I. Ch 1 Information Technology, The Internet, And You

A. Competencies

1. Explain the five parts of an information system: people, procedures, software, hardware, and data.

2. Distinguish between system software and application software.

3. Distinguish between special-purpose and general-purpose application software.

4. Identify the four types of computers and the three types of microcomputers.

5. Describe the different types of computer hardware devices for input, processing, output, storage and communication.

6. Define data and describe document, worksheet, database, and presentation files.

7. Explain computer connectivity, and the wireless revolution.

8. Describe the Internet and Web.

B. Information Systems

- An information system has five parts: people, procedures, software, hardware, and data.
- People: end users like us and information technology staff.
- Procedures: the rules or guidelines people follow when using software, hardware, and data. Procedures are written in manuals by computer specialists and these manuals are provided by software and hardware manufacturers with their products.
- Software: programs consisting of step-by-step instructions that tell the computer how to do its work – they process data to convert it into information.
- Hardware: the equipment that processes the data to create information. It includes keyboard, mouse, monitor, system unit, and other devices. Hardware is controlled by software.
- Data: the raw, unprocessed facts including text, numbers, images, and sounds. Examples are hours worked, pay rate. Data after processed by computer is known as information.
- An additional part of information systems is connectivity.
- Connectivity allows computers to connect and share information by using telephone lines, or cables or wireless.
- Information Technology (IT) includes software, hardware, and data.
C. People

- People are the most important part of any information system.
- Examples include people in education, business, medicine, entertainment.

D. Software

- Software is another name for programs.
- Programs are instructions that tell the computer how to process data into a form user wants.
- Two major types of software are systems software and applications software.

1. 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.

   a) Operating Systems
   - Most important system software program that interacts with the application software and the computer.
   - It handles programs execution (running), storing data and programs, and processing data.
   - Programs that coordinate computer resources, provide an interface between the user and computer.
   - Examples include Windows XP and the Mac OS X.

   b) Utilities (or service programs)
   - Perform specific tasks related to managing computer resources, such as de-fragmenting disks, checking for viruses, etc.

   c) Device Drivers
   - Specialized programs to allow particular input and output devices to communicate with the rest of the system, for example, a printer driver.

2. Application software

- Application software is “end user” software and can be categorized as:

   a) Basic applications or General-purpose programs
   - Widely used in almost all career areas and most people use them.
   - Examples include:
     - Browsers: to connect to websites and display web pages.
     - Word Processors: to create and edit documents.
     - Spreadsheets: to analyze and summarize numerical data.
Database Management Systems (DBMS): organize and manage data and information

Presentation Graphics: communicate a message

b) Special-purpose applications or specialized applications

- Include thousands of applications that are narrowly focused on a specific profession or occupation.
- Some of the best known are graphics, audio and video, multimedia, web authoring, and artificial intelligence programs.

E. Hardware

1. Types of computers

a) Supercomputers

- The most powerful type of computers
- These machines are special high-capacity computers used by very large organizations.
- Example: NASA uses supercomputers to track and control space explorations.

b) Mainframe computers

- Not quite as powerful as supercomputers, they still have great processing speeds and storage capacity.
- Often fill up a specially wired and air-conditioned room.
- Typically used for business applications such as insurance companies that process thousands of policy holder billing statements.

c) Minicomputers

- Also known as midrange computers
- Typically the size of a desk
- Used by medium-sized companies or departments of large companies for specific purposes.
- A production department may use a minicomputer to monitor manufacturing processes and assembly line operations.

d) Microcomputers

- The least powerful, but most widely used computers.
- There are four main types of microcomputers:
  - Desktops: small enough to fit on top or along side your desk, yet too big to carry around
  - Notebooks (or laptops): portable, lightweight, fit in most briefcases
  - Personal Digital Assistants – PDAs (Handheld computers or palm computers): the smallest microcomputers, typically combine pen input, handwriting recognition, personal
2. Microcomputer hardware

a) System unit
- Also known as the *system cabinet* or *chassis*
- Holds most of the electronic components that make up the computer, including:
  - *Microprocessor* (or processor, Central Processing Unit – CPU): controls and manipulates data to produce information
  - *Memory* (or primary storage, Random Access Memory – RAM): holds data and program instructions for processing the data and also stores processed information before it is output. Memory is sometimes referred to as temporary storage as its contents will be lost if power to computer is switched off.

b) Input/Output devices
- Input devices translate data and programs that humans can understand into a form that computer can process and include such things as the keyboard and mouse
- Output devices translate processed information from the computer into a form that humans can understand and include such things as the monitor (video display screen) and printers

c) Secondary Storage
- Unlike primary memory, secondary storage holds the contents even when the power is switched off.
- Typical storage media includes:
  - Floppy disks: thin flexible plastic disks used to store and transport smaller files of data.
  - Hard disks: hard metallic platters with much greater storage capacities used to store programs and very large data files and can also access information much faster than floppy disks.
  - Optical disks: use laser technology and have greater capacity and two basic types are: Compact Discs (CDs) and Digital Versatile Discs (DVDs) typically used to store and transport multimedia files

F. Data
- Data is stored in document, worksheet, database, and presentation files.
- Data are the raw, unprocessed facts including text, numbers, images, and sounds.
- Four common types of files include:
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1. **Document files**: created by word processors to save documents like memos, letters.

2. **Worksheet files**: created by electronic spreadsheets to save analysis of things like budget.

3. **Database files**: created by database management programs to contain highly structured and organized data like an employee database file that contains all the worker’s names, id numbers, job titles, salary, date of birth.

4. **Presentation files**: created by presentation graphics programs to save presentation materials like speaker notes, electronic slides.

G. Connectivity, The Wireless Revolution, And The Internet

- **Connectivity** is the capability of your computer to *share information* with other computers.
- The **Internet** is the largest computer network in the world
- Single biggest change in the last five years is the use of *mobile (or wireless)* communication devices.
- The **Wireless Revolution** is expected to dramatically affect the way we communicate and use computer technology
- **Networks** (or Computer Networks) are central to the idea of connectivity that connects two or more computers that can be very close to few meters and as far as halfway around the globe.
- The **Web** (aka *World Wide Web*) provides a multimedia interface to resources on the Internet.