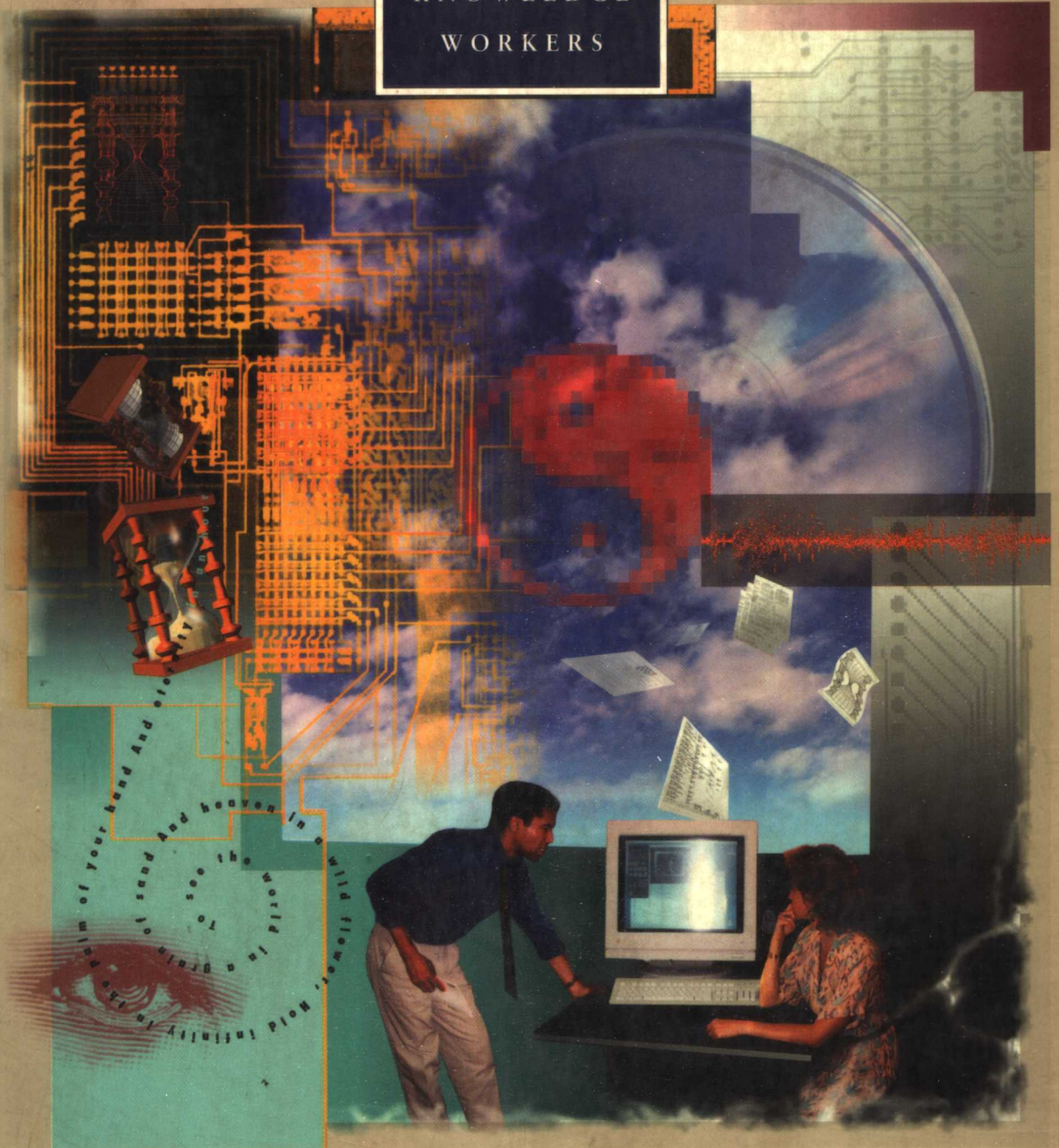


COMPUTERS

TOOLS FOR
KNOWLEDGE
WORKERS



R O C H E S T E R

COMPUTERS

TOOLS FOR
KNOWLEDGE
WORKERS

J A C K B . R O C H E S T E R

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This book is dedicated to the memory of

Charles Philip Lecht
(August 5, 1933–July 3, 1992)

Computer technology visionary and futurist
My mentor and my friend.

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INTRODUCTION: THE KNOWLEDGE WORKER

Students taking an introductory computer course in the 1990s will almost inevitably become computer users in their chosen occupation. More and more jobs require a computer today; moreover, a U.S. government study states that by the year 2000, three out of five jobs people will need to be trained and educated for do not exist today because they involve the use of emerging computer technologies.

What used to be referred to as white-collar work has changed. This is not merely clerical tasks, but work that requires the use of computers to perform. The computer *adds value*; therefore, this is called knowledge work. The people who perform it are **knowledge workers** who use a computer to complete work tasks more quickly and easily. The computer enhances their *personal productivity*.

Knowledge workers are white collar professionals from many walks of life who need to understand how to use a personal computer, how to work with computer-based information, and how computer systems benefit business. They may be self-employed in a home office or cottage industry; they may use a computer for their work in the office, while traveling, and at home; or they may operate their own small business.

TODAY'S BUSINESS COMPUTING ENVIRONMENT

Computers: Tools for Knowledge Workers takes the approach that students need to understand computers within the broad computing environment. Business today uses individual personal computers, workstations, departmental minis, and database-bound mainframes, often linked together in a network, al-

most always working within a framework called enterprisewide computing. The knowledge worker of today and tomorrow needs to understand how computing works in all these contexts. Moreover, this understanding must have a managerial emphasis or orientation; knowledge workers in the 1990s are more likely to become *information technology managers* in the particular department or division they work in, rather than programmers in the information systems department. They will not only use computer technology in their own work, but may often be involved in developing new departmental applications, using a fourth-generation language or object-oriented programming tools. They may be PC managers or be responsible for training other knowledge workers in their department. They may be work group computing team leaders or LAN managers.

Therefore, students need to clearly understand the foundations—the basics of the business computing environment that matured in the 1980s—as well as the new and emerging technologies that make the 1990s an exciting time for knowledge workers. That is the intent and the goal of this textbook. All the latest hardware and software technologies, as well as managerial and organizational advances, are presented *from a knowledge worker's perspective rather than a technical one*. They are discussed in terms of their value to the business and how they can be used to achieve goals better, faster, or with less cost.

A unifying theme in *Computers: Tools for Knowledge Workers* for presenting this information is that of **the computer system, which is comprised of people, data, procedures, software, and hardware**. Computers today are not a machine science; rather, as presented here, they are part of the business-oriented human enterprise. You, the student, are either a knowledge worker now or will be performing knowledge work in your career. Thus, com-

puter concepts are explained in the context of their everyday, actual business, and personal use with many case studies (both short and long) that demonstrate how those concepts apply in business situations using true examples and illustrations.

A TEXTBOOK DESIGNED FOR YOU

Computers: Tools for Knowledge Workers has four key differentiating features: a sharper focus, a stronger organization, greater currency, and more enriching applications.

A SHARPER FOCUS. This text is written for the student majoring in such subjects as accounting, communications, finance, marketing, management, and public relations. The topics, presentation level, and overall focus of the book are tailored to knowledge work, where technical depth serves the purpose of showing students how computer technology makes work more efficient and satisfying. Topics and concepts build one upon another so that students see the *relationship* between people, data, procedures, software, and hardware. Concepts and terms appropriate only for hardware or software engineers will not be found here. This method allows students to grasp the concept, understand its importance, and visualize its application in the real world.

A STRONGER ORGANIZATION. This text begins with an overview of hardware, with emphasis on the personal computer. Understanding the PC's components make it easier to grasp how larger computer systems work. In Module II the focus shifts to software, so students can see that systems software and application software make computers useful. Module III builds upon the usefulness applications provide by exploring hardware concepts—the CPU, input, and output—in more detail. Now that students clearly understand the relationship between hardware and software, Module IV explains how systems are created with programming, software engineering, and database, yet always from a knowledge worker's perspective. Module V puts it all together and shows the computer at work on tasks in business: management information systems, communications, and office automation.

GREATER CURRENCY. Students should understand how today's computer environment was shaped, but most important, they must be prepared for the computer systems they will encounter in tomorrow's workplace. *Computers: Tools for Knowledge Workers* describes all the latest technologies *as they are being utilized in today's business environment*. There is no coverage of technology simply for technology's sake. For example, the most powerful microprocessor is not necessarily the one most widely used; a promising software technology may be popular in the computer press but rarely implemented. These subjects are covered, but presented in a realistic business context, so students can appreciate the difference between “gee-whiz” technology and rock-solid implementation.

MORE ENRICHING APPLICATIONS. This text's approach is to *show*, not simply to tell. This is done through hundreds of examples and case studies, all drawn from real-life business situations. The approach is people-oriented and explains how the technology is used to solve a business problem. In most cases, people and companies are portrayed by name, and the benefits drawn from computer technology are explained in terms of increased productivity and cost savings.

THE WAY THINGS WORK: PERSONAL COMPUTER ANATOMY. Chapter 2 has a feature that appears for the first time in a computer text: a set of six acetate overlays that show the various internal and external components of a personal computer and the way they work together. This Computer Anatomy feature is called The Way Things Work, and it begins with the basic electronic components, each overlay adding components and connections so that their relationships to one another are made clear. After studying this Computer Anatomy, the student should be able to identify the major electronic and electromechanical components, and perhaps even install a component in their own personal computer.

TEXT ORGANIZATION

Computers: Tools for Knowledge Workers is organized into five self-contained modules that build one upon another, but can be reorganized if so desired.

Each chapter is clearly structured and is composed of the following elements:

- *A chapter outline*, clearly explaining chapter content and organization.
- *Learning objectives*, keyed to chapter sections and topics, with an accompanying summary at the end of each chapter.
- *Knowledge Checks*, intrachapter self-quizzes that allow the student to confirm understanding before proceeding to the next section or topic.
- *Practical, useful art* — photographs, drawings, and illustrations — that communicate how the technology is used, with captions that explain what the student is seeing in the photograph.
- *Three boxed features*, Yesterday, Today and Tomorrow, illuminate each chapter's topic. Yesterday is a history vignette that provides necessary perspective. Today is a story of how knowledge workers are using interesting or innovative computer technology today. Tomorrow describes where the computer technology is heading in the 1990s and toward the year 2000.
- An *Ethics essay* keyed to each chapter topic, concerning the personal, office, and social implications of computing. Students learn how the common understanding all people share for ethical and moral behavior in the workplace applies in knowledge work, how appropriate behavior is often misplaced when working with technology, and in some cases about overt criminal behavior.
- *Summary*, tied to the learning objectives.
- *Careers for Knowledge Workers*, true-life stories with an accompanying photo of individuals performing the kind of work the text describes. These knowledge workers are people working in business who, by and large, do not have a computer science degree. Rather, they are using computers to perform tasks such as newspaper publishing, marketing, public relations, or product development.
- *Issues* that accompany the Ethics essay present the student with a moral or ethical decision to make, based on a short, descriptive, realistic business scenario. These issues are meant to stimulate class or group discussion on the impact of technology in modern life and how it

affects personal and group human behavior.

There are no right or wrong answers, but students are encouraged to support their opinions with facts and examples from their own experience or outside reading.

- *Review and discussion questions* designed for either individual or class use. These questions, grouped by type (review, discussion, multiple-choice, fill-in-the-blank, true/false), may be used for class discussion, as a self-test, or to provide questions for in-class quizzes. The answers to the odd-numbered questions are included in the text.
- *Essential key terms*, those a knowledge worker needs to understand the technology and accomplish their work, referenced to the text page where they first appear. The Glossary contains all key terms and definitions.

Computers: Tools for Knowledge Workers is a textbook that is practical, rigorous, and complete. It is sharply focused on the student, tomorrow's knowledge worker. It is carefully organized and thoughtfully written. It has practical, pedagogically sound features. It blends traditional and current topics and exemplifies them through interesting, real-life examples, illustrations, and cases. Careers, ethics, social implications, and the history and future of computers are integrated with chapter topics for greater relevance.

ACKNOWLEDGMENTS

Benjamin Franklin, the great American statesman, writer, editor, publisher, and printer, once said "Either write things worthy of reading, or do things worth the writing." This text is, in the truest sense of the word, a collaboration among many knowledge workers. The author hopes he has written a textbook worthy of reading.

Many thanks to those knowledge workers who gave of their time and energy to develop the *Careers for Knowledge Workers* profiles. Sincere thanks to the reviewers listed below for their thoughtful comments and suggestions; their work has been more than worthy of the writing and they have substantially shaped the book. Now it is in the students' hands, where it is hopefully worth reading and will

lead to knowledge work worth writing about in future editions.

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SUPPLEMENTS

Three excellent educators have been part of the team helping to develop the learning and teaching program for *Computers: Tools for Knowledge Workers*. Cathi Chambley-Miller of Aiken Technical College is author of the Study Guide. Ernest F. Hensley of St. Petersburg Junior College compiled and wrote the Instructor's Resource Manual. Eugene Stafford of Iona College prepared the Test Bank. The author appreciates the hard work that went into preparing these supplements and thanks each author.

COMPUTERS USED IN THE PREPARATION OF THIS TEXT

As a working author and computer industry journalist, I enjoy the opportunity to not only see how computer technology is utilized in business, but to use it myself. I used or reviewed all the personal computer hardware and software technology you read about in this text. I use both a PC and a Macintosh; my primary computer is a Zeos 80386 with 4MB of RAM and two Conner IDE hard disk drives: a 120 MB hard disk for word processing software and work files and an 80MB hard disk for all other application software. I use a Nanao Flexscan 9080i 16-inch color monitor with an ATI Graphics Ultra video card, a Hewlett-Packard LaserJet III printer with a Bitstream Type City font cartridge, a Fujitsu keyboard, a Supra modem, and the DAK Industries CD-ROM drive and disc reference library.

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