

Peter Norton's DOS 5 Guide

Fourth Edition

Works With All DOS
Versions Through 5.x

Peter Norton

All-Time Bestseller!
Over 750,000 Copies Sold

Peter Norton's DOS 5.0 Guide

Fourth Edition

Peter Norton



Brady Publishing

New York London Toronto Sydney Tokyo Singapore

Copyright © 1991 by Peter Norton
All rights reserved
including the right of reproduction
in whole or in part in any form

The first edition of this book was published under the title:
MS-DOS and PC-DOS: User's Guide



Brady Publishing

Simon & Schuster, Inc.
15 Columbus Circle
New York, NY 10023

Manufactured in the United States of America

3 4 5 6 7 8 9 10

Library of Congress Cataloging-in-Publication Data

Norton, Peter, 1943

[DOS guide]

Peter Norton's DOS guide / Peter Norton.—4th ed.

p. cm.

Includes index.

1. Operating systems (Computers) 2. MS-DOS. 3. PC-DOS.

I. Title. II. Title: DOS guide

QA76.76.063N68 1991

005,4'46—dc20

ISBN 0-13-663048-0

91-4046

CIP

ACKNOWLEDGMENTS

With my thanks, to
Harley Hahn
Scott Clark
and
Kevin Goldstein.

As always, my continuing thanks to
William Gladstone
and his staff at Waterside Productions
and to Burt Gabriel and the people at Brady Publishing.

TRADEMARKS

All brand and product names mentioned herein are trademarks or registered trademarks of their respective holders.

LIMITS OF LIABILITY AND DISCLAIMER OF WARRANTY

The author and the publisher of this book have used their best efforts in preparing this book and the programs contained in it. These efforts include the development, research, and testing of the theories and programs to determine their effectiveness. The author and publisher make no warranty of any kind, expressed or implied, with regard to these programs or the documentation contained in this book. The author and publisher shall not be liable in any event for incidental or consequential damages in connection with or rising out of the furnishing, performance, or use of these programs.

Screen shots in this book were prepared using Hijaak, a product of Inset Systems. Thanks to Carol Barth and Greg Reynolds at Modern Design for their expertise.

INTRODUCTION

This book is about getting started with DOS—the disk operating system for the family of IBM-compatible personal computers—but it doesn't stop with DOS. It is about much more, because there are two halves to this book, even though you won't find them broken out in separate sections. One half of the book—the part you would expect to find—teaches the things you need to know about getting started with DOS and getting the most out of it. The other part, equally valuable, teaches what you need to know in order to be a wily, smart, and effective user of a small personal computer.

On the one hand, this book tells you about DOS and how to make good use of the commands that are built into it. On the other, it also gives you information on such topics as how to choose intelligently among the hundreds of programs offered for sale. Both halves of this book are based on something that sets it apart from many others: practical advice. In these pages, you'll find out how to make your personal computer work for you. You'll learn what works and what doesn't, what to buy, what to use, and none of this advice is theoretical; it's based on 25 years of experience working on all kinds of computers, from personal computers to mainframes. The last 10 of those years have been dedicated to working with personal computers, often ten hours a day or more, six or seven days a week on projects ranging from programming to writing articles and columns for *PC Week* and *PC Magazine*, to all the myriad tasks that a personal computer can do that contribute to running a company. This book is a result of that experience, leavened with a healthy dose of common sense—something we all rely on, and something this book will help you develop when dealing with DOS and your personal computer.

Help When You Need It

Perhaps you are the enthusiastic first-time owner of a personal computer. Perhaps your work is forcing you to use a computer you aren't really sure you want to deal with. Perhaps you are considering getting a

computer, and you want to learn a little of what computers are all about (and how to spend your money wisely). If you fit any of these three descriptions, then this book is for you.

This is a help book for beginning computers users—people who will be working with the family of IBM-compatible personal computers. How can you get the most help from it?

- If you are completely new to computers and don't understand them at all, read Chapter 1. It explains the fundamental ideas about how a computer and its operating system (DOS) work. Also, use the narrative glossary in Appendix B; it defines some of the most commonly-used technical terms related to computers, but it ties the definitions together in a narrative rather than dictionary-like form, so it's easier to read and understand.
- Check the chapter headings. They will guide you into the material you need.

Most of all, this book is here to help you through the small traumas of beginning to use your computer. Every new experience brings its pleasures and pains, but the pains tend to come first. And the problems of "computer phobia" are now legendary. Whether you are a reluctant beginner or a starting enthusiast, this book will help you make your use of DOS easier. Computers are for everyone.

This book won't, by the way, go into the overly technical details of using DOS. Your computer's manuals do that nicely. What it will do is help you understand what those manuals are about and, more importantly, it will help you get started. And it will do something more that your computer's manuals cannot, or dare not, do: It will give you advice about what's good and bad in software that you may be thinking about buying.

Variations in DOS

Like everything else mankind has created, DOS has a history, and this history is reflected in the version numbers, such as 3.10 and 5.00, which indicate what edition of DOS you have. You need to know at least a little about these version numbers to know where you stand with DOS.

The major changes to DOS are reflected in the whole numbers, like the five in version 5.00. The lesser numbers indicate minor, less important changes in the progress of DOS. Of course, there are improvements

and additions made in each version of DOS; the only really important thing is that you have a version no earlier than 2.00. The one-series was really the infancy of DOS. If by any chance you have one of those, you should trade it in for a newer version, but it's unlikely that you do. Whatever version of DOS came with your computer, it's almost certainly the right one for you to use.

The most popular versions seem to be 3.10, 3.20, and 3.30. Quite likely, you have one of these or the newer 4.00 or 5.00. This book describes the features of the latest version of DOS, 5.00. If you have an earlier version, a few of the things I mention here may not apply to your computer and to your DOS. Not to worry, as long as you have a version later than the one-series, you should be fine. If it is at all possible, I'd personally recommend that you update your DOS to version 5.00.

There are several ways you can find out what version of DOS your computer is using. One way is to look at your DOS manual. It will have the version number on the cover or title page. There are also two ways your computer can tell you which version of DOS it has. When you start up your computer with DOS, you ordinarily see the version number at the beginning of your session. There is also a DOS command called VER that tells DOS itself to report its version number to you. I'll be discussing how to start your computer with DOS and how to use the VER command early in the book.

In Appendix A, we will take a closer look at the various DOS versions. We will discuss why there are a number of versions and what differences you can expect when you change from one version to another.

DOS and Your PC

Just before I end this introduction and plunge with you into DOS, let's pause to define two terms: *DOS* and *the family of IBM-compatible personal computers*.

DOS is the name used by IBM for the main operating system that runs on the IBM PC family. DOS was created for IBM by Microsoft, a leading company in software for personal computers. Microsoft also provides versions of DOS for many other computers; these other versions are usually called MS-DOS (short for Microsoft DOS).

To distinguish their version of DOS, IBM calls it IBM DOS (the old name was PC-DOS). Whether we call it DOS, IBM DOS, PC-DOS, or MS-DOS, we're essentially talking about the same thing. The differences between DOS for one computer and DOS for another are quite minor.

However, since this book is for use with IBM-compatible computers and the IBM version of DOS, we'll follow the IBM standard when there are differences between one version of DOS and another.

Now, what about the computers that use DOS? There are now three basic families of IBM computers that use DOS: the PS/2 series, the newer PS/1 series, and the original personal computers: the PC, PC XT, and PC AT. While all three of these families use the same DOS and run the same software, most of the PS/2 models have different internal hardware—collectively, these are known as Micro Channel computers. IBM itself no longer makes the original personal computers, but many other companies make a range of compatibles.

IBM's PS/2 and PS/1 families have themselves grown quite large. At the low end, there are economical machines that offer performance similar to the original PC AT. At the high end, there are very powerful machines, like the PS/2 models 90 and 95, which are designed for intensive computing or for supporting a computer network.

The original PC family's—and more recently the PS/2 family's—vast popularity has seen them grow far beyond what IBM itself offers. Other companies have broadened our choices by producing models that are highly compatible with the IBM products and offer combinations of features that aren't exactly matched by any IBM model. Notable among these extended members of the family are many models by Compaq, Tandy, Toshiba, Dell, and Epson. In truth, there are more good variations on the old workhorse PC AT than we could wiggle a floppy disk at. All of these machines can be considered legitimate members of the full PC family; they all use the same DOS that you'll learn about in this book. Thus, when I refer to a "PC" or to a "personal computer," I mean any machine that runs DOS—that is, any member of one of the IBM or IBM-compatible personal computer families.

CONTENTS

Introduction xi

Help When You Need It xi / Variations in DOS xii / DOS and Your PC xiii /

Chapter 1 Basic Computer Concepts 1

Introduction 2 / The Computer as Worker 2 / Introducing DOS 7 /
The Computer at Work 7 / What a Computer Can and Can't Do 8 /
The Importance of an Operating System 9 /

Chapter 2 Getting Started with DOS 11

Introduction 12 / Setting Up DOS 12 / What You Need to Know First 12 /
Giving Yourself a Sense of Security 18 /

Chapter 3 Understanding Diskettes 21

Introduction 22 / Understanding Diskettes 22 / Preparing Diskettes
for Use—Formatting 24 /

Chapter 4 Understanding Hard Disks 29

Introduction 30 / Understanding Hard Disks 30 / Hard Disk Storage
Capacity 31 / Partitioning a Hard Disk 31 / Formatting a Hard Disk 35 /
Other Types of Disks 38 /

Chapter 5 Installing DOS 43

Introduction 44 / The Parts of DOS 44 / Installing DOS 45 /

Chapter 6 Fundamentals of DOS Commands 49

Introduction 50 / Keeping Track of Drives 50 / Internal versus External
Commands 53 / Common Command Notation 57 / Files and File
Names 60 / Wildcard Characters 61 /

Chapter 7 Elementary Commands 63

Introduction 64 / Asking DOS For Help 64 / Three Simple Commands 66 /
The Calendar Commands 69 /

Chapter 8 Basic File Commands 73

Introduction 74 / Copying Files 74 / Deleting Files with DEL and
ERASE 76 / Renaming Files with REN 81 / Displaying Files with TYPE 81 /
Comparing Copies of Files 84 /

Chapter 9 Basic Disk Commands 89

Introduction 90 / Checking Out Your Disks 90 / CHKDSK 105 /
Volume Labels for Disk Identification 109 / The Diskette Preparation
Commands 112 / Copying and Comparing Disks 114 /

Chapter 10 Batch File Basics 117

Introduction 118 / Introducing Batch Processing 118 / The First Two
Commands—REM and PAUSE 123 / Using Parameters for Flexibility 129 /
Other Features of Batch Processing 131 /

Chapter 11 More on Batch Files 133

Introduction 134 / Advanced Batch Commands 134 / Nesting Batch Files with
CALL 140 / Suggestions and Examples of Batch File Tricks 141 /

Chapter 12 Starting with AUTOEXEC.BAT 149

Introduction 150 / The Where and How of AUTOEXEC.BAT 150 /
Using AUTOEXEC.BAT to Set Up the DOS Environment 151 /
Using AUTOEXEC.BAT to Set Up Your Working Conditions 155 /
A Summary of What to Put in Your AUTOEXEC.BAT File 157 / A Typical
DOS-Generated AUTOEXEC.BAT File 157 / Customizing Your Own
AUTOEXEC.BAT File 159 /

Chapter 13 More About Disks and Files 161

Introduction 162 / What's on a Disk 162 / All About File Names 164 /
The Importance of File-name Extensions 167 / Global File-name Characters
(Wildcards) and Their Uses 170 / Disk File Formats and What They Mean to
You 171 / Risky File Recovery Using RECOVER 175 /

Chapter 14 Hard Disk Setup 177

Introduction 178 / Computing Speed 178 / Time Trials 179 / Holding Capacity 180 / Organizing Your Hard Disk 181 / Key Hard-Disk Commands 182 / Protecting Your Data 183 / Restoring Data to the Hard Disk 186 / Backing Up Large Systems 188 /

Chapter 15 Working with Subdirectories 189

Introduction 190 / Tree-Structured Directories 191 / When Do You Need a Subdirectory? 191 / Paths to a Directory 192 / Creating a Directory with MKDIR 193 / Changing Direction with CHDIR 195 / Using the TREE Command to Find Branches 196 / Pathfinding Shortcuts 198 / The PROMPT Command 199 /

Chapter 16 Organizing Your Hard Disk 203

Introduction 204 / Why Organize a Hard Disk? 204 / Guidelines for Organizing the Tree Structure 205 / Where to Put Your Programs 207 / Where to Put Your Data Files 211 / An Overall Strategy for Organizing Your Hard Disk 214 / Summary of How to Organize a Hard Disk 222 /

Chapter 17 Advanced Disk Commands 223

Introduction 224 / Double-Checking Your Disk with VERIFY 224 / Masking Your Disks 225 / Special Kinds of Copying 232 / Setting File Attributes with the ATTRIB Command 236

Chapter 18 The DOS Data Security System 241

Introduction 242 / DOS's Data Security System 242 / What Happens When You Format a Disk? 242 / What Happens When You Erase a File? 246 / Preparing the DOS Security System—The MIRROR Command 247 / Using UNFORMAT to Recover a Disk 249 / Using UNDELETE to Unerase a File 251 / Using MIRROR to Save a Copy of Your Partition Table 253 / The Importance of Being Able to Start DOS From a Diskette 254 / Protecting Your Data—A Checklist of What to Do 256 /

Chapter 19 Pipeline Tricks 259

Introduction 260 / Introducing Redirection 260 / A Redirection Example 265 / DOS's Filter Programs 268 /

Chapter 20 Special Commands 273

Introduction 274 / Controlling Devices with MODE 274 / Controlling Interruptions with BREAK 281 / Remote Control with CTTY 283 / Setting the DOS Version Number with SETVER 284 /

Chapter 21 DOS's Memory-Resident Programs 287

Introduction 288 / Memory-Resident Programs and What They Do 288 / Background Printing 290 / Help with Screen Printing 293 / Controlling the Sharing of Data 294 / Speeding Up Your Disk with FASTOPEN 295 /

Chapter 22 DOS Around the World 297

Introduction 298 / National Language Support 298 / How to Install National Language Support 299 / Code Pages 299 / Commands to Start National Language Support 300 / Commands to Modify National Language Support 301 /

Chapter 23 Recycling Your DOS Commands 303

Introduction 304 / Starting DOSKEY 304 / Recalling Commands from the History List 305 / Editing a Recalled Command 308 / Recalling and Editing Commands: A Summary 311 /

Chapter 24 The DOS Editing Keys 313

Introduction 314 / The DOS Editing Keys and DOSKEY 314 / Recalling the Previous Command 314 / Editing the Command Line 316 / A Summary of the DOS Editing Keys 322 /

Chapter 25 Using Macros to Create Your Own Commands 325

Introduction 326 / What Is a Macro? 326 / Initializing DOSKEY 326 / Defining a Macro 328 / Using Parameters 332 / When to Use a Macro Instead of a Batch File 334 / A Summary of Macro Definition Tools 337 /

Chapter 26 The DOS Editor 339

Introduction 340 / What Can You Do with EDIT? 340 / Starting the Editor: The EDIT Command 340 / The Help Menu 347 / The File Menu 348 / The Edit Menu 350 / The Search Menu 351 / The Options Menu 353 /

Chapter 27 The EDLIN Editor 355

Introduction 356 / EDLIN and How It Works 357 / Starting EDLIN 359 / Ending an EDLIN Session 360 / Using EDLIN Commands 361 / Advanced EDLIN Commands 370 /

Chapter 28 The Configuration File 373

Introduction 374 / The Configuration File 374 / Configuration Commands 375 / The Other CONFIG.SYS Commands 378 / Device Drivers 380 / Installing Memory-Resident Programs 385 / Summary of CONFIG.SYS Commands And Device Drivers 386 /

Chapter 29 Managing Memory 389

Introduction 390 / Understanding Memory 390 / The Different Types of Memory 394 / How to Arrange Your CONFIG.SYS File 399 /

Chapter 30 The DOS Shell 403

Introduction 404 / Starting and Stopping the DOS Shell 405 / Using the DOS Shell 406 / Task Switching 417 / Working with the Task Switcher 417 / Summary of the DOS Shell Shortcut Keys 420 /

Chapter 31 Avoiding Pitfalls 423

Introduction 424 / Disastrous Interruptions 424 / Ordinary Ways to Lose Your Data 426 /

Chapter 32 Avoiding Other Mistakes 431

Introduction 432 / Hardware Mistakes 432 / Software Mistakes 434 / Operational Mistakes 435 /

Chapter 33 Optimizing Your System 437

Introduction 438 / References 442 /

Chapter 34 Alternatives to DOS 443

Introduction 444 / PC Operating Systems 444 / Shells and Graphical User Interfaces 445 / Microsoft Windows 446 / OS/2 447 /

Appendix A The History of DOS 449

What Is an Operating System? 450 / Who Makes DOS? 450 / Why Are There
Different Versions of DOS? 451 / The Different Versions of DOS 452 /
The Important Advantages of DOS 5.0 454 /

Appendix B Narrative Glossary 457

Introduction 458 / Computer Fundamentals 460 / Programs and
Programming Languages 464 / Human Roles 465 / Data Organization 466 /
Disk Vocabulary 466 / Operating Systems 468

Appendix C Compaq MS-DOS 5.0 469

Appendix D Using DEBUG 471

Introduction 472 / Some DEBUG Background 472 / DEBUG and
Memory 474 / The DEBUG Commands 475 / DEBUG and Registers 479
DEBUG and Ports 479 / DEBUG and Disks 480 / DEBUG and Programs 481
Using DEBUG to Patch 483 / A Patch Example 483 / Using Expanded
Memory 486 / DEBUG Error Codes 486

Index 489

BASIC COMPUTER CONCEPTS

Introduction

To use your computer successfully you need to have an idea of what it is and how it functions. By this, I don't mean the computer technician's understanding of what's going on under the cover of your machine. I mean just a simple, practical, working idea of what's what: the sort of working knowledge that you need of a car in order to be a safe driver—not what a mechanic needs to know, but what a driver needs to know.

This chapter will lay out some basic computer concepts for you. We'll cover these concepts in four parts: First, we'll look at the computer metaphorically, as if it were a human office worker. Then, we'll consider what this "office worker" can do and what it can't. Next, we'll look at the importance of an operating system like DOS. Finally, we'll wrap up this chapter with a practical matter—the two quite different ways you can use your computer.

The Computer as Worker

The best way I know to explain how a computer works, to help make sense of its parts, and to show how they work together, is to pretend the computer is an office worker. Let's suppose you are at work. Your boss tells you that you will have a new personal assistant with only one responsibility: to help you with your work. But, the boss tells you privately, this assistant isn't very bright. Conscientious, yes; hard-working, yes; but bright, intelligent, imaginative? Absolutely not. A helper to assist with whatever you ask to be done, but one who has to be given instructions in laborious detail. A worker with lots of energy but absolutely no initiative, no common sense, no independence.

You don't need me to tell you the identity of your new assistant: obviously, it's your computer. Let's see, then, what your computer assistant has to offer, what it needs to get any work done, and what you'll have to do to get any useful work out of it.

Parts of the Computer

Your computer has, as they say, an electronic brain. This brain (and as you'll see, it's a "pea brain," for sure) goes by various names in computer terminology. Basically, it is the **central processing unit**, or just the **processor**, for short. This "brain" is the central, fundamental part of a computer, and sometimes people refer to just this one part as being the