STUDY GUIDE TO ACCOMPANY
COMPUTERS
THE USER PERSPECTIVE

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STUDY GUIDE
to accompany

Stallings • Hutchinson • Sawyer

COMPUTERS
THE USER PERSPECTIVE

by

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PREFACE

WHY SHOULD YOU USE THIS STUDY GUIDE?

Often after reading a chapter in a book, it's hard to determine the most important topic areas presented in it. This study guide presents the most important topics for each of the chapters in COMPUTERS: THE USER PERSPECTIVE and provides exercises to help you learn and remember them. The benefit to the student is a more thorough understanding of important topic areas, which should translate into better grades.

HOW TO USE THIS STUDY GUIDE

This study guide provides you with helpful information and exercises relating to each chapter and module in COMPUTERS: THE USER PERSPECTIVE. Each chapter in the study guide contains the following features:

o   Chapter Outline. What does the term <u>bus</u> mean to you? A vehicle that carries many passengers at one time? If looking at the outline presented in the study guide for Chapter 5, entitled Processing Hardware, this term is used to mean something different -- namely, a component of the central processing unit. Unless you can put a topic into its proper perspective or context, chances are you won't remember much about it. Therefore, this section provides you with an outline of the current chapter so you can put chapter topics into their proper perspective.

o   Why Is This Chapter Important? Why should you learn or remember something if it's not relevant to you? For example, is it important for you to know all about programming if you never intend on being a programmer? No. Furthermore, do you think you would have the incentive to learn all about programming if you don't intend on being a programmer? Probably not. If you have incentive to learn something, it's much easier to learn it, and also to remember it. Therefore, in this section we tell you why the current chapter is important and relevant to you.

o   Study Tips. This section summarizes the most important topics for the current chapter while focusing on the "user perspective" -- in other words, topics are summarized in a highly relevant manner. Whenever possible, you are provided with hints on how you might remember these topics. For example, in Chapter 4 of the study guide, when describing the different types of

PART ONE   **THE BEGINNING: BECOMING A COMPUTER USER**

Chapter 1

Computers: The New Tool for an Information Age

CHAPTER OUTLINE

The User Perspective
    Who Is the User?
    "Computer Literacy": Mighty Micros and Other Computers
What Is a Computer System? The Sum of Three Parts
    Computer Hardware
        Input Hardware
        Storage Hardware
        Processing Hardware
        Output Hardware
    Computer Software
        Systems Software
        Applications Software
        Software Development Tools
    We The People
        Types of Computer Systems: What´s the Difference?
    Mainframes, Minicomputers, and Microcomputers
    The Anatomy of a Microcomputer
        Keyboard
        Monitor
        System Unit
The History of Computer Processing
    Data Processing before Computers
    The Evolution of Computers
        First Generation
        Second Generation
        Third Generation
        Fourth Generation
        Fifth Generation
    What Does All This Mean?
The Impact of Computers on Processing Data and Information
    Data Collection: Hard Labor to Easy Time
    The Production of Information: Faster, Easier, Better
    Information in Usable Forms: For the Computer and for the User
        Hardcopy Output
        Softcopy Output
The Impact of Computers on Society
    Opportunities for Employment
    Computers in Business
    Computers in Government
    Computers in the Legal Profession
    Computers in Medicine
    Computers in Education
    Computers in the Home

WHY IS THIS CHAPTER IMPORTANT?

In short, this chapter gives you the incentive to become computer
literate. It provides you with an appreciation for the critical
role computers play in our society today and with the incentive
to learn about computers and how to use them. The non-technical
orientation presented in this chapter provides the critical
"stepping stone" for the rest of the chapters in the text.

STUDY TIPS

Did you know that you are a user? On the one hand, we have the
computer professional who has highly technical knowledge about
computers, and, on the other, we have the user who has much less
technical knowledge but who makes decisions based on the
information that computers produce. A user who is valuable to a
business is one who is computer literate -- one who has a basic
understanding of computers and how to use them to produce
information relevant to his or her needs.

> TIP 1: Understand what is meant by the terms
> underlined above. Understand that, in today's society,
> it is important to be computer literate in order to be
> successful in business.

Believe it or not, you are smarter than a computer is. A
computer (hardware) is only as smart as the instructions
(software) you give it. A computer system is composed of
hardware, software, and people. The four categories of hardware
include input hardware, processing hardware, storage hardware,
and output hardware. The three categories of software include
systems software, applications software, and software development
tools.

> TIP 2: Be able to put all the terms underlined above
> into perspective. In other words, where do they fit
> into the overall picture of a computer system? This is
> important because there are chapters in the text that
> are dedicated to describing each of these terms in
> greater detail.

There are three major categories of computer systems:
mainframes, minicomputers, and microcomputers. The types of
things that distinguish the different types of computer systems
are the registers, memory, storage capacity, processing speed,
the number of users, and cost.

> TIP 3: Understand why it is difficult to give exact
> definitions for the terms underlined above. This is
> important because it helps you to appreciate the many
> technological advances that continue to affect each
> category of computer.

TIP 4: Although it's important for you to understand what a mainframe computer and minicomputer are, you will most likely be using microcomputers in the business environment. With this thought in mind, be familiar with the components of a typical microcomputer system as described in the section titled "The Anatomy of a Microcomputer."

The use of computers has improved the way in which data is processed into information. These improvements have provided the impetus for many businesses to acquire computer systems. In particular, we see extensive use of computers in government, in the legal profession, and in the medical profession. Also, we see many people using computers at home.

TIP 5: Understand the different ways in which computers have improved the way data are processed into information.

SELF-TEST QUESTIONS

FILL-IN-THE-BLANKs below by using the key terms defined in Chapter 1 of COMPUTERS: THE USER PERSPECTIVE. Some of the terms are used more than once.

As a _____ of computers, it is very important that you become _____ _____ in order to be successful in business. This might involve being able to describe and identify the different categories of computer hardware, including _____, _____, _____, and _____. This might also involve understanding the three different categories of computer software: _____, _____, and _____ _____ _____. And, most important, being _____ _____ involves knowing how to use hardware and software in order to process _____ into useful _____.

The three main categories of computer systems are _____, _____, and _____. You will most likely be using _____ in the business environment. With this type of computer, data is usually stored on either _____ _____ or _____ _____. Data is usually input through a _____, and information is usually viewed in _____ form on a _____. You may want information to be included in a report, in which case you would print it out in _____ form.

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TRUE/FALSE

T F 1. A microcomputer uses a microprocessor as its CPU.
T F 2. Computers enable data to be processed into information faster, easier, and better.
T F 3. The location and number of keys on a keyboard varies among manufacturers.
T F 4. A computer professional is a person who has had formal education in the technical aspects of using computers.
T F 5. In order to be considered computer literate, it's important to master the terminology used when talking about computers.
T F 6. Softcopy output is equivalent to printed output.
T F 7. The computers in use today fall into the second generation category.
T F 8. One of the negative impacts computers have had on society is that fewer jobs are available.
T F 9. Users should have a high degree of technical understanding of computers.
T F 10. Data that has a context is referred to as information.
T F 11. Floppy disks are used for storage on mainframe computers.
T F 12. Today users are becoming more directly involved in the process of producing reports through the use of microcomputers.
T F 13. Internal memory, which is like the brain of the computer, is made up of a control unit, an arithmetic/logic unit and processing registers.
T F 14. A monochrome monitor is often referred to as an RGB monitor.
T F 15. Computers can be categorized according to how fast they are in terms of MIPS.
T F 16. Software is a term used to describe the instructions that direct hardware on how to perform a task.
T F 17. You will most likely be using a mainframe computer in the business environment.
T F 18. One way of categorizing a computer is by how much it costs.
T F 19. A power supply is a commonly used input device.
T F 20. Applications software is composed of a set of programs designed to function as the principal interface between the different components in a computer system.

MULTIPLE CHOICE

1. Which of the following is usually <u>not</u> considered as part of
    a computer system?

    a.   CPU
    b.   Software
    c.   Hardware
    d.   Desk
    e.   People

2. In order to be computer literate, a person should:

    a.   learn the terminology used when talking about
         computers.
    b.   learn how to use a computer.
    c.   know what the various components are of a computer.
    d.   know how to use computer software in order to produce
         the information needed.
    e.   All of the above

3. Because computers are being used so much in business, you
    will be better equipped to enter the business world if you:

    a.   are computer literate.
    b.   know how to use a microcomputer.
    c.   can talk about computers.
    d.   know how to produce the information you want.
    e.   All of the above

4. To which of the following categories of hardware is the term
    <u>keyboard</u> most closely related?

    a.   Input hardware
    b.   Processing hardware
    c.   Storage hardware
    d.   Output hardware
    e.   None of the above

5. To which of the following categories of hardware is the term
    <u>processing registers</u> most closely related?

    a.   Input hardware
    b.   Processing hardware
    c.   Storage hardware
    d.   Output hardware
    e.   None of the above

6. To which of the following categories of hardware is the term
   internal memory most closely related?

   a. Input hardware
   b. Processing hardware
   c. Storage hardware
   d. Output hardware
   e. None of the above

7. Which of the following is not a function of systems
   software?

   a. It serves as the principal interface between the
      hardware, users, and other software.
   b. It provides the programmer with the necessary tools to
      create a high-level software program.
   c. It instructs hardware on what to do.
   d. It instructs hardware on how to perform certain tasks.
   e. It instructs hardware on when to perform certain tasks.

8. Which of the following types of computers will you most
   likely use in the business environment?

   a. Supercomputer
   b. Mainframe
   c. Minicomputer
   d. Microcomputer
   e. None of the above

9. Which of the following is considered a reason for users to
   seek computer training?

   a. To satisfy job requirements
   b. To increase job skill
   c. To increase marketability
   d. To learn to use a computer as a personal resource
   e. All of the above

10. Which of the following is considered by many to mark the
    beginning of the widespread use of computers by small
    businesses?

    a. ENIAC
    b. Large-scale integration circuits
    c. Introduction of the Radio Shack Models I and II and
       Apple II
    d. Punched cards and magnetic tape
    e. Parallel processing

MATCHING

1. _____ Software
2. _____ Processing registers
3. _____ Keyboard
4. _____ Control unit
5. _____ Arithmetic/logic unit

6. _____ Monochrome monitor
7. _____ Nonvolatile
8. _____ Hardware
9. _____ Bit
10. _____ Mother board

a. The most common type of input hardware device.
b. Located in the CPU, these hold the data and instructions that are being acted upon.
c. This hardware device performs mathematical comparisons and data comparisons.
d. The instructions that direct hardware on how to perform a task
e. The basic element of the coding scheme used in computers to represent data.
f. A computer.
g. A form that is relatively permanent.
h. This hardware device reads and interprets software instructions and coordinates the processing activities that must take place.
i. A type of output device that is only capable of displaying text and graphics in a single color on a solid background.
j. The main circuit board for a microcomputer system.

SHORT ANSWER

1. Do you think it is more important for users to be computer literate today as compared to 10 years ago?

2. What is a computer?

3. Why do you think systems software is often referred to as the most important type of software?

4. Internal memory is often considered a computer's most precious resource. Why do you think this is true?

5. What types of tasks do people (including users and computer professionals) perform as part of a computer system?

6. On what parameters are different types of computers (mainframes, minicomputers, microcomputers) often compared?

7. Why do you think this chapter described the "anatomy" of a microcomputer and not the anatomy of either a mainframe or a minicomputer?

8. How might the use of computers in society increase employment opportunities?

9. What is meant by the terms <u>hardcopy output</u> and <u>softcopy output</u>?

10. For what reasons have more and more users been taking training courses in how to use computer hardware and software?

Chapter 2

The Computer-Based Information System

CHAPTER OUTLINE

The User Perspective
   Where Do You Fit In?
What Is a Computer-Based Information System?
   System Components
   Phases of Activity
      Input Phase
      Processing Phase
      Output Phase
      Storage Phase
   The Four Phases of Activity at Intouch Office Supplies, Inc.
      Intouch Sales Order Entry: Input Phase
      Intouch Sales Order Entry: Processing Phase
      Intouch Sales Order Entry: Output Phase
      Intouch Sales Order Entry: Storage Phase
Methods of Input and Processing
   Batch Approach: Delayed Input
   On-Line Approach: Immediate Input
   On-Line Real-Time Approach: Immediate Input and Immediate
      Processing
   Off-Line Approach: Delayed, Heavy-Duty Processing
Management Philosophy and the Use of Computers
   Centralized Computer Facility: One for All
   Decentralized Computer Facilities: All for One
   Distributed Computer Facility: Something for Everyone

WHY IS THIS CHAPTER IMPORTANT?

As you probably know, many, if not most, businesses use computers to process data into useful information. It is extremely likely that, upon entering the business environment, you will be required to use a computer -- or interact with your company's computer-based information system -- to perform many of your processing tasks, but not all. The better you understand the dynamics of a computer-based information system, the more valuable you will be to a potential employer because you will be able to judge for yourself when and when not to use a computer in order to perform your job-related activities.

STUDY TIPS

Center stage! Action! Yes, you play a critical role in the **computer-based information system.** Your role involves interacting with the system in order to input data into the computer, reviewing information that is output as a result of processing, and perhaps developing business software.

> TIP 1: Understand what is meant by the term computer-based information system, and why you, as a user, may be more involved with it if your company uses microcomputers for most of its processing.

A computer-based information system is comprised of people, hardware, software, data, and information. Two or more of these components work together in the information system's four phases of activity (input, processing, output, and storage).

> TIP 2: If you understand how people (you) are involved in each phase in a computer-based information system, it will be easier for you to remember what activities typically take place in each of the phases and what system components are involved in each phase.

The activities that take place in a computer-based information system vary somewhat, depending on the overall input and processing approach the company is using. The term approach refers to either the batch approach, the on-line approach, the on-line real-time approach, or the off-line approach. A company makes a decision on which approach is best, depending on how the organization inputs data, the time frame in which data needs to be processed, and when output is needed.

> TIP 3: As an employee in a business that has a computer-based information system, you will probably be using one or more of the approaches underlined above to input data and process it into information. It is

therefore relevant for you to understand what is involved
with each of these approaches.

In the business environment, it is important for you to
understand how to get the information you need to perform your
job activities efficiently. In a computer-based information
system, understanding how the computer facility in your company
is organized is an important key to getting the information you
need. Most companies that use computers have either a
centralized computer facility, a decentralized computer facility,
or a distributed computer facility.

When an organization has established a <u>centralized computer
facility</u>, a single computer department provides computer services
to all the other departments in a company. When a <u>decentralized
computer facility</u> is established, each department in the
organization has its own computer facility. When an organization
establishes a <u>distributed computer facility</u>, each department has
its own computer equipment, and one or more computers connected
to a central computer.

TIP 4: Understand the advantages and disadvantages of
the different computer facilities described above.

SELF-TEST QUESTIONS

FILL-IN-THE-BLANKs below by using the key terms defined in
Chapter 2 of COMPUTERS: THE USER PERSPECTIVE. Some of the terms
may be used more than once.

The critical components of a computer-based information
system are data, information, _____, _____,
and _____. The four phases of activity include the
_____ phase, the _____ phase, the
_____ phase, and the _____ phase. People are most
involved in the _____ and _____ phases when data
needs to be put into computer-usable form and information needs
to be reviewed.

_____ and _____ procedures govern each
activity that is performed in the computer-based information
system. When working in a business that requires you to use a
computer to process data into information, it is especially
important for you to understand what the _____ procedures
are for to get your job done. If you have questions you will
want to consult someone in your organization's computer
_____.

TRUE/FALSE

T F 1. Users are <u>not</u> an important component of the computer-based information system.

T F 2. Computerized procedures include those performed by people when they interact with the information system.

T F 3. A computer-based information system includes four major phases of activity: input, processing, output, and storage.

T F 4. Users are never involved with developing software in a computer-based information system.

T F 5. Computer hardware performs tasks as directed by processing procedures that fall into two categories: manual procedures and computerized procedures.

T F 6. During the input phase, all the number and character manipulation activities are done.

T F 7. During the processing phase, keyboards are a very important hardware device.

T F 8. The output phase provides the user with all the necessary information to perform and manage day-to-day business activities.

T F 9. In the input phase, computerized procedures are required to check the validity of the data that is being entered.

T F 10. There is a great need for human involvement in the storage phase of the computer-based information system.

T F 11. A temporary storage file is often referred to as a transaction file.

T F 12. When the batch approach is used for inputting data into a computer system, data is immediately transferred into computer-usable form at the time of input.

T F 13. No similarities exist between the on-line and the on-line real-time approach to inputting and processing data.

T F 14. When the on-line real-time approach is used, data is input and processed immediately.

T F 15. Airline systems usually use the batch approach to inputting and processing data.

T F 16. One of the major disadvantages of the centralized approach to organizing a computer facility is cost, because hardware must be duplicated at different locations.

T F 17. It is difficult to control a centralized computer facility.

T F 18. A distributed computer facility combines the approaches of both the centralized and decentralized computer facilities.

T F 19. A decentralized computer facility uses a separate computer facility to service the needs of each different organizational unit in a company.

T F 20. There are very few advantages of using the distributed approach to organize a computer facility.

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MULTIPLE CHOICE

1. During normal business activities, users typically interact with the computer-based information system in order to:

   a. input data to the computer.
   b. develop software using new microcomputer software development tools.
   c. review information produced by computer.
   d. monitor operating activities.
   e. All of the above

2. Which of the following is not a phase in a computer-based information system?

   a. Input
   b. Output
   c. Storage
   d. Protection
   e. Processing

3. In the processing phase, what are users typically involved in?

   a. Performing calculations
   b. Classifying data
   c. Issuing instructions
   d. Summarizing data
   e. All of the above

4. Which of the following hardware devices is the most related to the output phase?

   a. Printers and monitors
   b. CPU and internal memory
   c. Keyboard
   d. ALU and control unit
   e. Floppy disks and hard disks

5. Which of the following do you not need to consider when deciding on an approach to computerizing an information system?

   a. Does data need to be processed immediately?
   b. How is data input?
   c. Does data need to be processed later?
   d. When is output information needed?
   e. How long does the organization plan on using computers to process data into information?

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