.

6. Remove the disk from the drive and place it in its protective cover.

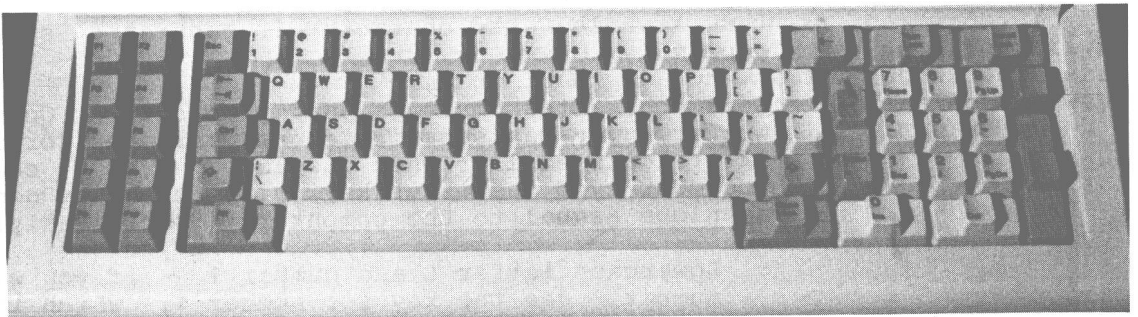
* * * * *

The next photograph shows the IBM PC keyboard. You might notice how similar it is to a typewriter keyboard.

The purpose of the keyboard is to send characters to the computer. Which of these characters are recognized or what each is used for depends on the software that is being used at the time.

CHARACTERS

There are 256 characters the keyboard can generate. Not all of them are visible, and many have special meanings. They include 26 lowercase letters, 26 uppercase letters, 10 numerals, and 34 special characters. The uppercase letters can be obtained by holding down one of the keys with the broad up arrows (a SHIFT key) while you press the key or by pressing the key marked Caps Lock (the CAPS LOCK key) once and then pressing the keys. Some of



IBM PC Keyboard

the special characters require that you hold down the SHIFT key even if the CAPS LOCK key has been pressed. These are the characters that appear on the upper half of a key. For example, the key with a semicolon, ;, has a colon, :, on the upper half. To type a semicolon, you just press the key; but to type a colon, you must hold the SHIFT key down while you press the key. The CAPS LOCK key is a toggle key. The first time you press it, it causes all letters to be uppercase. The second time, all letters are lowercase (unless the SHIFT key is pressed).

SPACE BAR

The long bar at the bottom of the keyboard is the space bar; this can be used to type blank spaces between characters.

Type a few keys to get a feel for the keyboard. In fact, as you read the manual, try different things.

As you type the keys, the computer might respond with the error message, Bad command or file name. The computer is indicating that DOS, the software that is running in the computer right now, does not recognize what you typed. Ignore this message for the time being.

You will notice that as you type characters, the characters appear on the screen and the cursor moves right along the typing line.

DIFFERENCES FROM A TYPEWRITER

There are some distinct differences between a computer keyboard and that of an ordinary typewriter.

Word Wrap

- > On an ordinary typewriter, you must press the carriage return at the end of each line. On a computer, if you keep on typing past the right edge of the screen, the next character will appear on the next line down. This feature is called word wrap. It allows you to enter lines that are longer than the width of the screen, which is 80 characters.

Auto-Repeat

- > Another difference from a typewriter is the auto-repeat feature. If you press a key and hold it down for a while, the character it generates starts to repeat.

Keys to Watch Out For

- > Some characters must be used precisely. On a typewriter, you can substitute one character for another if it looks similar when displayed; on a computer, you must type the exact key, since each key generates a unique signal to the computer. Specifically:

Lowercase letter l and number 1 -- if you want the number, use the key for number 1, which is just above the letter Q.

Letter O (oh) and number 0 (zero) -- again, if you want the number, use the number key.

Single quote -- use the one on the key with the double quote. The one on the key with the tilde (~) should not be used.