

Chapter 1

Information Technology, the Internet, and You

Lecture Guide

- **Learning Objectives**
 - Explain the parts of an information system: people, procedures, software, hardware, data, and the Internet.
 - Distinguish between system software and application software.
 - Differentiate between the three kinds of system software programs.
 - Define and compare general purpose, and specialized, and mobile applications software.
 - Identify the four types of computers and the four types of personal computers.
 - Describe the different types of computer hardware including the system unit, input, output, storage, and communication devices.
 - Define data and describe document, worksheet, database, and presentation files.
 - Explain computer connectivity, the wireless revolution, the Internet, and cloud computing.

Chapter Outline

- **Information Systems**
 - Parts to an information system:
 - People – end users
 - Procedures – rules and guidelines to follow when using software and/or hardware
 - Software – programs that consists of step-by-step instructions
 - Hardware – the equipment that processes data to create information
 - Data – raw unprocessed facts
 - Internet - Almost all of today’s information systems provide a way to connect to other people and computers, typically using the internet. This connectivity greatly expands the capability and usefulness of information systems.
- **People**
 - Most important part of any information system
 - Our lives are touched every day by computers and information systems
 - Different features in the book aid in becoming an efficient and effective end user
 - Making IT Work for You
 - Practical IT applications
 - Tips
 - Numerous tips to make your computing safer, more efficient, and more effective
 - Privacy
 - Important information on protecting your personal information
 - Environment
 - Important relevant environmental information

- Ethics
 - Variety of different ethical/unethical situations for your consideration
- Careers in IT
 - Specific careers in information technology providing job descriptions, projected employment demands, educational requirements, current salary ranges and advancement opportunities.
- Computing Essentials Web site
 - www.mhhe.com/ce2015
 - This site is integrated with the textbook for animations, career information, tips, test review materials and much more.
- **Procedures**
 - Computer users are required to follow rules or guidelines in order to effectively use software, hardware, and data.
 - Procedures are typically documented in manuals that are written by computer specialists.
 - Software and hardware manufacturers provide manuals with their products and are provided either printed or in electronic form.
- **Software**
 - Programs – the instructions that tell computers how to process data
 - Two major types of software:
 - System Software
 - Enables application software to interact with computer hardware
 - A collection of programs
 - Operating system – coordinate the computer’s resources, provide a user interface, and run applications (ex: Windows 8, Mac OS X)
 - Utilities – perform specific tasks related to managing computer resources. The most essential utility programs that every computer system should have is an antivirus program.
 - Device drivers – specialized programs that allow input or output devices to communicate with the rest of the computer system
 - Application Software
 - End-user software
 - Three types – general purpose, specialized, and mobile apps
 - General purpose application software that is used in nearly all careers (ex: browser, word processor, spreadsheet, data base management system, presentation graphics)
 - Specialized computer programs that are narrowly focused on specific disciplines and occupations (ex: graphics and Web authoring programs.).

- Mobile apps or mobile applications, or simply apps, are small programs designed for mobile devices such as smartphones and tablet computers. The most popular mobile apps are for social networking, playing games, and downloading music and videos
- **Hardware**
 - Four types of computers
 - Supercomputers
 - Most powerful type of computer
 - Special high-capacity computers
 - Fastest processing
 - Used by large organizations, usually research facilities
 - Mainframe
 - Capable of great processing speeds and large amounts of data storage
 - Do not have as high of a capacity or as fast processing as supercomputers
 - Used by large corporations
 - Midrange
 - Also referred to as servers
 - Less powerful than a mainframe computer but more powerful than a personal computer
 - Support end users for specific needs such as retrieving data from a database or supplying access to application software.
 - Personal also known as Pcs
 - Least powerful
 - Most widely used
 - Fastest growing segment
 - Four types of personal computers include:
 - Desktops
 - Laptops
 - Tablets
 - Mobile devices also known as handhelds
 - Smartphones most widely used handheld computer
 - Personal computer hardware
 - System unit – micro-processor and memory (RAM)
 - Input devices–keyboard and mouse
 - Output devices-most common is computer display, or monitor
 - Secondary storage – hard disks, solid-state storage, and optical disks
 - Hard disks-store programs and very large data files
 - Solid-state-no moving parts, reliable, requires less power
 - Communication devices – modems
- **Data**
 - Raw unprocessed facts
 - Stored electronically in files

- Four types of files include:
 - Document files – created by word processors
 - Worksheet files – created by electronic spreadsheets
 - Database files – created by database management systems
 - Presentation files - created by presentation graphics applications
- **Connectivity**
 - Connectivity is the capability of a personal computers to share information with other computers
 - Two most dramatic changes in connectivity in the past five years have been the widespread use of mobile or wireless communication devices and cloud computing
 - The wireless revolution, the ability to connect computers to each other without cables, is expected to dramatically affect the way we communicate and use computer technology.
 - A network is the central concept of connectivity – when two or more computers are connected.
 - The Internet is the largest computer network in the world.
 - The Web provides a multimedia interface to the resources available on the Internet.
 - Cloud computing uses the Internet and the Web to shift activities from the user’s computer to computers on the Internet.
- **Careers in IT**
 - There are different types of IT careers highlighted in each chapter
 - Webmaster
 - Software engineer
 - Computer support specialist
 - Computer technician
 - Technical writer
 - Network administrator
- **A Look to the Future**
 - Using and understanding information technology
 - The purpose of this book is to help you use and understand information technology.
 - The Internet and the Web are considered the two most important technologies of the 21st Century
 - Powerful software is available to do extraordinary tasks
 - Personal computers are more powerful than ever
 - Privacy is necessary as technology can impact our personal private environment
 - All organizations rely on the quality and flexibility of their information systems to stay competitive
 - Computers are changing the way we do business, communicate, and live

Teaching Tips

- **Information Systems**
 - The purpose of this book is to help students become highly efficient and effective computer users. This first chapter is an overview of an information system. Users need to understand that personal computers are common tools in all areas of life, to also understand the wireless revolution, and to recognize the role of information technology in your personal and professional life.

- **People**
 - Mention that people are the most important part of the system. People come in contact with computers almost every day in some way.
 - Ask the students to talk about the computers they use every day - both directly and indirectly. For example, computers are in clock radios, microwave ovens, traffic lights, cars, etc.
 - As end users – the book provides different features to promote becoming efficient and effective computer users. Explain how the following sections can help the students to better understand computers
 - Making IT Work for You
 - Privacy
 - Ethics
 - Tips
 - Careers in IT
 - Computing Essentials Web site
 - In this book, Environmental Fact boxes are included in the margins to present important relevant environment information.

- **Software**
 - Emphasize that there are two types of software - System software, is not a single program rather it is a collection of programs. System software is the “background” software that helps the computer manage its own resources, and Application Software which might be described as end user software. There are two types of application software – basic and specialized.
 - You can engage the students by asking them to name different types of System Software and Application Software. You can further the discussion by asking students why they have computers, which will help emphasize the importance of application software.
 - Refer to the Web site, www.mhhe.com/ce2015 , for additional research and materials about different types of software.

- **Hardware**
 - Emphasize the basic categories of computer hardware. You can give examples of each. For an example of a supercomputer, refer to Figure 1-7.
 - Mention that the categories are determined by their storage capacity and processing speeds. It is also helpful to mention the uses of computers in each category.
 - Emphasize that personal computers are the least powerful, yet the most widely used and fastest-growing segment of computer hardware. . Review the four types of personal computers. See Figure 1-8.

- Review the four basic categories of personal computer hardware: system unit, input/output, secondary storage, and communication.
- **Data**
 - Data is raw, unprocessed facts
 - Data is stored electronically in files
 - See Figure 1-14 for the four most common types of files: presentation, database, worksheet, and document.
- **Connectivity**
 - The two most dramatic changes in the past five years has been the widespread use of mobile or wireless communication devices and cloud computing. See Figure 1-15 for illustrations of the devices.
 - Ask the students to define the Internet. Talk about the various networks available in homes today.
- **Careers in IT**
 - Figure 1-16 is a good reference for the different types of careers in IT. Each provides specific job descriptions, salary ranges, and advancement opportunities. When most students think of computer related jobs, programming is the first and usually only career that comes to mind. This list helps to bring a broader awareness of what exists and what may interest them.

Key Terms

Key Term	Definition
application software	End user software
apps	Small programs designed for mobile devices
cloud computing	Uses the Internet and the Web to shift many computer activities from a user's computer to computers on the Internet.
communication device	Computer equipment that allows a computer to connect to other computer systems to share data and information.
compact disc (CD)	A type of optical disc that has the least storage capacity.
connectivity	Allows computers to connect and share information with other computers.
data	Unprocessed facts.
database file	Typically created by database management programs to contain highly structured and organized data.
desktop computer	A type of microcomputer that is small enough to fit on top of or alongside a desk yet is too big to carry around.
device driver	Specialized programs designed to allow particular input or output devices to communicate with the rest of the computer system.
digital versatile disc (DVD)	A type of optical device that gives great capacity and can be used to store many different types of data. (See also digital video disc)
digital video disc (DVD)	A type of optical device that gives great capacity and can be used to store many different types of data. (See also digital versatile disc)
display	A monitor used to display information
document file	Data files created by word processors to save documents such as memos, term papers, and letters.
end user	The most important part of an information system. (See also people)
general purpose application	Application software that is used in nearly all careers.
handheld computer	The smallest microcomputer that is designed to fit into the palm of one hand.
hard disk	A secondary storage device that uses magnetized dust to store the information.
hardware	The equipment that processes the data to create information.
information	Processed facts.
information system	Composed of five parts: people, procedures, software, hardware, and data.
information technology (IT)	Relating to computer software and hardware, and data.
input device	Translate data and programs that humans can understand into a form the computer can process.
Internet	The largest computer network in the world.
keyboard	A type of input device that allows the user to input character data into the computer.

Key Term	Definition
mainframe computer	A type of computer that is capable of great processing speeds and data storage.
memory	Holds data and program instructions for processing the data. (See also primary storage, random access memory)
microprocessor	Controls and manipulates data to produce information.
midrange computer	Also referred to as servers, most widely used to support end users for specific needs such as retrieving data from a database or supplying access to application software.
modem	Modifies telephone communications into a form that can be processed by a computer.
monitor	A common output device that allows the user to see what the computer is doing.
mouse	A type of input device that allows the user to point and click on items for easier operation.
network	A communications system connecting two or more computers.
notebook computer	A type of microcomputer that is portable, lightweight, and fits into most briefcases.
operating system	Program that coordinates computer resources, provides an interface between users and the computer, and runs applications.
optical disc	A secondary storage device that uses laser technology and has the greatest capacity.
output device	Translates the processed information from the computer into a form that humans can understand.
people	The most important part of an information system. (See also end users)
pc	A term for personal computer
personal digital assistant (PDA)	The most widely used handheld computer.
presentation file	Created by presentation graphics programs to save presentation materials.
printer	A computer output device that produces a hard copy of data.
procedures	The rules or guidelines for people to follow when using software, hardware, and data.
program	Consists of the step-by-step instructions that tell the computer how to do its work. (See also software)
random access memory (RAM)	Holds data and program instructions for processing the data. (See also primary storage, memory)
secondary storage	Holds data and programs even after electrical power to the computer system has been turned off.
server	Most widely used to support end users for specific needs such as retrieving data from a database or supplying access to application software.
smartphone	Mobile phone offering advanced capabilities beyond a typical mobile phone, often with PC-like functionality.

Key Term	Definition
software	Consists of the step-by-step instructions that tell the computer how to do its work. (See also program)
solid-state storage	A secondary storage device that has no moving parts. Data is stored and retrieved electronically directly from these devices, much as they would be from conventional computer memory.
specialized application	Computer programs that are narrowly focused on specific disciplines and occupations. (See also special-purpose application)
supercomputer	The most powerful type of computer that is a special high-capacity computer used by very large organizations.
system software	Enables the application software to interact with the computer hardware and helps the computer manage its own internal resources.
system unit	A container that houses most of the electronic components that makes up a computer system.
tablet	A type of notebook computer that accepts handwriting and converts it to standard text that can be further processed.
utility	A part of the system software that performs specific tasks related to managing computer resources.
virus	Malicious programs that can damage software, hardware, and compromise the security and privacy of your personal data.
Web	Provides a multimedia interface to the numerous resources available on the Internet.
wireless revolution	A revolution that is expected to dramatically affect the way we communicate and use computer technology.
worksheet file	Created by electronic spreadsheets to analyze things like budgets and to predict sales.

Answers to End-of-Chapter Materials Chapter 1

Num	Multiple Choice Answers (Book)	Matching Answers (Book)	Multiple Choice Answers (www.mhhe.com/ce2015 Only)	Matching Answers (www.mhhe.com/ce2015 Only)
1	A	F	A	A
2	B	G	A	H
3	A	I	B	F
4	A	A	B	B
5	A	J	C	D
6	B	D	A	E
7	D	H	A	C
8	B	B	B	G
9	A	E	A	I
10	B	C	A	J

Open Ended Questions:

1. Explain the parts of an information system. What part do people play in this system?

- People- Personal computers make people, or end users, more productive.
- Procedures- Rules or guidelines for people to follow when using software, hardware, and data.
- Software- A program consisting of the step-by-step instructions that tell the computer how to do its work. The purpose of software is to convert data (unprocessed facts) into information (processed facts).
- Hardware- Equipment that processes the data to create information.
- Data- Raw, unprocessed facts, including text, numbers, images, and sounds.
- Connectivity- typically uses the Internet and allows users to greatly expand the capability and usefulness of their information systems.

People are the most important part of any information system. Our lives are touched every day by computers and information systems.

2. What is system software? What kinds of programs are included in system software?

- System software enables the application software to interact with the computer hardware. System software is “background” software that helps the computer manage its own internal resources.
- It consists of operating systems, utilities, and device drivers.

3. Define and compare general purpose applications, specialized applications and apps. Describe some different types of general purpose applications. Describe some types of specialized applications.

- General purpose applications are widely used in nearly all career areas. They are the kinds of programs you have to know to be considered computer competent. Examples of general purpose applications include word processors, spreadsheets, databases, presentation graphics programs and browsers.
- Specialized applications, also known as special-purpose applications, include thousands of other programs that are more narrowly focused on specific disciplines and occupations. Two examples are graphics, and Web authoring programs.
- Apps are small programs designed for mobile devices such as smartphones, tablet computers, and other mobile devices. The most popular apps are for text messaging, Internet browsing, and connecting to social networks.

4. Describe the different types of computers. What is the most common type? What are the types of personal computers?

- There are four types of computers- supercomputers, mainframe computers, midrange computers, and microcomputers.
- Personal computers are the most widely used and fastest-growing, type of computer.
- There are four types of microcomputers- desktop, notebook, tablet, and handheld.

5. What is connectivity? What are wireless devices and the wireless revolution? What is a computer network? What are the Internet and the Web? What is cloud computing?

- Connectivity is the capability of a microcomputer to share information with other computers.
- The single most dramatic change in connectivity in the past five years has been the widespread use of mobile or wireless communication devices. These wireless applications are just the beginning of the wireless revolution, a revolution that is expected to dramatically affect the way we communicate and use computer technology.
- A computer network is a communications system connecting two or more computers.
- The largest network in the world is the Internet. It is like a giant highway that connects you to millions of other people and organizations located throughout the world. The Web, also known as the World Wide Web or WWW, provides a multimedia interface to the numerous resources available on the Internet.
- Cloud computing is the ability to store and access programs, files, and other activities via the Web and Internet, rather than on a user's computer.