

Computers in Small Bytes

THE
COMPUTER
WORKBOOK

Second Edition

An abstract, high-contrast illustration in shades of brown and tan. It features geometric shapes and patterns that suggest computer hardware. A central square frame contains a circular element. Below it, a keyboard is depicted with a grid of keys. To the right, a curved shape resembling a monitor or a piece of a computer case is visible. The overall style is reminiscent of mid-20th-century graphic design.

Irene Joos, Nancy I. Whitman,
Marjorie J. Smith & Ramona Nelson

Computers in Small Bytes ***The Computer Workbook***

Second Edition

*Irene Joos, Nancy I. Whitman,
Marjorie J. Smith, Ramona Nelson*

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Computers in Small Bytes

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Dr. Joos has given computer-related presentations at the local, national, and international level. She is the President Elect of Sigma Theta Tau, Eta Chapter, and a member of the NLN's Council for Nursing Informatics, Executive Committee. She was formerly president of the Tri-State Nursing Computer Network. She is a member of The American Medical Informatics Association.

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She is a member of Sigma Theta Tau, Beta Phi Mu, the American Medical Informatics Association, and the National League for Nursing. She received the Dean's Distinguished Teaching Award from the University of Pittsburgh, School of Nursing as well as the Nightingale Award for Excellence in Nursing. Dr. Nelson is a Sigma Theta Tau Distinguished Lecturer, Chair Elect of the NLN Council for Nursing Informatics, and President Elect for the Tri-State Nursing Computer Network. For Dr. Nelson, one topic within the broad field of healthcare informatics is of special interest: How to help nurses and other health care providers understand informatics and, in turn, provide better care using computers. This concept is the focus of her publications and presentations.

Preface

This second edition of *Computers in Small Bytes* reflects a balance between the everchanging computer world and the “real” world in which most of us exist. It updates the content to reflect changes in the computer world while continuing to provide helpful activities with the current equipment and software found in most settings. The emphasis of the lessons is on basic concepts and terms that span the changes in computer technology. The hardware chapter presents basic concepts and terms necessary to understand the current technology. The operating system chapter now focuses on managing files and the hard drive. The systems used to demonstrate these concepts are Windows and DOS, but the concepts are valid regardless of the operating environment you use. The specifics of how to perform a given task changes, but not the concepts. The software chapters now include both Windows and DOS programs (WordPerfect, Paradox, Quattro Pro, and Harvard Graphics) and the MAC section incorporates MS Word, Excel, and PowerPoint. The exercises for this software also work in the Windows versions. The data communication chapter (now computer-assisted communications) reflects the growth of the Internet and data communications. Following that theme, the legal/ethics chapter discusses some Internet concerns. The nursing informatics chapter (now healthcare informatics and information systems) lists additional terms and concepts necessary to understand information systems in health care.

This workbook will assist novice computer users in developing a set of computer skills useful in their school and work worlds and in developing an understanding of healthcare informatics. The lessons for each chapter contain basic terminology and concepts necessary for understanding that content area. The exercises provide progressive difficulty in developing associated skills and in working with the concepts. This workbook is unique in that the exercises use health care situations. Assignments help assess the user’s level of understanding and skill developed. Each chapter stands alone so the user can choose to develop selected skills as needed.

Our sincere hope is that this workbook will serve as a sound basis for developing basic computer skills for health care professionals. With basic skills and knowledge in hand, it is amazing how quickly intermediate and advanced skills and knowledge develop.

Computers in Small Bytes

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ORGANIZATION OF THE WORKBOOK

This workbook consists of 13 chapters, a precourse assessment, appendices, a bibliography, and an index featuring highlighted computer terms. With the exception of this chapter, each chapter is organized similarly, beginning with a lesson that introduces the content, describes key concepts and terms, and, in application chapters, provides you with common application function descriptions and keystrokes. Each chapter also includes one or more exercises for use in the classroom or computer lab to practice application of lesson concepts, and one or more assignments intended for users to demonstrate knowledge and skill with the chapter topic.

The first chapter covers material foundational to understanding and using this workbook. Content about hardware, software, and operating systems provides users with the necessary knowledge to use the chapters related to specific application programs.

The next four chapters include lessons and exercises for four major categories of software applications: word processing, spreadsheets, databases, and graphics. To illustrate the basic concepts of each of these application programs, commonly used software packages are presented. They are WordPerfect, Quattro Pro, Paradox, and Harvard Graphics for Windows and DOS- (Disk Operating System) based computers, and Microsoft Word, Excel, and PowerPoint for the MAC and Windows.

Additional chapters discuss using computers as tools for specific applications common to health care providers: computer-assisted communications, computers and education, research, and healthcare informatics and information systems. In some of these chapters, such as computer-assisted communication, we introduce additional software program concepts; for example, what you need to access the Internet is described. In some lessons, the content is more conceptual in nature, and the application exercises and assignments require no software programs.

The remaining chapter outlines the ethical and legal use of computers in health care. Appendix A provides a precourse questionnaire for assessing current computer knowledge, and Appendix B provides a bibliography of titles that are helpful both to the computer user and the teacher. Important computer terms are highlighted in the index.

BEFORE YOU START: SOME HELPFUL INFORMATION

Every computer system and every computer lab has subtle differences that can cause confusion for the beginner; therefore, you must learn something about the computer environment in which you will be computing. Your teacher or computer lab personnel can assist you in answering the following questions.

Accounts: Do you need an account to use the computer lab? If so, how and where do you get an account? Note that many places have at least a 24-hour wait time before you can use the lab.

- Computer Labs:** Where are the computer labs located and who has access to them? Do you need to present an ID card to use the equipment and software?
- Cost:** Is there a user charge for accessing and using the computer equipment and software? Do the rates vary (less at night or during off-peak times)? Do you pay a computer fee with your tuition charges? What does the fee cover?
- Documentation:** Does your computer lab have user documentation? Where is the documentation? Are there handouts available in the computer lab? Are there documents on-line that you read or print out? What documentation do you need to start? Most computer labs have user documentation that can help you to start and to learn specific software programs. For example, your lab might have a document called *Getting Started with Pine E-mail* or *Accessing the Computers with a Modem*.
- Equipment:** What type of hardware will you be using? What type of diskettes do you need and where do you get them? What do you need to do to turn on the equipment and what will you see?
- Lab Hours:** What are the lab hours? Do they change during the term? Some labs expand their hours of operation toward the end of the term when many papers and projects are due.
- Logging In:** Is there a logging in procedure (a series of steps to access the computer software)? If so, how do you go about logging in to the system? Is there a help sheet to guide you?
- Rules:** What are the rules that govern use of the lab? Many labs have no eating, drinking, and smoking policies. Some labs also require checking all diskettes brought into the lab for viruses before you can use them.
- Support:** What support is available to you if you need help? Many labs provide user consultants to assist anyone having problems. Others provide on-line help services.

GETTING STARTED WITH THE WORKBOOK

You should review the material in this section before you begin work on the computer.

<CR> Used throughout this workbook, this symbol refers to the Enter or Return key. When you see <CR>, do not type it. Press the Enter or Return key.

Bold Text in bold indicates what to click on, which keys to press, or what to type. Computers are very exacting. A misspelled word or failure to place a blank where you need a blank results in error messages. Make sure what you type is exactly what is bolded.

Ctrl+FX When you see a Ctrl, Alt, or Shift followed by a plus sign (+) and function key number or letter, press the first key, then while holding it down, press the correct function key. Release both keys together.

Version Because commands vary with different versions of software, the version of the software program used for the exercises is indicated. This does not mean you can't use another version; it means that some of the specific commands will be different. You may need to use the manual or other reference materials to guide you in completing the exercise.

Mac/Windows The exercises for Word, Excel, and PowerPoint were written on a Macintosh, but you can use Windows-based programs for these exercises as well. A few things may be different, but you should be able to figure them out. Most of the keystrokes are exactly the same. A few menu items are different; for example, you will not have the Apple symbol, but instead see the control-menu box symbol.

Described below are some additional tips you might find helpful as you develop your computer literacy through use of this workbook.

1. Don't try to complete all the workbook exercises at once. Sometimes it is helpful to come back later, especially when the exercises aren't going well or you are tired.
2. Pay attention to messages on the screen. This is the computer's way of trying to help you.
3. Use the software commands found at the end of each lesson for an application program to complete your exercises or assignments for that software program. *You don't need to memorize the commands or sequences of events.* Use the screen clues, prompts, and on-line help as well as templates that may be available for specific software programs.
4. Try additional commands by referring to other reference sources such as the user manual or reference books. The commands given in this workbook were chosen to enable you to complete the exercises and learn some basics of how the programs work. There are many more functions you can do with each of the software programs presented.
5. Always make a backup of your files. This is especially important for the beginner so you don't lose hours of work.
6. Practice doing assignments from all courses using the computer. It takes practice to develop computer literacy. You will find tasks become easier and take less time when using the computer as a tool to help do your work.
7. *Have patience with yourself.* You will be learning a new vocabulary and developing new skills; these efforts take time and energy.

FOR THE PROFESSOR

Using the Workbook

- You may use the entire workbook or parts of it within a computer course. You may reorganize the lessons to fit the course outline. We have found, however,

that the general information about computers and operating systems is important before learning about specific software applications. This is probably more important with Windows/DOS-based computers than the Macintosh. We also have found that the chapter about word processing is best introduced before the other lessons about specific software programs. Our experience indicates that word processing is one of the most readily useful applications for students, thus one of great interest. Learning to use the keyboard and mouse for word processing provides the basis upon which to build other computer skills. In addition, students can convey knowledge of other computer concepts using word processing, thus, providing further opportunity to practice and expand word processing skills as they progress through the workbook.

- You may use selected chapters of the workbook within individual courses to prepare students to use the computer as a tool in health care settings. For example, you could introduce the chapter on database applications in an introductory nursing course to guide students on the use of computerized literature databases and to help students begin to organize nursing care plans. You might use the research chapter in a research course, the spreadsheet chapter in an administration or leadership course, and the graphics and computer education chapters in courses about patient teaching.
- You can use the workbook as a stand-alone for students lacking the required computer literacy competencies. The student then can demonstrate the required competencies by completion of selected assignments.

Organization of Chapters

1. **Lessons.** You can use the lessons on computer literacy topics as a foundation for classroom presentations. The lessons were developed in an outline, lecture format, not as a chapter in a textbook. You can use readings in current textbooks and journals to expand the content and provide examples of applications for health care settings. We introduce appropriate concepts and terms in each chapter lesson. Sometimes, the concept or term may be repeated in other chapters as necessary to understand the new material.
2. **Exercises.** We designed the exercises for each lesson for use in the classroom or computer lab setting. You can use all or part of them. The step-by-step exercises designed to introduce a computer skill were developed to require minimal assistance. However, because novice users can find the most imaginative problems, it is helpful if the teacher or a lab consultant is available to help students handle problems and decrease initial frustration. We designed the exercises related to applications in health care situations for use as a foundation for class discussions. They have been successfully incorporated in entire class discussions and for small groups within the class.
3. **Assignments.** You can use the assignments included with each lesson for independent evaluation of individual students or small groups. You can use all

or part of them. We have found that requiring assignments within one or two weeks after the class presentation encourages students to practice the concepts immediately, and helps them identify misconceptions or problems in applying the material. Grading criteria for assignments requiring use of software programs can include competence, accuracy, and pleasing visual presentation. Teachers may attribute grade points to these assignments in any way they wish.

Orienting Students

Throughout the workbook, wherever possible, we made an effort to use content that is generic to any computer. Thus, you may need to supplement the workbook with some specific information that students need in order to be successful with the computer exercises and assignments. Since computer labs are set up in a variety of ways, from using menus to accessing application programs to using batch files for accessing subdirectories, students need an orientation to the computers they will be using. Even starting the computer can be a challenging and fear-provoking experience for the novice computer user. Step-by-step instructions on starting the computer and accessing each software program are essential.

Information about where the computer stores data is also important. Some computer programs are configured to automatically save data on a floppy diskette; others have space set aside on subdirectories of the hard drive or file server. Even on the same computer, various programs may be configured differently. We have found that students have difficulty initially understanding data storage concepts, and often think files are lost when they are saved on the hard drive or file server data space. Explanations and written guidelines about the data storage configurations for each program the students will be using can save them many hours of frustration.

CHAPTER 2

Computer Systems

OBJECTIVES

1. Describe the major hardware components of a computer system and their function(s).
2. Define basic terminology related to hardware and software.
3. Describe the main classes of computer software.

INTRODUCTION TO COMPUTER SYSTEMS: HARDWARE

The hardware for a computer system consists of input devices, system unit (processing unit, memory, boards, power supply), output devices, and secondary storage devices. The following definitions are important to your understanding of the upcoming sections on hardware. Refer to these definitions as you encounter them throughout this chapter.

Common Computer Hardware Terms

- Bit:** The smallest unit of data, the lowest level. Bit is an abbreviation for binary digit. A bit represents one of two states for the computer: 0 or 1, off or on, like a light switch. Everything the computer understands uses combinations of 0s and 1s.
- Byte:** A string of bits used to represent a character, digit, or symbol. It is usually 8 bits.
- Cursor:** A “visible indicator” on the screen that marks your location and the point at which you begin your work. The cursor can appear as a pointer (generally an arrow), vertical or horizontal line or rectangle, or I-beam (looks like a capital letter I). The cursor also changes to reflect processes and functions.

For example, in Windows, it changes to an hourglass when the program is processing your command. In Netscape, an Internet browser, it changes to a hand when you are over linked text or objects (text or object that takes you someplace else).

Diskettes: A magnetic storage medium for your data. Common size for Windows/DOS computers is 3½" (720K, 1.44MB, and 2.88MB). The common size for the Mac is 3½" (440K, 800K, and 1.4MB).

Icons: Pictorial symbols or figures on the computer screen that represent a computer function or command. For example, clicking on the picture of the printer starts the Print command.

Laptop: A portable computer. Configuration of laptops is similar to microcomputers.

Mainframe: A large computer that accommodates hundreds of users simultaneously. It has a large data storage capacity, large memory, multiple input/output (I/O) devices, and speedy processor.

Menu: A list of options available to you on that screen.

Micro: A term that describes a small one-user computer system with its own central processing unit, memory, and storage devices. Micros are growing in processing power, speed, and storage.

Minicomputer: Medium-sized computers that are faster, store more data, and are cheaper than mainframes. Size-wise, they are between mainframes and microcomputers.

Modem: Modulator/demodulator. Converts computer signals (digital) into an analog (wave length) form that can be sent over telephone lines. They come in internal (placed inside the computer) and external (on the table top) types.

PC: An acronym for a microcomputer or personal computer. In this class are desktop models, laptops, and notebooks. Notebooks are usually 8½" × 11" and fit into a briefcase. Laptops are slightly larger than notebooks and usually have a full-size keyboard.

PDAs: Personal Digital Assistants (also called palmtops). These are the smallest portable computers and are less powerful than PCs. PDAs are useful for special applications such as small spreadsheets, addresses, schedules, and small databases.

Sector: A pie-shaped segment of tracks on a diskette is a sector.

Storage: A place or space for holding data and application programs. The computer has both primary (memory) and secondary (floppy diskettes, hard drives, optical drives, and tape drive) storage spaces. In addition, the storage space may be either temporary (like the memory RAM space or floppy diskettes) or permanent (like the memory ROM space or most optical discs).

Toggle: To switch from one mode of operation to another. For example, pressing the Insert key toggles you from Insert mode to Typeover mode.

Track: Concentric rings on a disk or diskette.

Upgrade: To buy the newest release of a software program or to enhance a piece of equipment.

Workstation: In hardware terms, a workstation is a computer with capabilities beyond a normal PC. It looks like a PC, but uses a different CPU design known as RISC (reduced instruction set computing). Most of these use the Unix operating system. When used in a network context, it refers to a computer node on a network.

Major Input Devices

Input devices are hardware components that convert data from an external source into electronic signals understood by the computer. Two major input devices are the keyboard and mouse or pointing device.

Keyboard: The keyboard is an input device that looks like a typewriter, but it has more keys. Two common layouts are 80 and 101 keys. Note, however, that this does change. For example with Windows 95, a new keyboard with additional keys is available. While there are some differences among keyboards, there are some commonalities. Most keyboards have four components: alphanumeric keys (typewriter key layout), numeric keypad (calculator layout), function/special keys, and cursor movement keys. Described next are some of the common special keys for Windows or DOS computers and Macintosh computers.

WINDOWS/DOS

Alphanumeric Keys: These keys resemble the typewriter keyboard layout.

Enter: The Enter or Return key works like a carriage return. Press it after entering commands or at the end of paragraphs. Also use it to accept the outlined button in a Windows dialog box. Some texts use the symbols \leftarrow or <CR> to represent the Enter key.

Shift: This key functions like a typewriter shift key. It produces uppercase letters. On many keyboards, an up arrow (\uparrow) represents the shift key.

Tab: Tab functions like a typewriter Tab. It permits you to move along the screen at defined intervals or next field in a dialog box. For example, pressing the tab key moves the cursor five spaces at a time. This is the default tab setting for many word processing programs.