

Microsoft Office 2007 (Brief Concepts and Techniques)  
Windows XP Edition

I. Introduction to Computers

a. Objectives

- i. Define the term computer and discuss the four basic computer operations; input, processing, output, and storage
- ii. Define data and information
- iii. Explain the principal concepts of the computer and their use
- iv. Describe the use of magnetic disks, USB flash drives, and other storage media
- v. Discuss computer software and explain the difference between system software and application software
- vi. Identify several types of personal computer application software
- vii. Discuss computer communications channels and equipment and the Internet and World Wide Web
- viii. Define e-commerce
- ix. Explain how to purchase a personal computer

II. What is a computer?

A **computer** is an electronic device, operating under the control of instructions stored in its own memory; that can accept data (input), process the data according to specified rules (process), produce results (output), and store the results (storage) for future use. Generally, the term is used to describe a collection of hardware components that function together as a system.

Figure for Quiz 1



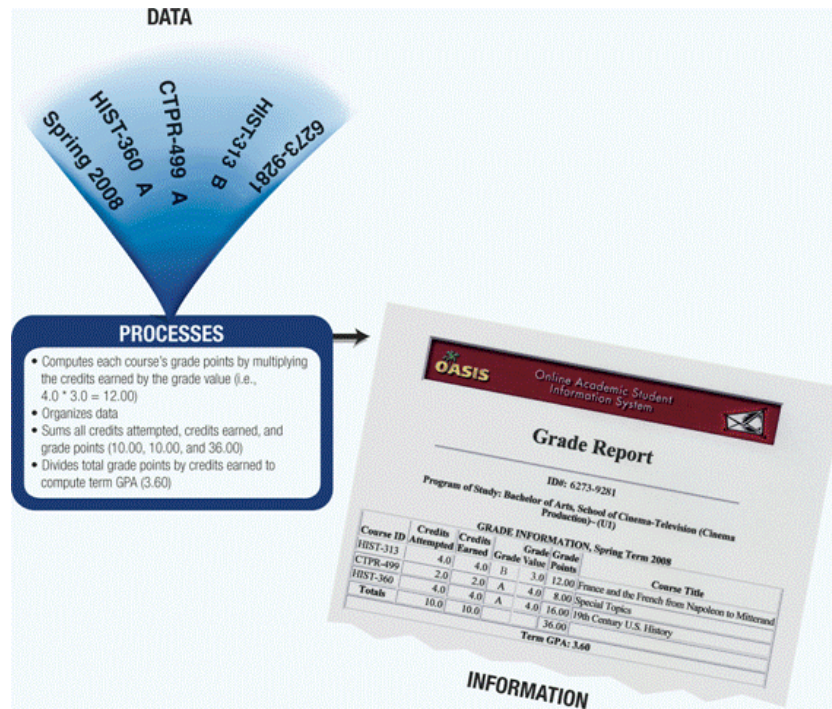
Hardware listed above are: Printer, Portable Media Player, Monitor, PC Video Camera, CD/DVD Drive, Scanner, Digital Camera, Keyboard, Microphone, Mouse, System Unit, Hard Disk Drive, Modem, Card Reader/ Writer, USB Flash Drive, External Hard Drive.

III. What does a computer do?

Computers perform four basic operations – input, process, output and storage. These operations comprise the **information processing cycle**. Collectively these operations change data into information and store it for future use.

All computer processing requires data. **Data** is a collection of unprocessed items, which can include text, number, images, audio, and video. Computers manipulate data to create information.

**Information** conveys meaning and is useful to one or more people. During the output operation, the information that has been created is put into some form, such as a printed report, or it can be written on computer storage for future use.



People who use the computer directly or use the information it provides are called **computer users, end users**, or sometimes, just **users**.

Computer has the capability to perform the information processing cycle with amazing speed, reliability, and accuracy. They also have the capability to store huge amounts of data and information and its ability to communicate with other computers.

IV. How does a computer know what to do?

For a computer to perform operations, it must be given a detailed set of instructions that tells it exactly what to do. These instructions are called a **computer program**, or **software**. Before processing for a specific job begins, the computer program corresponding to that job is stored in the computer. Once the program is stored, the computer can begin to operate by executing the program's first instruction. The computer executes one program instruction after another until the job is complete.

V. Input Devices

An **input device** is any hardware component that allows you to enter data, programs, commands and user responses into a computer. Depending on your particular application and requirements, the input device you use may vary. Popular input devices include the keyboard, mouse, digital camera, scanner, and microphone. The two primary input devices used are the keyboard and the mouse.

a. Keyboard

A **keyboard** is an input device that contains keys you press to enter data into the computer. A desktop computer keyboard has 101 to 105 keys. Keyboards for smaller computers, such as notebooks, contain fewer keys. A computer keyboard includes keys that allow you to type letters of the alphabet, numbers, spaces, punctuation marks, and other symbols such as the dollar sign (\$) and asterisk (\*). A keyboard also contains other keys that allow you to enter data and instructions into the computer.

b. Mouse

A **mouse** is a pointing device that fits comfortably under the palm of your hand. With a mouse, you control the movement of the **pointer**, often called the **mouse pointer**, on the screen and make selections from the screen. A mouse has one to five buttons. The bottom of a mouse is flat and contains a mechanism (ball, optical sensor, or laser sensor) that detects movement of the mouse.

Most notebook computers come with a touchpad, a small, flat, rectangular pointing device near the keyboard that allows you to move the pointer by sliding a fingertip on the surface of the pad.

i. Laser Mouse

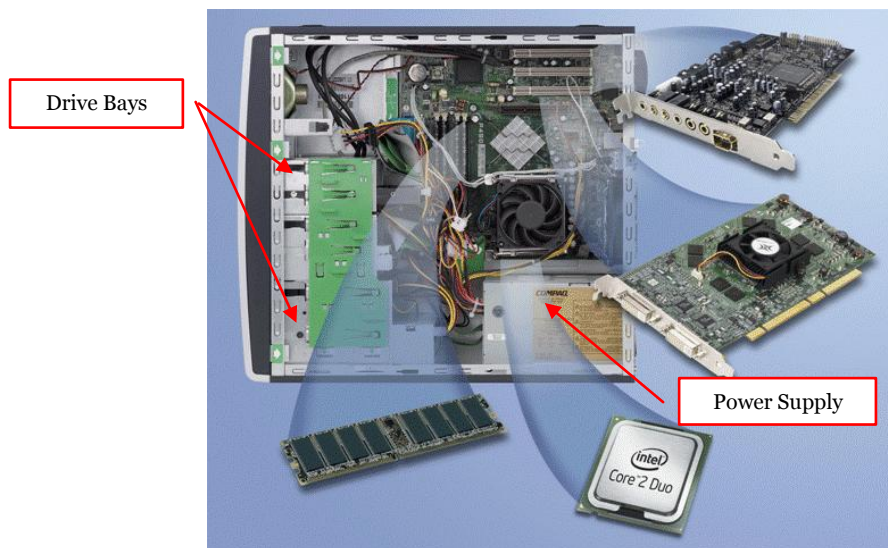
A laser mouse uses a laser sensor to detect movement of the mouse. It also includes buttons you push with your thumb to navigate forward and backward through Web pages.

ii. Optical Mouse

A media mouse, (optical mouse), also includes buttons to control media presentations.

VI. System Unit

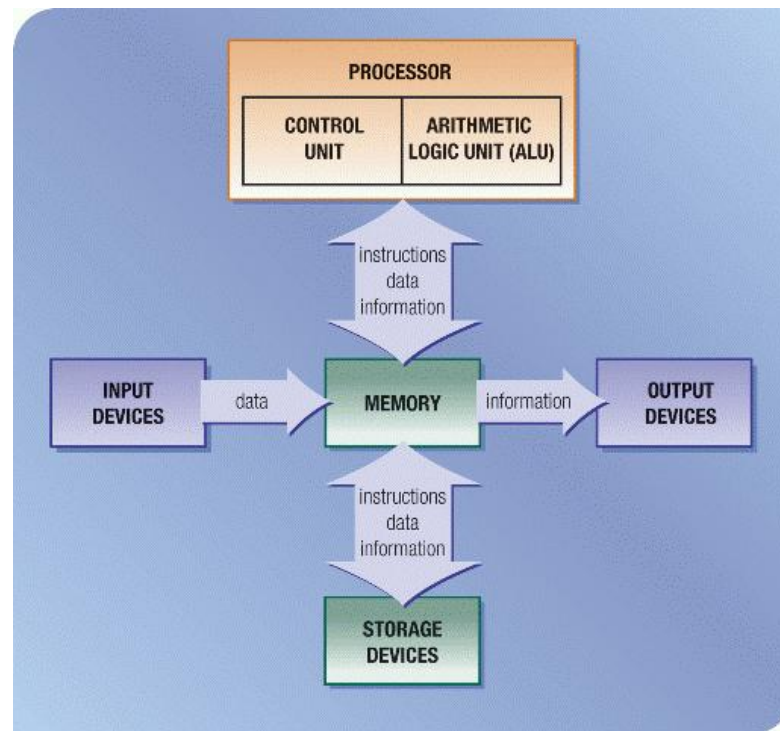
The system unit is a case that contains electronic components of the computer used to process data. System units are available in a variety of shapes and sizes. The case of the system unit, also called the chassis, is made of metal or plastic and protects the internal electronic parts from damage. The motherboard sometimes called the system board is the main circuit board of the system unit. Many electronic components attach to the motherboard, such as the processor, memory, and expansion slots.



Components shown above are: Memory, Processor, Video Card, and Sound Card.

a. Processor

The processor also called the **central processing unit** (CPU), interprets and carries out the basic instructions that operate a computer. The processor is made up of the control unit and arithmetic/logic unit. The **control unit** interprets the instructions. The **arithmetic/logic unit** performs the logical and arithmetic processes. High-end processors contain over 200 million transistors and are capable of performing some operations 10 million times in a tenth of a second, or in the time it takes to blink your eye.



b. Memory

Memory, also called **random access memory**, or **RAM**, consists of electronic components that temporarily store instructions waiting to be executed by the processor, data needed by those instructions, and the results of processed data (information). Memory consists of chips on a memory module that fits in a slot on the motherboard in the system unit. The amount of memory in computers typically is measured in kilobytes, megabytes, or gigabytes. One **kilobyte (K or KB)** equals approximately 1,000 memory locations and **one megabyte (MB)** equals approximately one million memory locations. One **gigabyte (GB)** equals approximately one billion memory locations. A **memory location**, or **byte**, usually stores one character such as the letter A. Therefore, a computer with 512 MB of memory can store approximately 512 million characters. One megabyte can hold approximately 500 letter-size pages of text information and one gigabyte can hold approximately 500,000 letter-size pages of text information.

VII. OUTPUT DEVICE

a. Printers

Printers used with computers are impact or nonimpact.

1. **Impact printers** print by striking an inked ribbon against the paper. One type of impact printer used with personal computers is the dot-matrix printer.
2. **Nonimpact printers**, such as ink-jet and laser printers, form characters by means other than striking a ribbon against paper. One advantage of using a nonimpact printer is that it can print higher-quality text and graphics than an impact printer, such as the dot-matrix. Nonimpact printers also do a better job of printing different fonts, are quieter, and can print in color. The popular and affordable ink-jet printer forms a character or graphic by using a nozzle that sprays tiny drops of ink onto the page. Ink-jet printers produce text and graphics in both black and white and color on a variety of paper types and sizes. Some ink-jet printers, called **photo printers**, produce photo-quality pictures and are ideal for home or small-business use. The speed of an ink-jet printer is measured by the number of pages per minute (ppm) it can print. Most ink-jet printers print from 6 to 33 pages per minute. Graphics and colors print at a slower rate.

3. **Laser printers** are high-speed, high-quality nonimpact printers that employ copier-machine technology. It converts data from the computer into a beam of light that is focused on a photo-conductor drum, forming the images to be printed. Laser printers can cost from a couple hundred dollars to a few thousand dollars for the home and small office user, to hundreds of thousands of dollars for large business users. Generally, the more expensive the laser printer, the more pages it can print per minute.

b. Display Devices

A **display device** is an output device that visually conveys text, graphics, and video information. A **monitor** is a display device that is packaged as a separate unit. Two basic types of monitors are the **flat panel monitor** and CRT. The **LCD monitor**, the most popular type or flat panel monitor, uses crystal, similar to a digital watch, to produce images on the screen. Flat panel monitors take up much less desk space and have gained significant popularity over the past few years. The television-like **CRT (cathode ray tube)** monitor is composed of individual picture elements called **pixels**. A screen set to a resolution of 800 x 600 pixels has a total of 480,000 pixels. Each pixel can be illuminated to form parts of a character or graphic shape on the screen.

Flat Panel



CRT



Mobile computers such as notebook computers and Tablet PCs, and mobile device such as PDAs, portable media players, and smart phones, have built-in LCD screens.

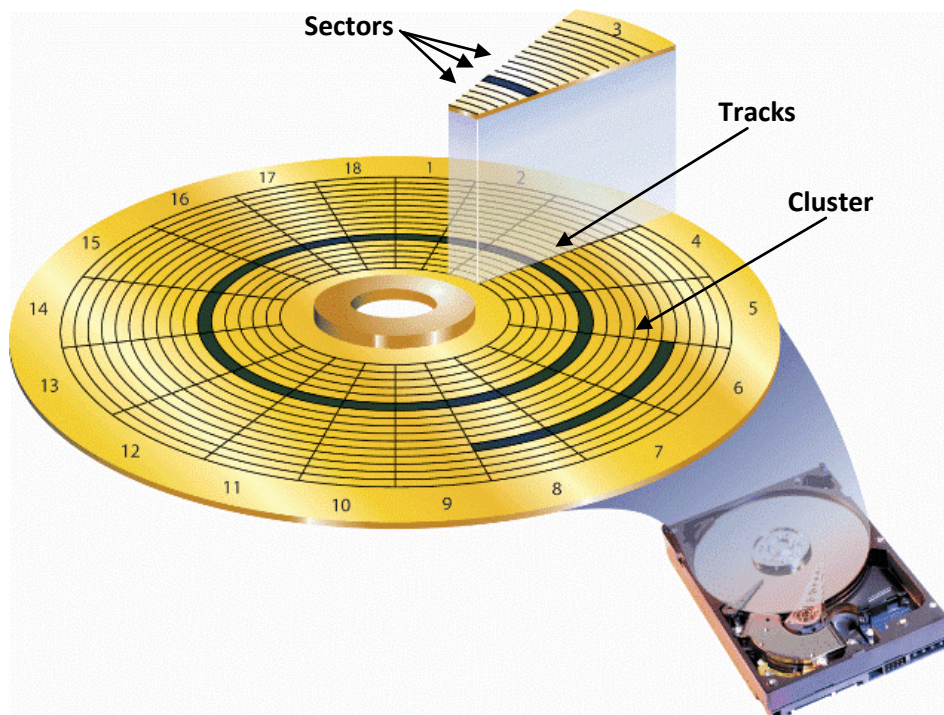


## VIII. STORAGE DEVICES

A **storage device** is used to store instructions, data, and information when they are not being used in memory. Four common types of storage devices, sometimes called storage media, are magnetic disks, optical discs, tape, and miniature mobile storage media.

### a. Magnetic Disks

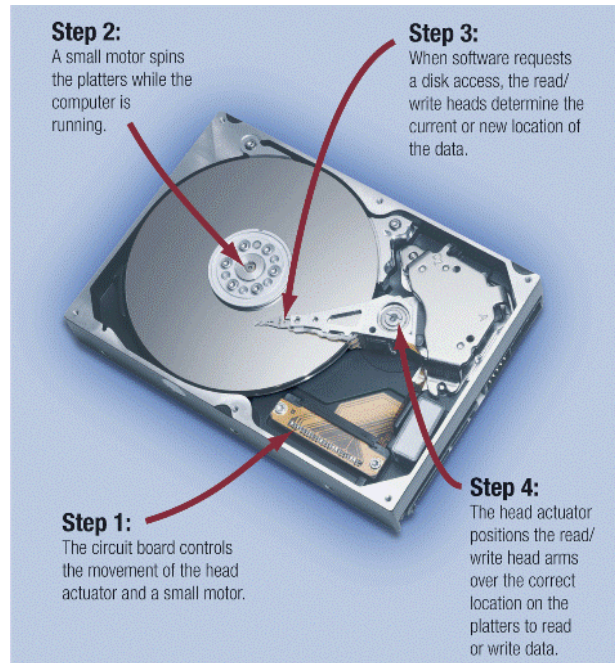
**Magnetic disks** use magnetic particles to store items such as data, instructions, and information on a disk's surface. Before any data can be read from or written on a magnetic disk, the disk must be formatted. **Formatting** is the process of dividing the disk into tracks and sectors, so the computer can locate the data, instructions and information on the disk. A **track** is a narrow recording band that forms a full circle on the surface of the disk. The disk's storage locations consists of pie-shaped sections, which break the tracks into small arcs called **sectors**. On a magnetic disk, a sector typically stores up to 512 bytes of data.



Two types of magnetic disks are floppy disks and hard disks. Some are portable, others are not. **Portable storage medium** means you can remove the medium from one computer and carry it to another computer.

### 1. Hard Disk

A **hard disk**, also called a hard disk drive, is a storage device that contains one or more inflexible, circular platters that magnetically store data, instructions, and information. Home users store documents, spreadsheets, presentations, databases, e-mail messages, Web pages, digital photographs, music, videos and software on hard disks.



When reading or writing, the read/write heads on a hard disk drive do not actually touch the surface of the disk. The distance between the read/write heads and the platters is about two millionth of one inch. This close distance means that dirt, dust, smoke, or other particles could cause a **head crash**, when a read/write head touches a platter, usually resulting in loss of data or sometimes the entire drive. Thus, it is crucial that you back up your hard disk regularly. A **backup** is a duplicate of a file, program, or disk that you can use in case the original is lost, damaged, or destroyed.

### 2. Floppy Disks

An older form of magnetic storage is the **floppy disk**, or **diskette**, an inexpensive portable storage medium. The most widely used floppy disk is 3.5 inches wide and typically can store up to 1.44 megabytes of data or 1,474,560 characters. Although the exterior of the 3.5-inch diskette is not floppy, users still refer to them as floppy disks.

A **floppy diskette drive** is a device that can read from and write on a floppy disk. Floppy disk drives are either built into the system unit, or are external to the system unit and connected to the computer via a cable.

### b. Optical Discs

An optical disc is a portable storage medium that consists of a flat, round and portable disc made of metal, plastic, and lacquer that is written and read by a laser. Optical discs used in personal computers are 4.75 inches in diameter and less than 1/20 of an inch thick. Nearly every personal computer today has some type of optical disc drive installed in a drive bay.

Many different formats of optical disc exist today. These include CD-ROM, CD-R, CD-RW, DVD-ROM, DVD-R, DVD-RW, DVD+RW, and DVD+RAM.

i. CD-ROM

A **CD-ROM** (compact disc read-only-memory) is a type of optical disc that users can read but not write on (record) or erase – hence the name read-only.

ii. CD-R

A **CD-R** (compact disc-recordable) is an optical disc onto which you can record your own items such as text, graphics, and audio. With a CD-R, you can write on part of the disc at one time and another part at a later time. Once you have recorded the CD-R, you can read from it as many times as you wish. You can write on each part only one time, and you cannot erase the disc's contents.

iii. CD-RW

A **CD-RW** (compact disc-rewriteable) is an erasable optical disc you can write on multiple times. A CD-RW overcomes the major disadvantage of CD-R discs, which is that you can write on them only once. With CD-RW's, the disc acts like a floppy or hard disk, allowing you to write and rewrite data, instructions and information onto it multiple times.

iv. DVD-ROM

A **DVD-ROM** (digital versatile disk-read-only memory) is a very high-capacity optical disc capable of storing from 4.7 GB to 17 GB – more than enough to hold a telephone book containing every resident in the United States. As with the CD-ROM format, you cannot write on an optical disc that uses the DVD-ROM format. You can only read from it.

v. DVD-R and DVD+R

**DVD-R** and **DVD+R** are competing DVD-recordable formats, each with up to 4.7 GB storage capacity. Both allowing users to write on the disc once and read (play) it many times.

vi. DVD-RW, DVD+RW and DVD-RAM

**DVD-RW**, **DVD+RW** and **DVD-RAM** are competing DVD formats, each with storage capacities up to 4.7 GB per side, that allow users to erase and write (record) many times.

c. Tape

Tape is a magnetically coated ribbon of plastic housed in a tape cartridge capable of storing large amounts of data and information at a low cost. A tape drive is used to read from and write on a tape. Tape is primarily used for long-term storage and backup.



d. Miniature Mobile Storage Media

Miniature mobile storage media are rewritable media usually in the form of a flash memory card, USB flash drive, or a smart card. Miniature mobile storage media allow mobile users to transport digital images, music, or documents easily to and from computers and other devices.



### 1. Flash Memory Cards

**Flash memory cards** are solid-state media, which means they consist entirely of electronics (chips, wires, etc.) and contain no moving parts. Common types of flash memory include CompactFlash (CP), Secure Digital (SD), xD Picture Card, and Memory Stick.

### 2. USB Flash Drive

A **USB flash drive** sometimes called a pen drive or thumb drive is a flash memory storage device that plugs into a USB port on a computer or mobile device. USB flash drives are the portable storage media of choice among users today, making the floppy disk nearly obsolete, because they are small, lightweight, and have such large capacities, ranging from 32 MB to 64GB.

### 3. Smart Card

A smart card, which is similar in size to a credit card or ATM card, stores data on a thin microprocessor embedded in the card. When you insert the smart card in a specialized card reader, the information on the card is read and, if necessary, updated.

## IX. COMMUNICATION DEVICES

A communications device is a hardware component that enables a computer to send (transmit) and receive data, instructions, and information to and from one or more computers. A widely used communications device is the telephone or cable modem.

Communications occur over transmission media such as telephone lines, cables, cellular radio networks, and satellites. Some transmission media such as satellites and cellular radio networks are wireless, which means they have no physical lines or wires.

## X. COMPUTER SOFTWARE

Computer software is the key to productive use of computers. With the correct software, a computer can become a valuable tool. Software can be categorized into two types: system software and application software.

a. System software

**System Software** consists of programs to control the operations of computer equipment. An important part of system software is a set of programs called the operating system. Instructions in the operating system tell the computer how to transfer data.

Today, most computers use an operating system that has a **graphical user interface (GUI)** that provides visual cues such as icon symbols to help the user. Each **icon** represents an application such as word processing, or a file or document where data is stored.

b. Application Software

Application software consists of programs designed to make users more productive and/or assist them with personal tasks. Some widely used application software includes Web browsers, personal information managers, project management, accounting, computer-aided design, desktop publishing, paint/image editing, audio and video editing, multimedia authoring, Web page authoring, personal finance, legal, tax preparation, home design/landscaping, educational, reference, and entertainment (games, simulations, etc.)

i. Word Processing

**Word processing software** is used to create, edit, format, and print documents. A key advantage of word processing software is that users easily can make changes in documents, such as correcting spelling; changing margins; and adding, deleting, or relocating entire paragraphs.

ii. Spreadsheet

**Electronic spreadsheet software** allows the user to add, subtract, and perform user-defined calculations on rows and columns of numbers. These numbers can be changed, and the spreadsheet quickly recalculates the new results. Electronic spreadsheet software eliminates the tedious recalculations required with manual methods.

iii. Database

**Database software** allows the user to enter, retrieve and update data in an organized manner. These software packages have flexible inquiry and reporting capabilities that let users access the data in different ways and create custom reports that include some or all of the information in the database.

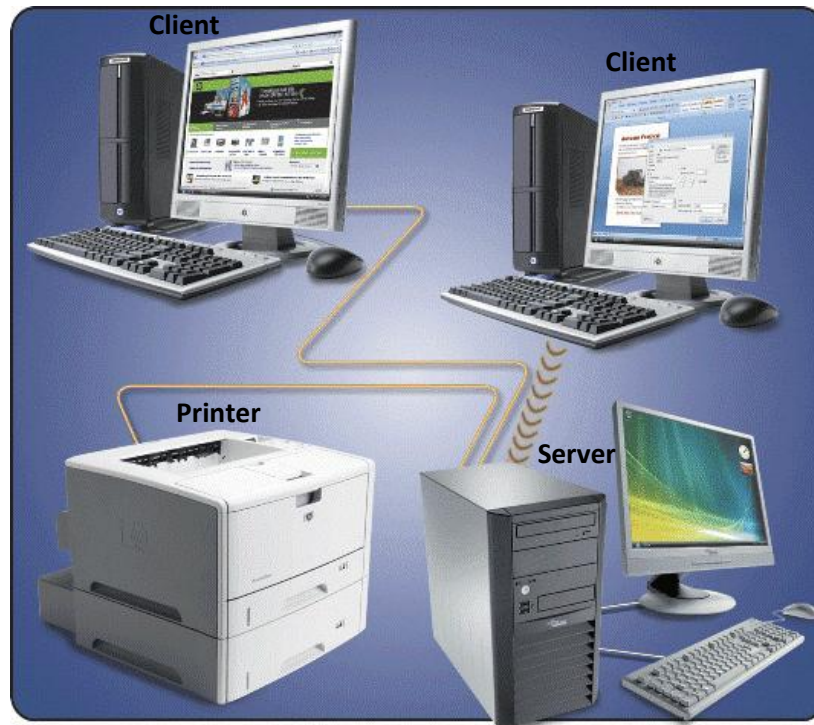
iv. Presentation Graphics

Presentation graphics software allows the user to create slides for use in a presentation to a group. Using special projection devices, the slides are projected directly from the computer.

XI. NETWORK AND THE INTERNET

A **network** is a collection of computers and devices connected together, often wirelessly, via communications devices and transmission media. When a computer connects to a network, it is **online**.

Networks allow users to share resources, such as hardware, software, data, and information. Sharing resources saves time and money. For example, instead of purchasing one printer for every computer in a company, the firm can connect a single printer to all computers via a network.



A network that connects computers in a limited geographic area, such as a school computer laboratory, office, or group of buildings, is called a **local area network (LAN)**. A network that covers a large geographical area, such as one that connects the district offices of a national corporation is called a **wide area network (WAN)**.

a. The Internet

The world's largest network is the Internet, which is a worldwide collection of networks that connects millions of businesses, government agencies, educational institutions, and individuals. With an abundance of resources and data accessible via the Internet, more than 1 billion people around the world use the internet for a variety of reasons, including communicating with and meeting other people, accessing a wealth of information, news, and research findings, shopping for goods and services, banking and investing, and accessing sources of entertainment and leisure, such as online games, music, videos, books and magazines.

Most users connect to the Internet through a regional or national ISP, an online services provider, or a wireless Internet service provider. An **ISP (Internet service provider)** is an organization, such as a cable company or telephone company that supplies connections to the Internet for a monthly fee. Earthlink and AT&T Worldnet are examples of national ISPs. Like an ISP, an **online service provider (OSP)** provides access to the Internet, but it also provides a variety of other specialized content and services such as news, weather, financial data, e-mail, games, and more.

A wireless Internet service provider (WISP) is a company that provides wireless Internet access to computers and mobile devices such as smart phones and PDA's. Examples are: Boingo Wireless and Cingular Wireless.

b. The World Wide Web

One of the more popular segments of the Internet is the World Wide Web, also called the Web, which contains billions of documents called Web pages. A Web page can contain text, graphics audio, and video, and has built-in connections, or links, to other Web documents.



A website is a related collection of Web pages. Visitors to a Web site access and view Web pages using a software program called a **Web browser**. A Web page is a unique address, called a **Uniform Resource Locator (URL)**.

## XII. ELECTRONIC COMMERNCE

When you conduct business activities online, you are participating in electronic commerce, also known as **e-commerce**. Some people use the term m-commerce (mobile commerce) to identify e-commerce that uses mobile devices. These commercial activities include shopping, investing, and any other venture that represents a business transaction.

- a. **B2C (Business to Consumer)**  
Involves the sale of goods to the general public.
- b. **C2C (Consumer to Consumer)**  
Involves one consumer selling directly to another.
- c. **B2B (Business to Business)**  
Involves providing goods and services to other businesses.