

Unit one

Recognizing computer

Types of computers

1-Supercomputer

- considered to be the fastest type of computer available
- Very expensive due to the amount of information to be processed daily
- Generally have specialized software programs installed such as weather forecasting, or animation

2-Mainframe computers

- can simultaneously handle hundreds of different programs and users without sacrificing performance
- Process large volumes of data at an incredible speed
- Commonly found in government agencies or large organizations such as an automated teller machine (ATM)

Supercomputer

- considered to be the fastest type of computer available
- Very expensive due to the amount of information to be processed daily
- Generally have specialized software programs installed such as weather forecasting, or animation

3-Main computers

- can simultaneously handle hundreds of different programs and users without sacrificing performance
- process large volumes of data at an incredible speed

commonly found in government agencies or large organizations such as an automated teller machine (ATM)

4-Minicomputers

- typically process data at a slower rate and in smaller volumes than mainframes • as the number of users increase, there is a reduction in speed
- commonly found in medium-sized manufacturing companies and legal or accounting firms.

- point-of-sale terminals, cash registers or retail scanners all link to minicomputers.

5-Personal computers (PC) or microcomputers

- sit on, beside, or under a desk
- process data quickly
- used extensively in small businesses, schools and homes
- * Two general types of microcomputers:

The PC (based on the original IBM machine), and the Macintosh

Designed by Apple



6-Notebook/Laptop computers

- Portable microcomputers
- Similar to desktop models in speed, performance and usage
- can purchase accessories such as expandable keyboards
- Cost is the same or slightly more than a desktop computer
- can purchase a notebook created for the PC or Apple environment



7-Personal Digital Assistants (PDA)

Small palm-sized computers or cellular telephones used as personal Organizers have specific software to make appointments, contact lists and write notes popular for their portability with software installed to create documents, take pictures, or connect to the Internet



8-Personal Digital Assistants (PDA)

Small palm-sized computers or cellular telephones used as personal Organizers have specific software to make appointments, contact lists and write notes popular for their portability with software installed to create documents, take pictures, or connect to the Internet

Elements of a Personal Computer

There are four crucial elements that make up a personal computer system:

- **The central element is the user who needs to perform a task by using software to accomplish that task.**

- **The equipment itself (computer, monitor, printer, etc.) is called**

HARD ware because you can physically touch the components.

- **Programs are called Software as they function only while the**

Computer is on. A software program is a set of coded instructions the computer uses in a series of on/off signals to carry out the user's task.

- **These on/off signals begin when you first turn on the computer.**

Without electricity the computer cannot function.

The four major hardware component parts called internal or external devices that make up the system include:

- **Central processing unit (CPU)**

- **input/output (I/O) devices**

- **random access memory (RAM)**

- **storage devices**

An internal device installs inside the system unit, and an external device plugs into a connection on the computer.

Looking at the System Unit

The system unit or box is often the most important and expensive part of the computer. A desktop box or a towerbox provides the same functionality.



Separate devices inside the box perform specialized functions for the computer:

• Motherboard

- Largest electronic circuit board and consists of the CPU, RAM, and ROM BIOS.
- Expansion slots expand your computer by adding items such as graphics video card
- peripheral component interconnect (PCI) slots add new components or cards such as a modem
- input/output ports are connectors for various input or output devices such as USB mouse
- accelerated graphics port (AGP) slot is for a card that can handle 3-D graphics
- central processing unit (CPU) slot contains the microprocessor chip
- random access memory (RAM) slot is designed for these types of memory chips
- system clock determines time and date .

•Microprocessor

– “brain” of the computer, located on the motherboard; also known as the central processing unit (CPU)

– instructions from the software programs and the user are received and executed here

each model or type processes information and instructions at speeds measured in megahertz (MHz) or gigahertz (GHz).

•Power Supply

– Converts the AC (alternating current) coming from a wall outlet to DC (direct current) format

– must be between 5v and 12v, with 5v needed for the circuit boards and 12v for hard drives and CD-ROMs

• Expansion slots

– The openings at the back of a system unit, to allow you to add items such as sound cards, printers, network cards, etc.

•Memory

For a computer to store information, it needs to have memory chips installed. Memory is measured in bytes; in very simple terms, one byte is equal to one character.

Officially, computers are developed using a numbering system of 1s and 0s. These two unique numbers represent the charged or uncharged nature of electricity and are known as the binary system. These two digits essentially make a bit and eight bits make one byte.

The following shows how computer technology and the requirement for storage capacity have grown:

Size in “bytes”

1 Kilobyte (KB) = 1,024

1 Megabyte (MB) = 1,048,576

1 Gigabyte (GB) = 1,073,741,824

1 Terabyte (TB) = 1,099,511,627,776

1 Petabyte (PB) = 1,125,899,906,842,624

•Read Only Memory Basic Input/Output System (ROM BIOS)

– a group of integrated circuits responsible for starting the computer, checking RAM, and loading the operating system

– occurs only when the computer is first turned on or when you have to restart the computer.

– does not perform any tasks other than to read the information.

• Random Access Memory (RAM)

– located on the motherboard of the CPU

– electronic pool of memory where the computer can hold programs and data.

– RAM temporarily holds the current software program and the current data created by the user

– RAM is volatile – it only works when the computer is turned on and the information “vanishes” when the computer is turned off.

• Cache Memory

– helps speed up the processor by storing frequently used instructions and data in this area.

– Dynamic RAM (DRAM) constantly changes, using what it needs based on the instructions being performed, and constantly “refreshes” itself.

– Static RAM (SRAM) is a specific amount of RAM that never needs to be refreshed, and is traditionally faster and more reliable.

What are Input/Output Devices?

Input/Output (I/O) devices enable communication between the user and the computer. There are actually three classifications of I/O devices you can use to:

- send information to the computer, e.g., the keyboard, mouse, trackball or scanner

- display/transmit information from the computer, e.g., monitor, printer, or speakers

- communicate between computers, e.g., modems and networks

Looking at the Monitor

The monitor is an output device that enables you to view information the computer displays. All monitors have a power switch as well as brightness and contrast controls to adjust the screen image.

Monitors come in a variety of sizes, resolution, and types; the larger the screen size, the larger the image will be on the screen and the more expensive the monitor.

Using Video Cards

The monitor needs to be connected to a video card to display information. All computers have a standard video card; you can purchase other video cards with more memory to handle large amounts of graphics, 3D graphics, or just to display information faster. You can also install a second video card to view information on two monitors.

The type and cost of these video cards vary significantly; the rule of thumb is the more options you want on a video card, the more it will cost.

Using the Keyboard

The keyboard is an input device that sends information to the computer. It is the primary tool for inputting alphanumeric data. You can also use the keyboard to input commands for a task in an application program.



There are a variety of keyboards available for the computer; the above is an example of the traditional keyboard.

Some keyboards address issues such as ergonomics to reduce or prevent stress on the wrists (i.e., carpal tunnel syndrome) or eyestrain. Many newer keyboards also contain buttons to enhance the multimedia experience while using your computer.

Some keys you will use frequently include:

Backspace

Deletes one character to the left of the flashing cursor each time you press it.

Delete

Deletes the character above or to the right of the cursor each time it is pressed.

Spacebar

Inserts a blank space between words and is also the safest key to press when a software program prompts you to press any key.

Esc

Cancels a current selection, or generates a special code for the computer. Referred to as the *Escape* key.

Tab

Advances the cursor to the right a specified number of characters or to the next cell in a program. When held down with the **Shift** key, you can move the cursor a similar distance to the left.

Shift

Displays the uppercase letters for the alphabetic keys or the punctuation symbols that share the number keys. Use this key in conjunction with other keys to perform a function or task in a program, e.g., **Shift+F7** activates the thesaurus in Word.

Ctrl

Press and hold down the *Control* key while pressing another key to send a command to the computer, or to perform a specific task in an application program, such as **Ctrl+B** to add boldface to text.

Alt

Press and hold down the *Alt* key while pressing another key to send a command to the computer, or to perform a specific task in an application program, e.g., **Alt+F** activates the **File** menu.

Using the Mouse

This device moves the mouse pointer around on the monitor. Moving the mouse on a flat surface such as a desk causes the mouse ball to rotate and initiates movement reflected by the mouse pointer on the monitor.



- Click** Point the mouse pointer at an item, then press and release the left mouse button to select that item.
- Double-Click** Point the mouse pointer at an item, then press the left mouse button twice in rapid succession to initiate programs and open files.
- Right-Click** Point the mouse pointer at an item, then press the right mouse button to display the shortcut menu for that item.
- Left Drag** Press and hold the left mouse button as you move the mouse to move or select multiple items on the screen.
- Right Drag** Press and hold the right mouse button as you move the mouse to move or copy items. On release of the mouse button, a shortcut menu appears with further options.
- Middle Wheel or Button** Use to scroll through the document. When the **Ctrl** key is pressed, this can zoom in or out on the screen.

What Are Storage Systems?

Storage systems are used to store data. When working on the computer, the RAM area holds your current work and a copy of the active software program. As RAM is only temporary, you must save the work to a storage device before exiting the software program or turning off the power.

The storage device used depends on the amount of storage required and speed of data retrieval, or the data transfer rates (the speed at which data is sent from computer to storage device and vice versa). Hard disk drives are used most often to store and retrieve software programs and data due to their speed and storage capacities.

- the Floppy Disk Drive
- Hard Disk Drives
- CD Drives
- CD-ROM (Compact Disk Read Only Memory) drive

*CD Writer drive ,*DVD drive

- USB Flash memory

Using Printers

Printers are output devices that display what was on your screen onto paper once you activate the print command. All applications allow you to print a file, and offer different options for printing, e.g., landscape versus portrait orientation, paper size, manual feed, etc.

Dot Matrix printer



Ink Jet Printer



Laser Printer



Looking at Networks

A network is any system that allows two or more computers to communicate and share resources with each other. They can be called centralized systems as all data flows to and from these computers.

Networks can have a combination of computers connected to it, such as PCs, Apple machines, PDAs, Unix or Linux systems, dumb terminals that display information only, smart terminals that have limited processing capabilities, or cellular phones, etc.

A network can be small or large, depending on the company or user requirements.

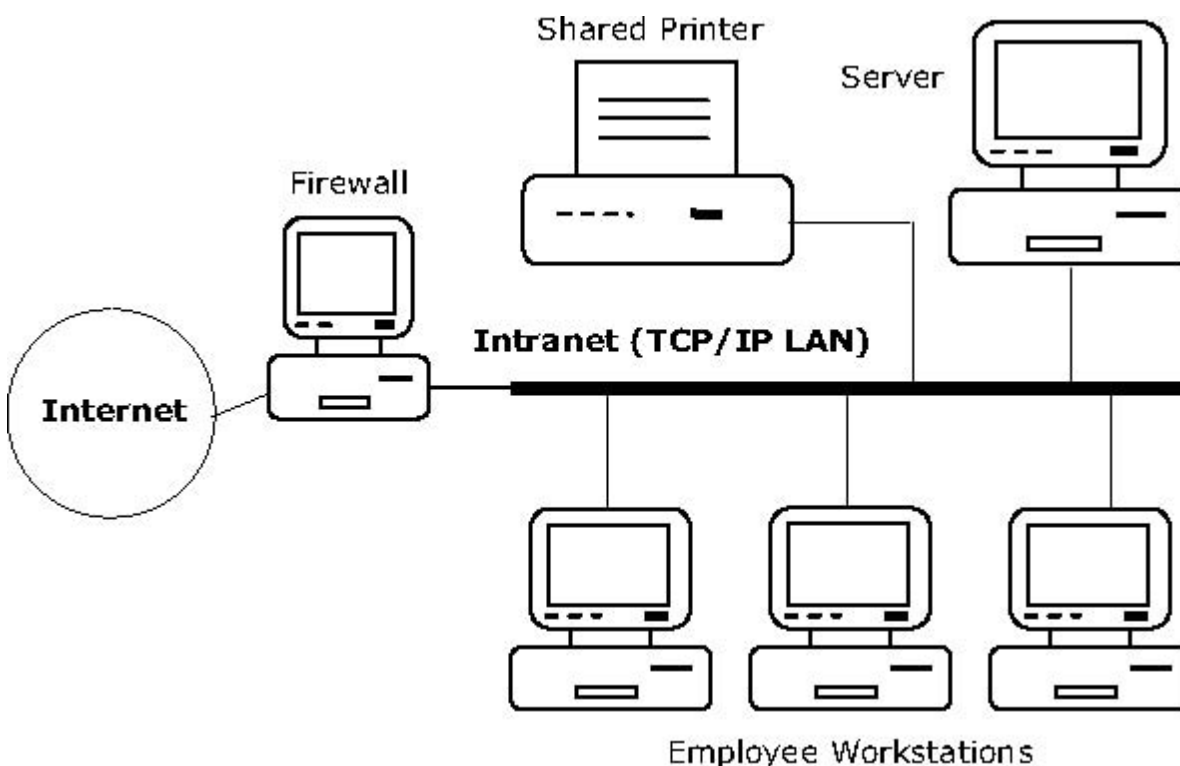
LAN A Local Area Network connects a small to medium number of computers together in a confined area.

HAN A Home Area Network connects computers in a home environment.

CAN A Campus Area Network connects computers in a limited area such as a campus or military base.

WAN A Wide Area Network connects computers over long distances (i.e., between branches or offices in different provinces or states).

MAN A Metropolitan Area Network connects computers in a metropolitan area.



There are many benefits to being on a network, with the main one being the ability to share information or equipment.

- share files stored in one location (network) by multiple users
- share devices such as printers or access to the Internet
- company information organized in one central area for storage, maintenance, and backup purposes

To connect to a network, you need the following:

- the computer must have a network card (NIC) installed, regardless of whether the network uses cables or

wireless technology

- the computer must be set up correctly to identify which network you can access, e.g., home, business, etc.
- to connect to the Internet, you also need a device called a router that recognizes this service

Every time you need to use a program or access a file stored on the network, you are asking the network for that

item. The speed for accessing items depends on the:

- speed of the network connection
- server microprocessor speed
- microprocessor speed on your system
- number of other requests being made on the network