

WINDOWS

User's Guide to

DOS

Using the
Command Line
in Windows 95/98

Carolyn Z. Gillay
& Bette A. Peat

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& Bette A. Peat*

Dedication

To my daughter-in-law, Mary Brown, who brings me so much joy and even knows and loves all the books that I do.

—C. Z. G.

For Patty, Nicki, Sandy, and Brian. They light up my life.

—B. A. P.

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PREFACE

This textbook provides an overview of the hardware, software, and operating-system concepts used with computer systems. Students will use a computer system to execute problem-solving exercises at the command line, thereby maximizing their efficient use of the computer. This text can be used as the core textbook for a course that focuses exclusively on DOS, for the DOS portion of a network or programming class, as a supplement to a Windows 95/98 course, or in a class that follows the introduction to Windows 95/98. Since this textbook assumes the installation of Windows 95/98 and teaches operating-system concepts through the MS-DOS command line window, it would be a misnomer to call this an exclusively DOS textbook.

It is difficult to convince students with no computer experience that they need the knowledge that DOS provides. DOS is indeed “dead” as a stand-alone operating system; however, command syntax, parameters, parsing commands, and troubleshooting are all handled better from the command line interface rather than the graphical user interface. This text teaches these concepts using the MS-DOS window in Windows 95 and Windows 98. Using the MS-DOS window first and foremost eliminates lab problems in trying to maintain separate DOS and Windows 95/98 operating systems environments. Secondly, it solves the problems of students working on their own computers who typically have Windows 95/98 systems. This text only deals with the commands and functions that are available in Windows 95/98 in the MS-DOS prompt command line.

This text leads students from a basic to a sophisticated use of the command line interface. Each chapter has questions for both novice and advanced students so advanced students can be challenged without sacrificing the needs of beginning students. Furthermore, while this text does teach the various character-based commands, it also stresses the concepts, purpose, theory, and understanding of operating systems in general.

This text demonstrates to students the command line interface and explains when and why one would use it instead of the graphical user interface of Windows 95/98. It provides numerous examples to allow students to master operating systems. The command line prompt exists in Windows 95, Windows 98, Windows NT 4.0, Windows NT 5.0, and Novell. Batch files are useful in all these operating systems. Batch file skills are critical in the networking world of Novell and NT as well as for the stand-alone computer system. Pipes, filters, and redirection used with batch files are covered in a thorough, step-by-step methodology. Advanced batch files are covered in detail, building on programming logic in a comprehensible way. Students cover all batch file commands and are introduced to DEBUG.

Setting up computer systems, optimizing performance, and troubleshooting require students to have good command line skills. To this end, students learn about creating a startup disk and about the AUTOEXEC.BAT and CONFIG.SYS configuration files. This leads into a discussion of driver files, real mode, protected mode, and different types of memory.

This text also covers two major forms of connectivity: networking and the Internet. We have found that there is a gap in too many students’ knowledge base of networks. Students often take a Windows and/or DOS class and then, if on a networking career path, jump into a

large-systems networking class. This can be an intimidating jump. There are many other students who work in small offices that do not have network administrators; others may work in environments where they only need to access a network or share files, folders, and devices on their own systems at home. These students are not going to follow the networking program. To address the needs of these students, this text introduces some basic networking concepts and then leads the students into setting up a peer-to-peer network (where possible) and shows them how to share files, folders, and devices. Students also learn general network techniques, such as mapping drives.

The other form of connectivity deals with the Internet. Students learn various options in connecting to the Internet and then do some simple activities using Internet Explorer to access the Internet. A brief introduction to TCP/IP concepts is included because, when using the Internet, so many students are lost at the first mention of such terms as protocol and IP address. This overview gives them an understanding of some of these important terms so that they have a better comprehension of online activities. To further the students' knowledge of using the command line interface, students learn how to use some simple commands that can be run at the command line, such as FTP. In addition, certain troubleshooting commands such as ping are included.

The last chapter covers a much too neglected topic: backing up a computer system, including the Registry. Students learn the purpose and function of the Registry as well as what files make up the Registry. They learn about how to restore the Registry in both Windows 95 and Windows 98 and about the new tools in Windows 98 such as ScanReg. They learn about the structure of the Registry, how files and the Registry interact, and when and how to do simple tasks using RegEdit.

This book takes up where other Windows books leave off. Although no prior knowledge or experience with computers, software, operating systems, or Windows 95/98 is necessary, it helps if the students have completed a basic Windows 95/98 class.

ACTIVITIES DISK WITH SHAREWARE PROGRAMS AND DATA FILES

One of the difficulties in teaching the command line interface to students is the esoteric nature of operating systems. Although students find the material interesting, the question that I repeatedly get is "What good is DOS? It doesn't do anything." This is particularly true now that the world has moved to the graphical user interface. By discussion and example, this text demonstrates the importance of the command line interface.

Another obstacle to teaching the command line interface is that instructors attempt to use a complex application program, such as Word, and they end up spending their time teaching the application, not the operating system. Thus, two simple shareware applications are provided for students to work with: a simple database (Home Phone Book) and a simple spreadsheet (The Thinker). Students have the opportunity to load an application program and prewritten data files, as well as create simple data files. In doing so, students better understand the differences between data files and program files and are able to use operating system commands to manipulate both types of files. In addition, the text includes several educationally sound shareware games that reinforce certain DOS concepts in an enjoyable manner.

These shareware files are on the ACTIVITIES disk along with data files students use for the exercises in the book. The ACTIVITIES disk's files are easily installed on a computer system's hard disk or network server. The exercises do not direct students to save files to the hard disk or network server. Early on, students create a DATA disk, and all files are written to the DATA disk. This approach provides real-life experience in working with the hard disk or

server without risking damage to either. There are numerous warnings and cautions alerting students to when a possible network conflict could arise.

AN INTEGRATED PRESENTATION OF CONCEPTS AND SKILLS

Each section of the book is presented in a careful, student-oriented, step-by-step approach. Interspersed between the steps in the exercises are the reasons for and results of each action. At the end of each chapter, there are application assignments that allow students to apply their knowledge and prove mastery of the subject area through critical-thinking skills. Each command is presented in a syntactically correct manner so that when the students have finished the course, they will be able to not only use software documentation, but also be comfortable in a network/Internet environment that requires the use of syntax and commands. This also assists the students in their ability to learn how to solve problems using the documentation at hand. This skill also transfers to the use of application packages and other operating system environments. No matter what changes are made to future versions of the operating system, students will be able to use the new commands.

USES A SELF-MASTERY APPROACH

Each chapter includes a chapter overview, list of key terms, chapter summary, discussion questions, true-and-false questions, completion questions, multiple-choice questions, and problems where students are asked to write the commands. Each chapter also includes three sets of application assignments that focus on the skills learned in the chapter. The first two require the use of the computer. The first problem set requires students to complete activities on the computer and write the resulting answers on a Scantron form; the second problem set requires students to use the computer and print out the answers. For the second problem set, the student results are sent to a batch file provided with the ACTIVITIES disk. The batch file is an easy-to-follow program. The students supply their solutions to the problems, and the batch file formats the answers in a consistent manner and includes the students' names and other instructor-directed identifying information. The printouts typically print on two pages or less. The last set of application assignments are brief essay questions that encourage students to integrate what they have accomplished in the chapter with their improved understanding of the command line interface of the Windows 95/98 operating system. All three types of assignments reinforce critical-thinking skills. These application assignments can be turned in as homework. Where hands-on assignments are not possible, such as dealing with the Registry, students still have an opportunity to answer brief essay questions that encourage them to explain their understanding of the topic at hand.

SUPPLEMENTARY MATERIAL

This book comes with an instructor's manual that includes teaching suggestions for each chapter as well as the answers for every question and application exercise. There are additional chapter tests. A midterm and a final are included.

REFERENCE TOOLS

This text is useful as a reference for MS-DOS commands. The first appendix provides instructions to install the subdirectory containing the shareware programs and data files to the hard disk. This feature is particularly useful for students who work at home or in an office. The rest of the appendices include a complete command reference (including DOS commands that

are no longer available in Windows), an ANSI table, and a tutorial on how to add any missing Windows components. There is also a glossary.

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Anyone who wants to offer suggestions, improvements, or just share ideas can reach me at **czg@bookbiz.com**.

—C. Z. G.

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—B. A. P.

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MICROCOMPUTER SYSTEMS

HARDWARE, SOFTWARE, AND THE OPERATING SYSTEM

LEARNING OBJECTIVES

After completing this chapter you will be able to:

1. Categorize the latest types of computers in use today.
2. Identify and explain the functions of basic hardware components.
3. Explain how a central processing unit (CPU) functions.
4. Compare and contrast random access, cache, and read-only memory.
5. Explain how the use of adapter boards increases the capabilities of a computer.
6. List and explain the functions of peripheral input and output devices.
7. Explain what external storage devices are.
8. Explain how to measure the capacity of a disk.
9. Explain how disk drives write information to and read information from disks.
10. Explain the purpose and function of a hard disk.
11. Compare the purpose and function of hard and floppy disks.
12. Explain how and why a disk is divided.
13. Explain how disk drives derive their names.
14. Compare and contrast system software and application software.
15. Explain the functions of an operating system.
16. Explain the advantages of using a network.

CHAPTER OVERVIEW

It is impossible to live today without being affected by computers. Computers are used in public and private industry and are found in every sector of the business world. Computer software is what makes computers useful for all types of applications. There is specialized software for sophisticated scientific applications such as nuclear and atomic physics and for all forms of engineering and industrial research. The greatest use of application software is in business with all types of word-processing, accounting, and marketing packages. Computer use only continues to grow.

Application software makes a computer useful, but you must first understand how the operating system of a computer works. Foremost, the operating system manages all the basic functions of a computer and allows the computer to run application programs. When new technology appears in hardware and software, operating systems must also keep pace. Conse-

quently, new operating system versions appear. The operating system of choice today is Windows 95/98. Previously, most people used the operating system MS-DOS. MS-DOS was a character-based operating system. In order to use it, you had to key in a command and did not use a pointing device such as a mouse. Each application program running under this operating system was installed as a separate entity—there was no sharing of resources, such as a printer, and no ability to run more than one application at a time.

In 1990 Microsoft released the first successful version of Windows, version 3.0—an “environment” that worked between the operating system and application programs. Windows introduced the personal-computer user to a graphical user interface, referred to as a GUI. In the 3.1 version of Windows, commands could be issued by clicking a mouse. Peripheral devices such as a printer were installed in Windows and were thus available to all the applications. Application programs were written to run under Windows. Plus, Windows offered the advantage of being able to run more than one program at a time, and it became easy to share data between programs.

In 1995 Microsoft introduced the Windows 95 operating system, an operating system that no longer required DOS. However, even though many tasks are accomplished using the GUI, the command line or text-based command remained. As users become more sophisticated, they become aware that some tasks can be done only at the command line and that others are actually easier at the command line. This text is a guide to understanding and using the command line in the Windows 95/98 operating systems. In addition, this text introduces techniques using the GUI with an emphasis not only on troubleshooting, but also on solutions that make the Windows operating system clearer to the user.

1 AN INTRODUCTION TO COMPUTERS

At the most basic level, computers are calculators, but this definition is very narrow. We use these machines to handle accounting chores (spreadsheets), write books (word processing), organize and retrieve information (databases), and communicate with the world (the Internet). In the visual arts, computers have revolutionized the way films are made, games are played, and reality is perceived (virtual reality).

2 CATEGORIES OF COMPUTERS

Computers are categorized based on a variety of factors such as size, processing speed, information storage capacity, and cost. In the ever-changing technical world, these classifications are not absolute. Technical advancements blur the categories. For instance, some microcomputers today exceed the capabilities of mainframes manufactured five years ago. In addition, the microcomputer now is the dominant computer used by most businesses and users. These computers are available in sizes ranging from desktop to subnotebook sized. Table 1 shows the major categories of computers.

Computer	Applications
Supercomputer: Very large computer	Sophisticated scientific applications such as nuclear physics, atomic physics, and seismology.