

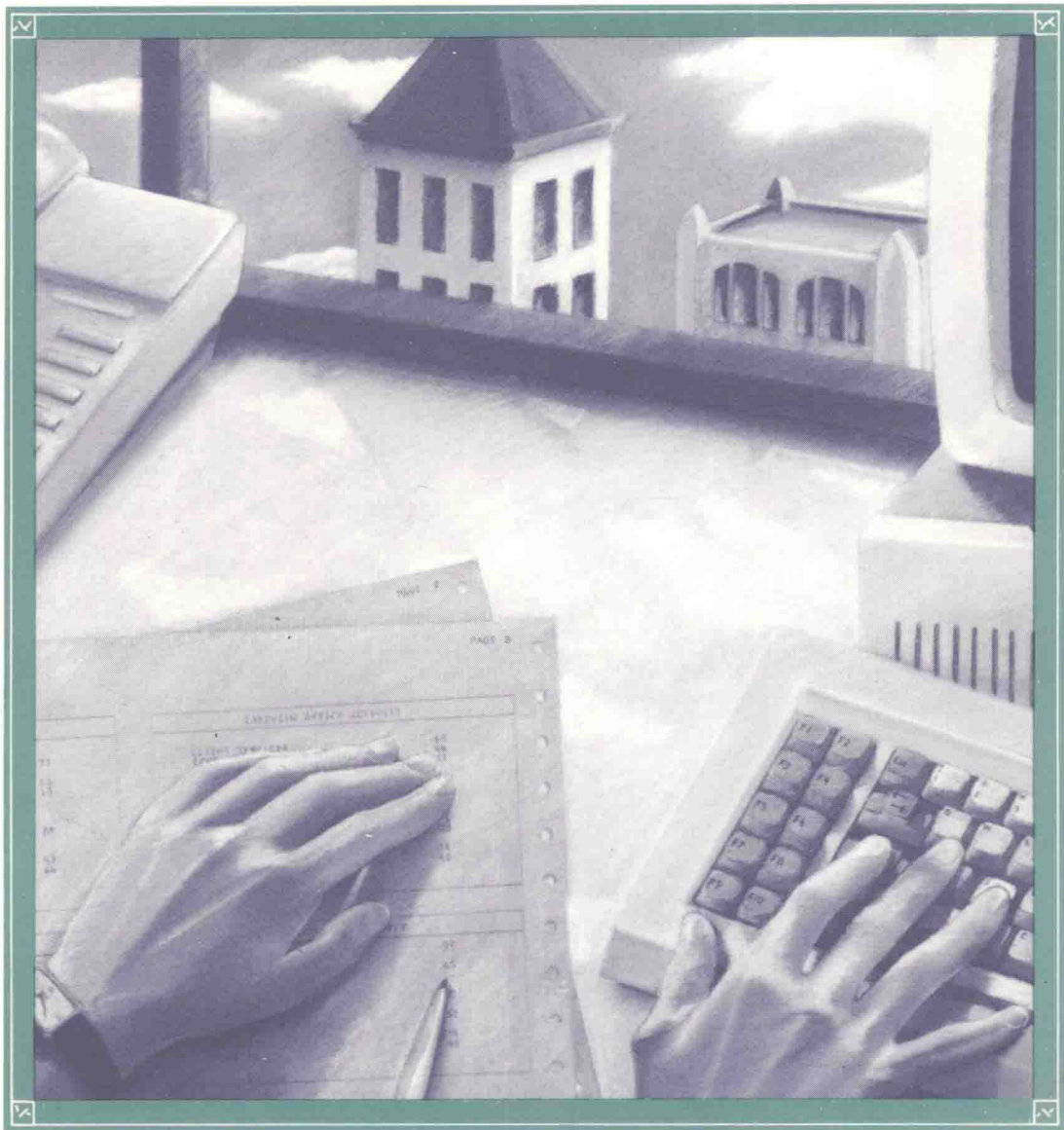
SARAH E. HUTCHINSON

STUDY GUIDE

for use with

COMPUTERS

THE USER PERSPECTIVE



Second Edition

HUTCHINSON/SAWYER

Study Guide

for use with

Computers The User Perspective

SECOND EDITION

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PREFACE

SHOULD YOU USE THIS STUDY GUIDE?

After reading a chapter in a book, it's hard to determine the most important topic areas presented. 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 study guide is a more thorough understanding of important topic areas, which should translate into better

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 sections:

Chapter Outline. What does the term bus 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.

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 the 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.

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 storage hardware devices used with computers, you are provided with ideas on what to focus on in order to differentiate between the different devices. Also in this section, important terms that relate to the topic under study are underlined so you can spot these terms easily.

Self-Test Questions. You will have the opportunity to test your understanding of the material presented in the text by completing the following types of exercises.

For the chapters: Fill-in-the-blank, 20 true/false, 10 multiple choice, 10 matching, and 10 short answer.

For the modules: 5 true/false, 5 multiple choice, 5 matching, and 5 short answer.

ACKNOWLEDGMENTS

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PART ONE

THE BEGINNING: BECOMING A COMPUTER USER

Chapter 1

COMPUTERS: POWER TOOLS FOR AN INFORMATION AGE

Chapter Outline

User Perspective

Who Is The User?

Computer Literacy: Why You're Reading This Book

What Is A Computer System?

Computer Hardware

Input Hardware

Storage Hardware

Processing Hardware

Output Hardware

Computer Software

Systems Software

Applications Software

We The People

Types of Computer Systems: What's The Difference?

The Anatomy of A Microcomputer

Keyboard

Monitor

System Unit

The History of Computer Processing

Data Processing Before Computers

The Evolution of Computers

First Generation (1944-1958)

Second Generation (1959-1963)

Third Generation (1964-1970)

Fourth Generation (1971-Now)

Fifth Generation (Now and in the Future)

What Does All This Mean?

The Effect of Computers On Processing Data And Information

Data Collection: Hard Labor To Easy Time

The Production of Information: Faster, Easier, Better (Usually)

Social Implications of Computerization

The Effect of Computers On Employment Opportunities

Opportunities For Computer Professionals

Opportunities For Users

Computers In Government

Computers In The Legal Profession

Computers In Medicine

Computers In Education

Computers In Industry

Computers In Entertainment

Computers In Agriculture

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 possesses 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, people, procedures, and data/information. When two or more computer systems are set up to communicate, connectivity becomes the 6th element. The four categories of hardware include input hardware, processing hardware, storage hardware, and output hardware. The two categories of software include systems software and applications software.

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 four major categories of computer systems: supercomputers, mainframes, minicomputers, and microcomputers. The types of things that distinguish the different types of computer systems are the type of CPU, the amount of main memory the CPU can use, the storage capacity of the computer system, the processing speed of the computer system, the number of users, and cost.

TIP 3: Understand generally the factors that distinguish one computer system from another. In Chapters 3-6 you are provided with detailed descriptions of most of these factors.

TIP 4: Although it's important for you to understand what a supercomputer, mainframe computer, and minicomputer are, it is likely you will 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."

TIP 5: If you have access to a microcomputer, identify the keyboard, monitor, system unit, and storage devices.

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. This has provided many job opportunities for computer professionals and users.

TIP 6: Review the different ways in which computers have provided job opportunities for users. Think about what skills might be important to have before you can be comfortable using a computer (for example, typing skills, software familiarity, etc.).

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 _____ 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 two different categories of computer software: _____ and _____ software. And, most important, being _____ involves knowing how to use hardware and software in order to process _____ into useful _____.

The four 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 on a _____.

TRUE/FALSE

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

MULTIPLE CHOICE

1. 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

2. To which of the following categories of hardware is the term main memory most closely related?
 - a. Input hardware
 - b. Processing hardware
 - c. Storage hardware
 - d. Output hardware
 - e. None of the above

3. 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

4. To which of the following categories of hardware is the term keyboard most closely related?
 - a. Input hardware
 - b. Processing hardware
 - c. Storage hardware
 - d. Output hardware
 - e. None of the above

5. Which of the following is usually not considered a part of a computer system?
 - a. CPU
 - b. Software
 - c. Hardware
 - d. Desk
 - e. People

6. 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

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 users with the tools necessary to solve specific problems relating to a particular business or profession.
 - 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. To which of the following categories of hardware is the term RGB most closely related?
- a. Input hardware
 - b. Processing hardware
 - c. Storage hardware
 - d. Output hardware
 - e. None of the above
9. 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
10. 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

MATCHING

- | | |
|----------------------|-----------------------------|
| 1. _____ CPU | 6. _____ Monochrome monitor |
| 2. _____ Diskette | 7. _____ Keyboard |
| 3. _____ Nonvolatile | 8. _____ Hardware |
| 4. _____ Computer | 9. _____ Software |
| 5. _____ System unit | 10. _____ Motherboard |

- a. The most common type of input hardware device.
- b. This is a common storage hardware device used with microcomputers.
- c. This hardware component typically houses the power supply, system board, storage devices, and some additional components.
- d. The instructions that direct hardware on how to perform a task
- e. This processing hardware component is often considered the "brain" of the computer.
- f. A computer.
- g. A form that is relatively permanent.
- h. A device made up of a combination of electronic and electromechanical components.
- 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. How might the use of computers in society increase employment opportunities?
2. For what reasons have more and more users been taking training courses in how to use computer hardware and software?
3. What types of tasks do people (including users and computer professionals) perform as part of a computer system?
4. What is a computer?
5. Main memory is often considered a computer's most precious resource. Why do you think this is true?
6. Do you think it is more important for users to be computer literate today as compared to 10 years ago?
7. With what factors are different types of computers (supercomputers, mainframes, minicomputers, microcomputers) often compared?
8. What is the purpose of the system unit in a microcomputer system?
9. Why do you think this chapter described the "anatomy" of a microcomputer and not the anatomy of either a mainframe or a minicomputer?
10. Why do you think systems software is often referred to as the most important type of software?

Chapter 2

THE COMPUTER-BASED INFORMATION SYSTEM

Chapter Outline

The User Perspective

Where Do You, The User, Fit In?

What Is A Computer-Based Information System?

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: If Not Now, When?

Batch Approach: Do It Later

Heavy-Duty Batch Input And Processing

On-Line Approach: Do It Now

Organizing Computer Facilities

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 hardware, software, people, procedures, and data/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 -- batch or on-line -- the company is using. 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 both 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 centralized computer facility, a single computer department provides computer services to all the other departments in a company. When a decentralized computer facility is established, each department in the organization has its own computer facility. When an organization establishes a distributed computer facility, 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 _____ procedures are required to get your job done.

If you have questions you will want to consult someone in your organization's computer _____. Companies may organize their computer facilities so they are _____ (one computer facility for everyone), _____ (each major organizational unit has its own facility), or _____ (users have their own equipment but are also connected to a larger system).

TRUE/FALSE

- T F 1. There are very few advantages of using the distributed approach to organize a computer facility.
- T F 2. In the input phase, computerized procedures are required to check the validity of the data that is being entered.
- T F 3. Computerized procedures include those performed by people when they interact with the information system.
- T F 4. A distributed computer facility combines the approaches of both the centralized and decentralized computer facilities.
- T F 5. A computer-based information system includes four major phases of activity: input, processing, output, and storage.
- T F 6. Users are not an important component of the computer-based information system.
- T F 7. A system in which a computer is used to perform processing is called a computer-based information system.
- T F 8. Computer hardware performs tasks as directed by processing procedures that fall into two categories: manual procedures and computerized procedures.
- T F 9. During the input phase, all the number and character manipulation activities are done.
- T F 10. The output phase provides the user with all the necessary information to perform and manage day-to-day business activities.
- T F 11. There is a great need for human involvement in the storage phase of the computer-based information system.
- T F 12. A decentralized computer facility uses a separate computer facility to service the needs of each different organizational unit in a company.
- T F 13. A temporary storage file is often referred to as a transaction file.
- T F 14. There is a great need for human involvement in the input phase of the computer-based information system.
- T F 15. Coordination and control are characteristic of the decentralized processing approach.
- T F 16. During the processing phase, keyboards are a very important hardware device.
- T F 17. 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 18. It is difficult to control a centralized computer facility.
- T F 19. 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 20. Airline systems usually use the batch approach to inputting and processing data.

MULTIPLE CHOICE

1. 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

2. Which of the following is a disadvantage of the centralized computer facility?
 - a. It is difficult to track and to fairly allocate departmental costs.
 - b. Computer specialists must work in areas of a company with which they are unfamiliar.
 - c. Users may have to wait for months in order to receive requested information.
 - d. Software developed by computer specialists often fails to meet the needs of a department.
 - e. All of the above

3. 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. Diskettes and hard disks

4. 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

5. The on-line approach to computerizing an information system should be used when:
 - a. information can be reviewed later.
 - b. decisions need to be made immediately.
 - c. decisions can be made at any time.
 - d. data can be processed later.
 - e. None of the above

6. Which of the following is not a phase in a computer-based information system?
 - a. Input
 - b. Output
 - c. Storage
 - d. Protection
 - e. Processing

7. Which of the following is an advantage of the centralized computer facility?
 - a. Cost-effectiveness
 - b. Coordination of processing activities

- c. Control of processing activities
 - d. Relative ease of imposing processing standards
 - e. All of the above
8. The computer facility that makes it the most difficult to obtain company-wide information is the:
- a. centralized computer facility.
 - b. decentralized computer facility.
 - c. distributed computer facility.
 - d. on-line computer facility.
 - e. None of the above
9. 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?
10. Which of the following is considered a disadvantage of the decentralized computer facility if a company uses different types of computers?
- a. It is difficult to obtain company-wide, consolidated information.
 - b. It is difficult to update information company-wide.
 - c. Data can usually be shared only in printed form.
 - d. Data must be input into each type of computer being used, causing a duplication of effort.
 - e. All of the above

MATCHING

- | | |
|---------------------------------|---------------------------------|
| 1. _____ Processing phase | 6. _____ Batch approach |
| 2. _____ Input phase | 7. _____ Interactive processing |
| 3. _____ Distributed facility | 8. _____ Batch |
| 4. _____ Storage phase | 9. _____ Source document |
| 5. _____ Decentralized facility | 10. _____ Output phase |
- a. In this phase, data/information is stored in computer-usable form.
 - b. In this phase, people are involved with instructing the computer to perform data input activities.
 - c. In this phase, the CPU is the principal hardware component.
 - d. In this phase, the user is responsible for reviewing information produced by the computer system.
 - e. Each organizational unit has its own computer facility.
 - f. An organization that uses this approach doesn't input data immediately to the computer once it has been collected.
 - g. An example of this is a customer order form.
 - h. A collection of source documents.
 - i. This term refers to on-line processing.
 - j. Each organizational unit has its own computer facility but is also connected to a larger system.

SHORT ANSWER

1. What are some disadvantages of the centralized approach to computerizing an information system?
2. How are users involved in the input phase of a computer-based information system?
3. Why is it important for you to understand how the computer facility at your business is organized?
4. How are users involved in the storage phase of a computer-based information system?
5. How are people usually involved in the output phase of a computer-based information system?
6. What is meant by the term approach as it refers to how an organization might computerize its information system?
7. Why do you think that, in companies with large computer systems, users are less likely to interact directly with the computer hardware?
8. Why is a distributed computer facility considered to have "something for everyone"?
9. How might the computer-based information system for one company be different from the system in another company?
10. In a computer-based information system, what is meant by the terms manual procedures and computerized procedures?