

InfoWorld's
ESSENTIAL
GUIDE

— TO THE —

IBM PC

*Frank J. Derfler, Jr. & The Editors of InfoWorld
show you how to get the most out of Hardware,
Software & Peripherals.*

InfoWorld's **ESSENTIAL GUIDE** TO THE **IBM PC**

Frank J. Derfler, Jr. *and*
the Editors of InfoWorld



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Preface

Welcome to *InfoWorld's Essential Guide to the IBM PC*. This book will help you get the most out of your PC. Whether you already own a PC or are trying to decide which computer to buy, we think you'll find this guide essential.

As a buying guide, it will help you get the most for your money. For example, it uncovers some of the hidden costs that you might overlook. After reading this book, you should have a good framework on which to base buying decisions.

If you already own a PC, you'll want to keep this book next to it as a resource of additional information.

To make this guide easy to use, we've divided it into two major parts: an overview of the Apple and reviews — a representative sampling of hardware and software products. Part 1, the overview, is divided into sections, with an explanation of what's in each section. In Part 2, the reviews — which follow the well-known, well-respected InfoWorld format — are arranged by applications, such as Words and Numbers.

With this arrangement, you can read the whole book straight through or skip around to various areas that especially interest you.

In the back of the book, you'll find a glossary and several useful appendices.

Prepared by the editors of *InfoWorld*, noted author Frank J. Derfler, Jr., and the *InfoWorld* product-evaluation team, this guide to the IBM PC will be a valuable addition to every PC user's bookshelf.



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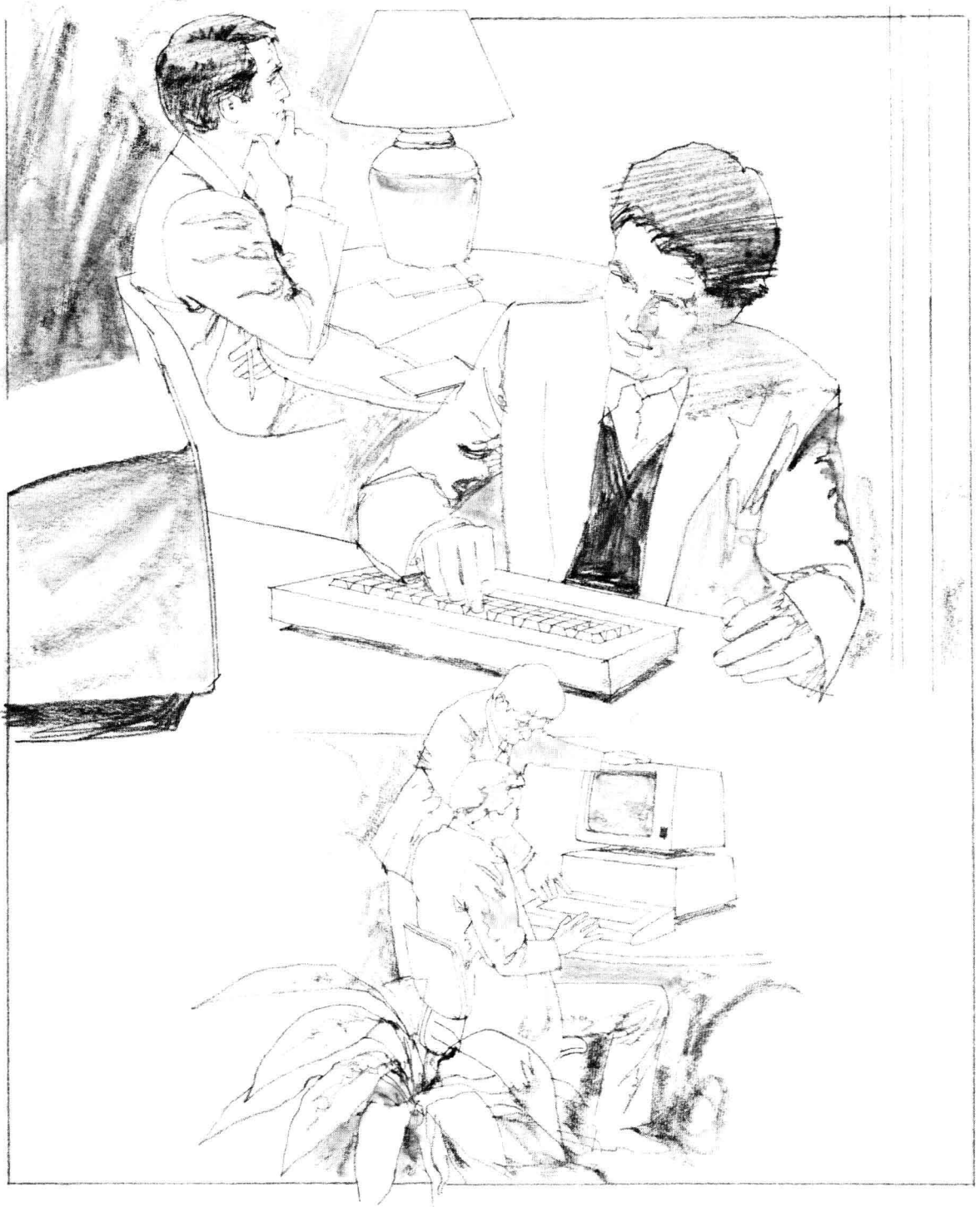
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Part 1

OVERVIEW



Getting Started

The introduction of the IBM PC has had and continues to have a profound impact on the world of personal computing. With the creation of the PC, IBM established a virtual personal-computer standard.

In this section, we'll explore the significance of the IBM PC.

We'll also provide buying advice (including a list of little things you may not have considered), and we'll show you how to beef up your PC.

History of the IBM PC
How to Buy a PC

HISTORY OF THE IBM PC

IBM introduced its first personal computer, the IBM PC, on August 12, 1981. Up until then, IBM, the world's largest computer company, had had a reputation for conservative thinking and well-established technology. With the introduction of the PC, IBM used new technology and marketing initiatives to turn what many people still saw as a hobby and toy market into a huge corporate market.

The project to develop the IBM PC started in July 1980 when IBM set up a separate operating division, called the Entry Systems Business Unit, in Boca Raton, Florida. Phillip (Don) Estridge headed a team of 12 engineers, which included Dr. David J. Bradley (who later took the lead in designing the PCjr and other improvements in the PC family).

IBM has traditionally used its own components in its machines, even designing its own memory chips and processors. The PC, in contrast, is largely built from non-IBM parts — the main processor is Intel's 8088, disk drives are from Tandon and Control Data Corporation, and other devices and subassemblies come from many large and small companies outside IBM. The design packaging, assembly, quality control and marketing, however, all belong to IBM.

Microcomputers differ mainly in the amount of memory they can use and the kind of operating system in the computer. Memory inside the computer is divided into two categories: random-access memory (RAM) and read-only memory (ROM). RAM is the working memory that the microprocessor writes into and reads from as it does its computing. ROM contains permanent instructions to which the computer refers as it works. The operating system is the fundamental

software that knits the hardware in the microprocessor, memory, keyboard and display together with the application programs that tell the computer specifically what you want it to do.

It was significant that IBM chose the Intel 8088, a 16-bit processor, in contrast to the 8-bit processors used in the machines that then dominated the market. Most 8-bit processors can only use a block of combined RAM and ROM memory that holds about 64,000 characters. Each character is called a byte and the letter *K* for kilo is used to mean one thousand, so a memory of 64,000 characters is usually called a 64-kilobyte or a 64K memory. The PC's 16-bit 8088 processor can make use of a block of memory that is just over one million bytes in size.

This means that a PC can handle a much larger internal memory and can efficiently run programs that manipulate a large amount of data. Its larger memory enables the PC to handle calculations more rapidly and to cope with more demanding programming techniques than the earlier 8-bit machines. This extra power, however, is no use without the software than can exploit it.

IBM turned to the outside world to an even greater degree for the PC's software and disk-operating system. A disk-operating system is the core program through which application programs interact with the computer's hardware. The use of outside companies provided IBM with the diverse talents needed to develop special application programs and a flexible operating system. IBM chose to use an operating system that was being developed as a general-purpose product. Early in the PC's development, IBM asked Microsoft to supply an operating system along with programming languages for the PC project. Microsoft's Bill Gates and Paul Allen purchased a 16-bit operating system that Seattle Computer was developing.

They polished it, added utility programs and programming tools and delivered the finished product to IBM as PC-DOS. (A similar operating system is offered under the name MS-DOS for other computers that use the 8088 and 8086 processors.) To ensure that a large body of application software would be available almost immediately, Microsoft made it relatively easy for programmers to transfer software from 8-bit CP/M (Digital Research's operating system for 8-bit machines) to MS-DOS. (See Chapter 3 for more information on PC-DOS and CP/M.)

Because the PC had a new technical design and operating system, you couldn't use existing software without modifying it. IBM had to release new software for word processing, spreadsheet analysis and business accounting. (These are the major application categories for microcomputers.) Again, the company turned to the established industry.

The first programs IBM introduced for the PC were little more than repackaged releases of programs that had been translated from the older 8-bit computers and the CP/M operating system. This initial software didn't take advantage of the 16-bit processor's ability to use large blocks of memory — some initial programs actually ran slower on the PC than on an 8-bit machine. IBM contracted with VisiCorp to translate its popular VisiCalc spreadsheet program into

PC-DOS and with Information Unlimited Software to provide its EasyWriter word-processing software. Packages from Peachtree Software soon joined the offerings boxed and sold in the distinctive IBM binder. IBM also started a campaign to solicit software from its own employees and from outside sources. This aggressive and open software support activity was certainly a contributing factor to the early success of the PC.

The acceptance of MS-DOS on the PC and other systems motivated software developers to write new software. It was over a year, though, before programs such as Lotus 1-2-3, Context MBA and Crosstalk XVI that could effectively use the 16-bit processor's speed and memory space became available.

Significance of the PC

The PC's release had two immediate effects. First, corporate managers and professionals, who had learned to place their trust in IBM equipment, saw it as a legitimate product for their use because it bore IBM's name on the front panel, even though it had nothing in common with their IBM mainframe and minicomputers. A survey by *Datamation* magazine in November 1983 reported that 50.9% of all people buying microcomputers for business use chose the PC. Venture capitalists began seriously considering the microcomputer industry as a place to put their money. IBM's advertising campaign, which uses a Charlie Chaplin figure and a rosebud to exemplify "modern times," soon blanketed both television and magazines.

Second, the PC created a new industry of hardware and software support. IBM's policy, which started with the PC, of publishing full technical details of the system encouraged a large number of new companies to spring up overnight. The ink was barely dry on IBM press releases when new companies began announcing add-on products. The PC's design included five expansion slots to hold circuit boards containing additional memory, connections for printers and other external devices and other accessories. The most commonly delivered configuration of the PC came with three or more of these slots filled with a disk-drive controller, video card and other IBM devices. The remaining one or two open slots were not enough to provide the expansion ability that most people wanted, so several companies moved quickly to produce add-on boards to increase memory and provide communications abilities. (See Chapters 6 and 7 for details about add-on products.)

One of the first add-ons to come on the market was a device for storing large amounts of data, called a hard-disk drive. (See Chapter 6.) A hard disk (sometimes called a Winchester or fixed disk) has greater storage capacity and faster access speed than the common floppy-disk drives. Hard-disk systems that companies typically offered for the PC had 5 million bytes (about 5 million characters) of storage, and some companies, such as Davong and Corvus, produced larger units that had a capacity of up to 20 million bytes. Adding a hard-disk drive to an IBM PC greatly enhances the computer's usefulness for accounting, financial analysis and large data-collection applications.