Computer Concepts and C Programming (06CCP13)

Unit I

Unit Division

- Unit-I
  - Introducing Computer Systems
  - Interacting with Computer
- Unit-II
  - Processing Data
  - Storing Data
- Unit-III
  - Using Operating Systems
  - Networks and the Internet
- Unit-IV
  - Algorithms and Flow Charts
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Unit Division...Contd

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  - ✓Essential Computer Hardware

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What is a Computer ?

"A Computer is an electronic computing device which accepts the given data, store the data, processes data and gives output in formatted manner"

Applications of Computers

- Science
  - To analyze large quantity of data
- Education
  - Used ranging from school to higher education institutes

Applications of Computers ...
contd

- Medicine and Health
  - To diagnose, operation
- Communication
  - Storing, transferring and accessing huge data
- Government
  - Forecasting in Military, Satellite Controlling
- Business and Banking Applications
  - Insurance sector, Bill payments
- Entertainment
  - Music, Movie Industries
- Engineering /Architecture / Manufacturing
  - Manufacturing, Robots

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Computers for individual Users

Computers for individual Users...Contd

- Micro computers
- Desktop computers
- Workstation computers
- Tablet computers
- Notebook computers
- Hand held PCs

Computers for individual Users...Contd

Micro computers

Microcomputers are more commonly known as personal computers. The term "PC" is applied to IBM-PCs or compatible computers

Used for –
Small industrial control, process control, information documentation where storage and speed requirements are moderate

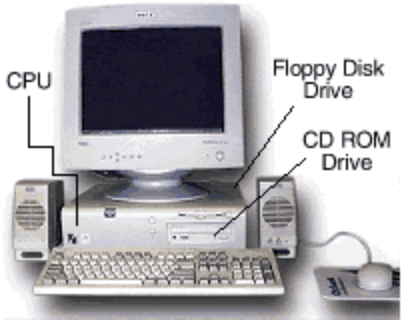
Computers for individual Users...Contd

In Microcomputer the cpu is usually single integrated circuit called microprocessor, word length ranges from 8bits to 32bits memory in the form of ROM & RAM I/O ports & a bus system of interconnecting wires, housed in a unit that is usually called a motherboard

Computers for individual Users...Contd

Unit - I

- Desktop Computer



Personal-use computer made for use on a desk in an office or home is distinguished from portable. Desktop/laptop client (32, 64-bit)

Example:

HHP 830,IBM5100,WANG2000,TEKTRONIX4051

Computers for individual Users...Contd

Unit - I

- Workstation

A type of computer used for engineering applications(CAD/CAM), desktop publishing, software development.

Generally come with a large, high resolution graphics screen at least 64MB of RAM built in network support and GUI, also has a mass storage device such as disk drive

Computers for individual Users...Contd

- Tablet PC

Is the newest development in portable full featured computers

They are lighter and can accept input from a special pen called a stylus or digital pen that is used to tap or write directly on the screen

Computers for individual Users...Contd

Tablet PC

Computers for individual Users...Contd

- Portable Note Book Computer

Laptop is a small mobile computer which usually weighs around 1.6kg. The term laptop and notebook are often used interchangeably

Laptop introduced in 1983

Example:

Acer travel mate, Extensa, Ferrari and Aspire

Computers for individual Users...Contd

- Handheld PC

Are computing device small enough to fit in your hand, popular type of handheld computer is the personal digital assistant (PDA) it will be equal to small appointment book and normally used for special applications such as taking notes, displaying telephone numbers and addresses and keeping track of dates and agendas

Handheld PC

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Computers for Organizations

Used for process control, development of new products, various forms of organizational communication and electronic commerce

- Mini computers
- Mainframes/Enterprise systems
- Servers
- Super computers

Computers for Organizations

- Mini compute

Multiprocessing systems capable of supporting from 4 to 200 users simultaneously, intermediate between micro & mainframe. Minicomputers are smaller than mainframes but larger than microcomputers

Computers for Organizations…

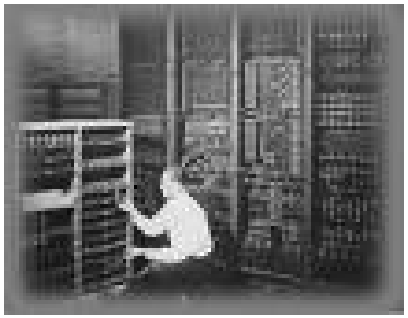
Contd

Computers for Organizations…

Contd

Unit - I

- Mainframes/Enterprise systems



using two or more cpu designed to work at very high speed with large word length, data storage capacity is very highMainframe computers can support hundreds or thousands of users, handling massive amounts of input, output and storage

Computers for Organizations…

Contd

- Servers

- Have large storage unit and faster communication links

uses: Repository for application programs, network server for control of network traffic file server for accessing many data files, mail servers for email connectivity and storage, web servers for storage of world wide web materials and web connectivity

Computers for Organizations…

Contd

- Super computers

Param 10000

Multiprocessor computers used for the large scale numerical calculations required in applications such as weather forecasting, robotic engineering, aircraft design and simulation

Computers for Organizations…

Contd

Super Computer

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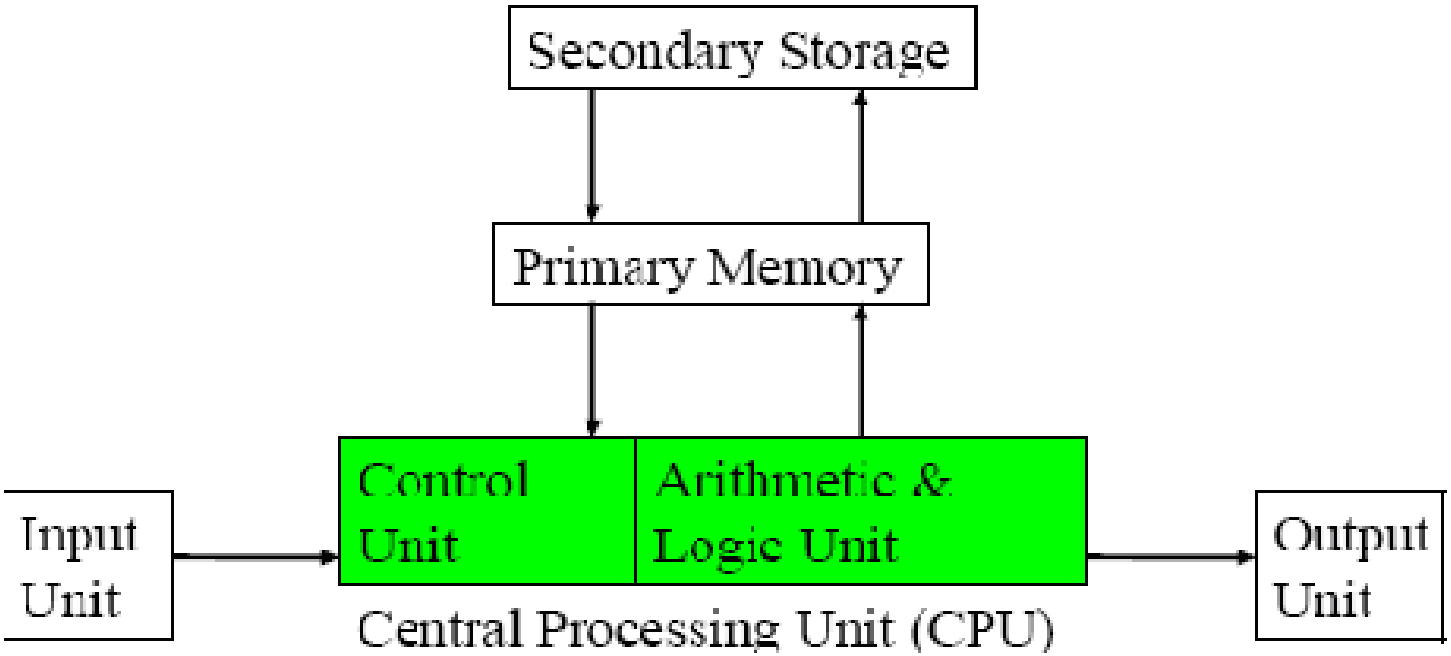
The parts of a Computer System

A computer consists of both hardware and software working together to help you accomplish tasks

The parts of a Computer System



The parts of a Computer System

- **Input Unit:** is an external device that is connected to the CPU. It is used to feed data and instructions for solving the problem
- **Arithmetic and Logic Unit (ALU):** All calculations are carried out in ALU. An ALU consists of electronic circuit, which performs basic arithmetic operations. ALU is where the "intelligence" of the computer is located. It can add, subtract, multiply, divide and compare numbers. It also performs relational & logical operation

The parts of a Computer System

- **Control Unit** It is an important unit in a computer. It controls and coordinates the activities of all the units of a computer system, which directs information to the proper places in your computer, such as calculation of information by the ALU unit or to store and print material. The important functions are
  - Fetching a data and instruction from main memory
  - Interpreting these instructions
  - Controlling input and output devices

The parts of a Computer System

Memory Unit: where the data and instructions fed by the user are stored. Two types of memory contained on a chip are RAM (Random Access Memory) or ROM (Read Only Memory). ROM memory has been installed on your computer by the manufacturer and can not be altered. ROM is the memory that determines all the basic functions of the operation of your machine, such as startup, shut down, and placing a character on the screen.

The parts of a Computer System

RAM is temporary memory, which displays the information you are working on. RAM remembers what you see on your screen while you are working. Today's applications required large amounts of temporary memory, which may require you to upgrade and add more RAM memory

- **Output Unit:** Output devices return processed data back to the user or to another computer system. The computer controls output devices

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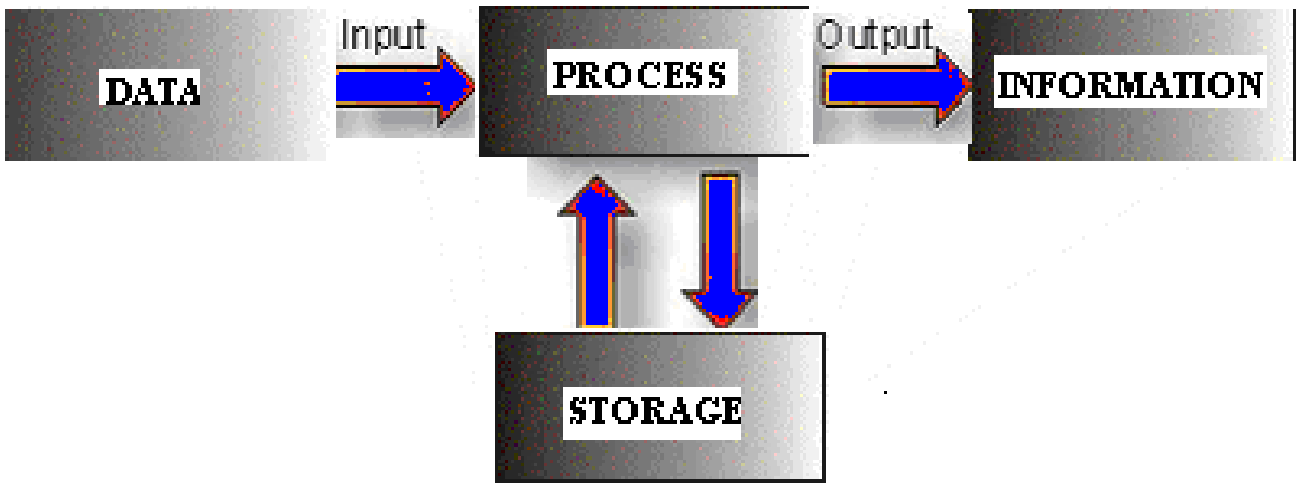
The information Processing cycle

- All data and information processing goes through stages in a logical order



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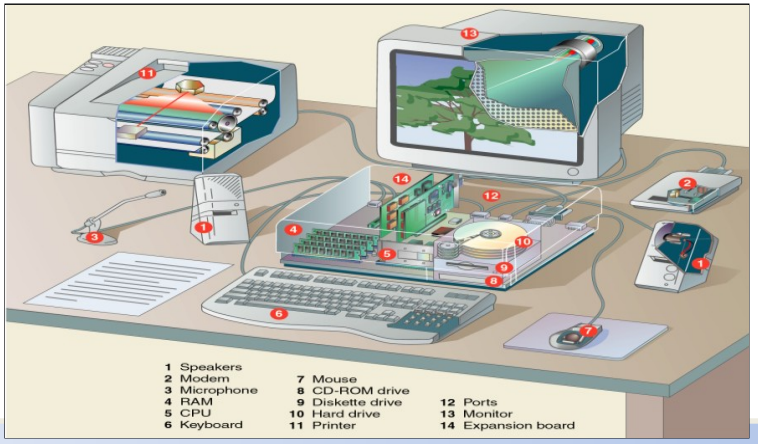
Essential Computer Hardware

A computer hardware is the electronic circuitry and electro mechanical devices which can be touched and seen. A peripheral is any computer device that is not part of the essential computer (the processor, memory, and data paths) but is situated relatively close by

Essential Computer Hardware

- **The Processor**: The procedure that transforms raw data into useful information is called processing. This function is divided between the computer's processor and memory. The procedure that transforms raw data into useful information is called processing. This function is divided between the computer's processor and memory



Essential Computer Hardware

- **Memory:** Main Memory also consists of chips attached to the motherboard.
- Memory holds data and program instructions as the CPU works with them. This memory is called Random Access Memory (RAM).
- The CPU can find any piece of data in RAM, when it needs it for processing.
- RAM is volatile, meaning it holds data only when the power is on. When the power is off, RAM's contents are lost.

Essential Computer Hardware

- Secondary Memory: Storage devices hold data not currently being used by the CPU. Data is commonly stored on a magnetic or optical disk. Each type of disk uses a special medium for storing data on its surface.
- A disk drive is a device that reads data from and writes data to a disk. Most new computers feature a floppy disk drive, a hard disk drive, and an optical disk drive.
- The most common optical storage devices are CD-ROM and DVD-ROM drives

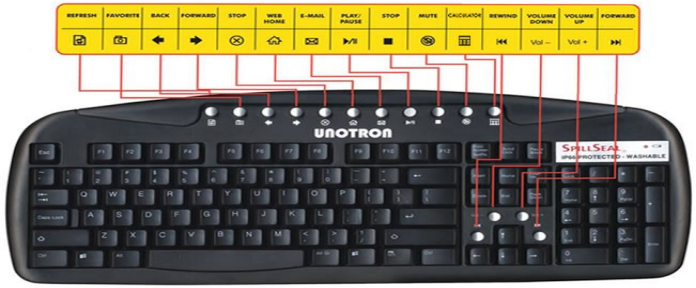
Essential Computer Hardware

- **Input / Output Device**: A computer would be useless if you could not interact with it because the machine could not receive instructions or delivers the results of its work. Input devices is an external device that is connected to the CPU. It is used to feed data and instructions for solving the problem. Example keyboard, mouse etc. Output device is used to display the result obtained after the execution of a program

Essential Computer Hardware

- Whenever the user wants output from the computer the control unit sends signal to this unit to be ready accept processed data from memory and to display. The most commonly used display units are monitor, LCD display, speaker and printer etc

Essential Computer Hardware



- A series of switches, arranged somewhat like a standard "QWERTY" typewriter that allows you to send information to a computer. There is no such keyborad as a "standard" computer keyboard

Key Points

- A computer is an electronic device which takes information and process information according to the program and produces the output.
- A computer system has five basic functional units.
- The Central Processing Unit is the brain of the computer.
- The arithmetic-logic unit (ALU) is the unit of the computer that performs arithmetic and logical operations on the data.

Key Points...Contd

- The control unit controls the overall activities of the components of the computer.
- The memory unit is the unit where all the input data and results stored.
- Computers for individual users and organizations with pictures and definitions for each type of computer .
- Information in lecture-1 will help you to understand the definitions of basic terms and pictorial view makes it much easier to remember the points

Part – A

Unit - I

Section - 2

Interacting with Computer

Interaction with computer is possible only through input output devices connected to it which transmits the data from outside world to the system, internally it converts into machine readable form executes it and then sends back the results to the user

A typical personal computer has hard, floppy and CD-ROM disks for storage, memory and CPU chips inside the system unit, a keyboard and mouse for input, and a display, printer and speakers for output

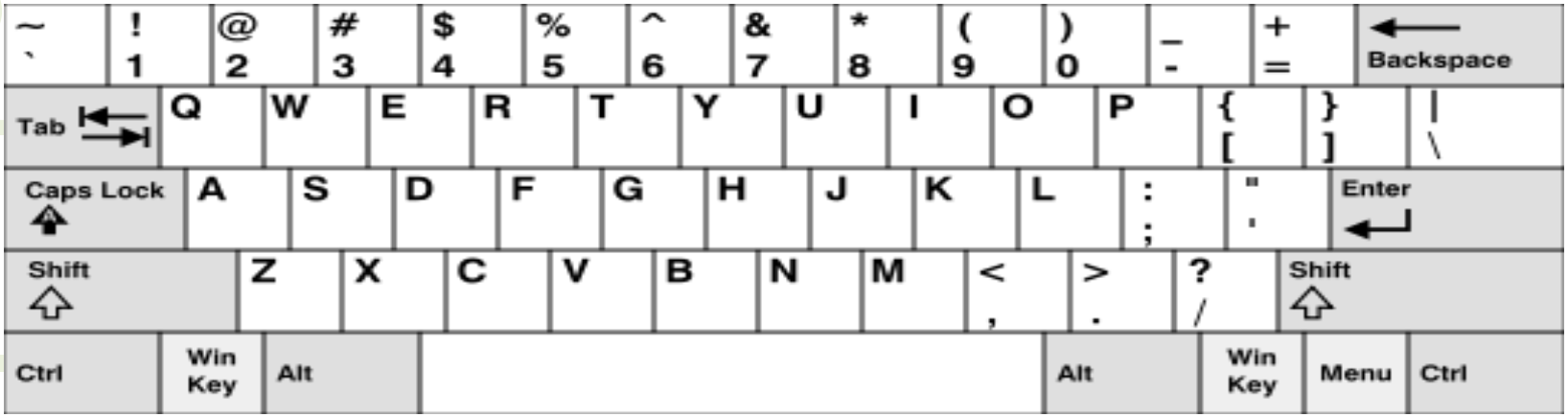
Interacting with Computer

- The Keyboard

Data is transferred to the PC over a short cable with a circular 6-pin Mini-din connector that plugs into the back of the motherboard

The Keyboard

- Standard keyboard layout



Interacting with Computer

- How the computer accepts input from the keyboard

The standard English keyboard layout is known as QWERTY. Keys labelled with only a capital letter can type both small and capital letters. To type the symbol at the top left of a key, the shift key, often labelled "↑", is used. To type the symbol at the bottom right of a key, the AltGr key is used

How the computer accepts input from the keyboard

Whenever a key is pressed, the electronic circuitry inside the keyboard identifies the key pressed. The circuit inside the keyboard determines which key is pressed and is converted into 7bit binary number or ASCII code(American Standard Committee for Information Interchange code), the corresponding character is stored in the key board buffer(DATAIN register) and corresponding status bit SIN will be set to high indicating the valid character is available in the memory buffer of keyboard which will be sensed by the processor. Since the rate of data transfer from the keyboard is limited by the typing speed of the user, it will be saved in buffer

- The Mouse

The mouse is a pointing device. You use it to move a graphical pointer on the screen and to issue commands without using the keyboard

Using the mouse involves five techniques

Pointing, Clicking, Double Clicking, Dragging and Right Clicking

The Mouse

- Variants of the Mouse

A trackball is like a mouse turned upside-down. Use your thumb to move the exposed ball and your fingers to press the buttons.

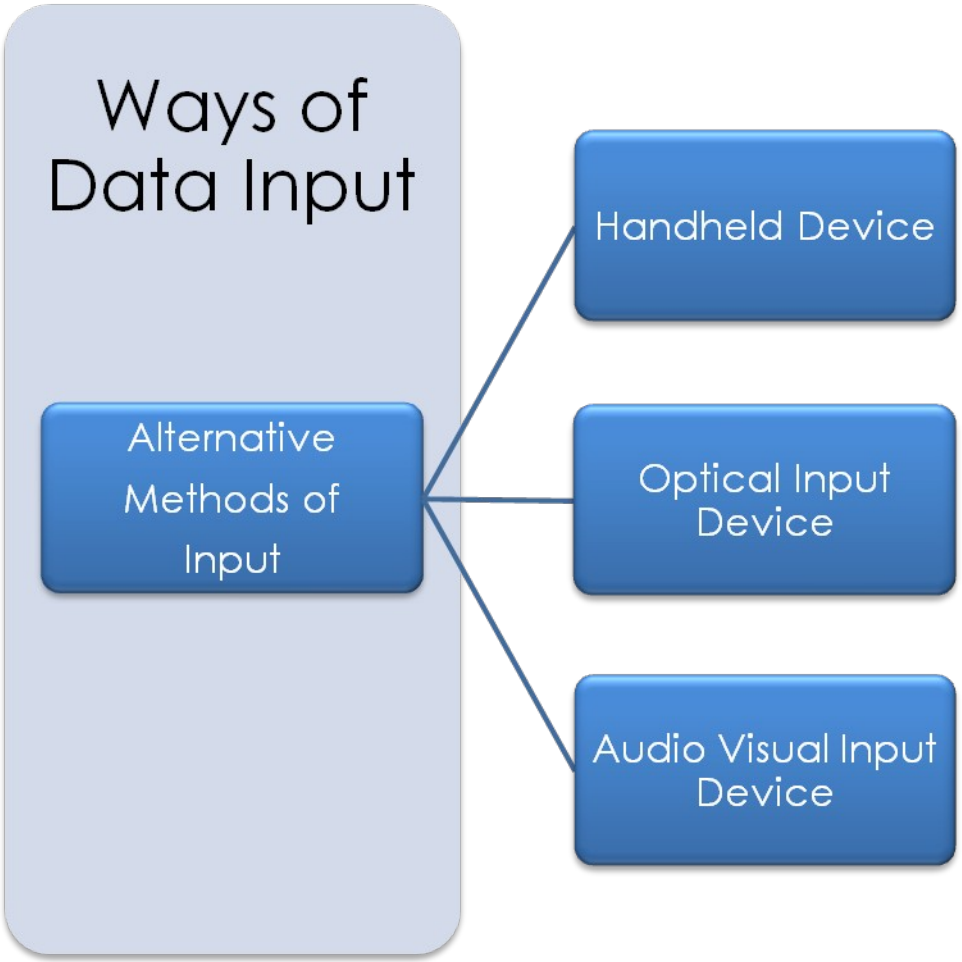
A track pad is a touch-sensitive pad that provides the same functionality as a mouse. To use a track pad, you glide your finger across the surface. An integrated pointing device is a small joystick built into the keyboard. To use an integrated pointing device, you move the joystick

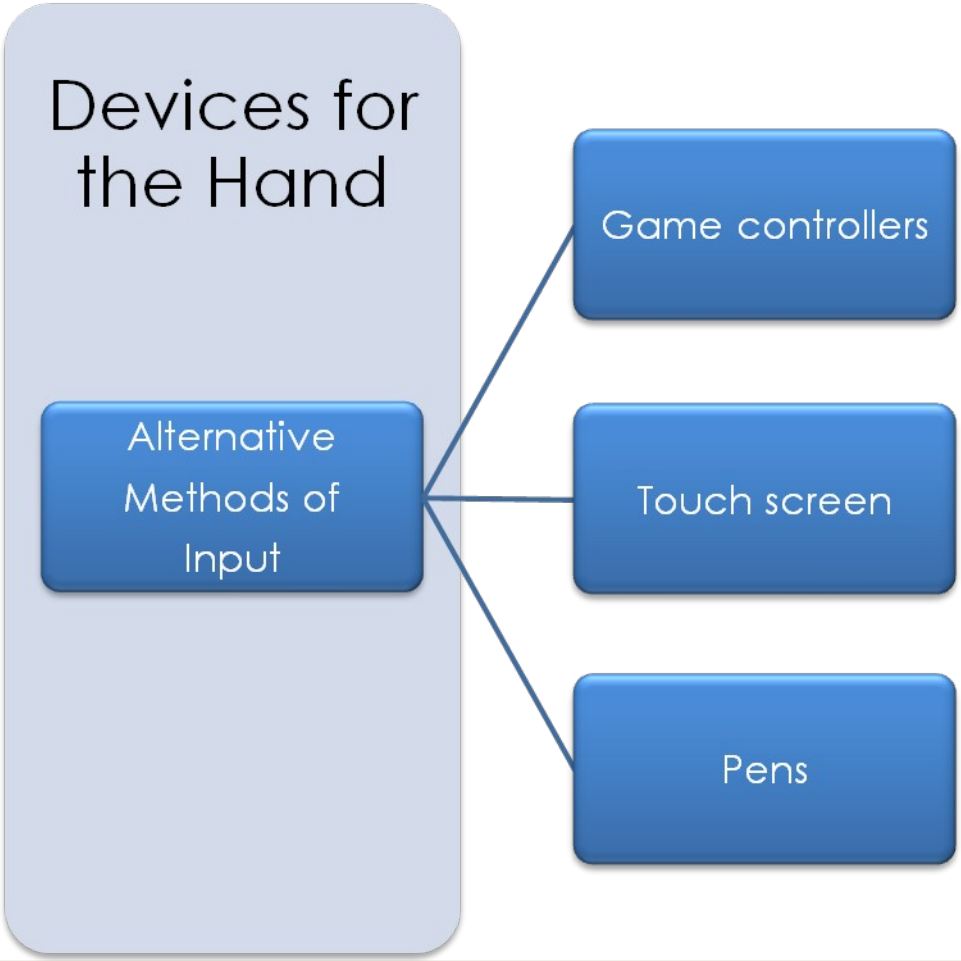
Interacting with Computer

- Inputting data in other ways – (Alternative methods of input)

Alternative input devices are important parts of some special purpose computers. Tapping a handheld computer screen with a stylus a much faster way to input commands than typing a miniature keyboard, on the other hand, a specialized device can give a new purpose to a standard system.

Interacting with Computer




Devices for the Hand
Alternative Methods of Input
Game controllers
Touch screen
Pens

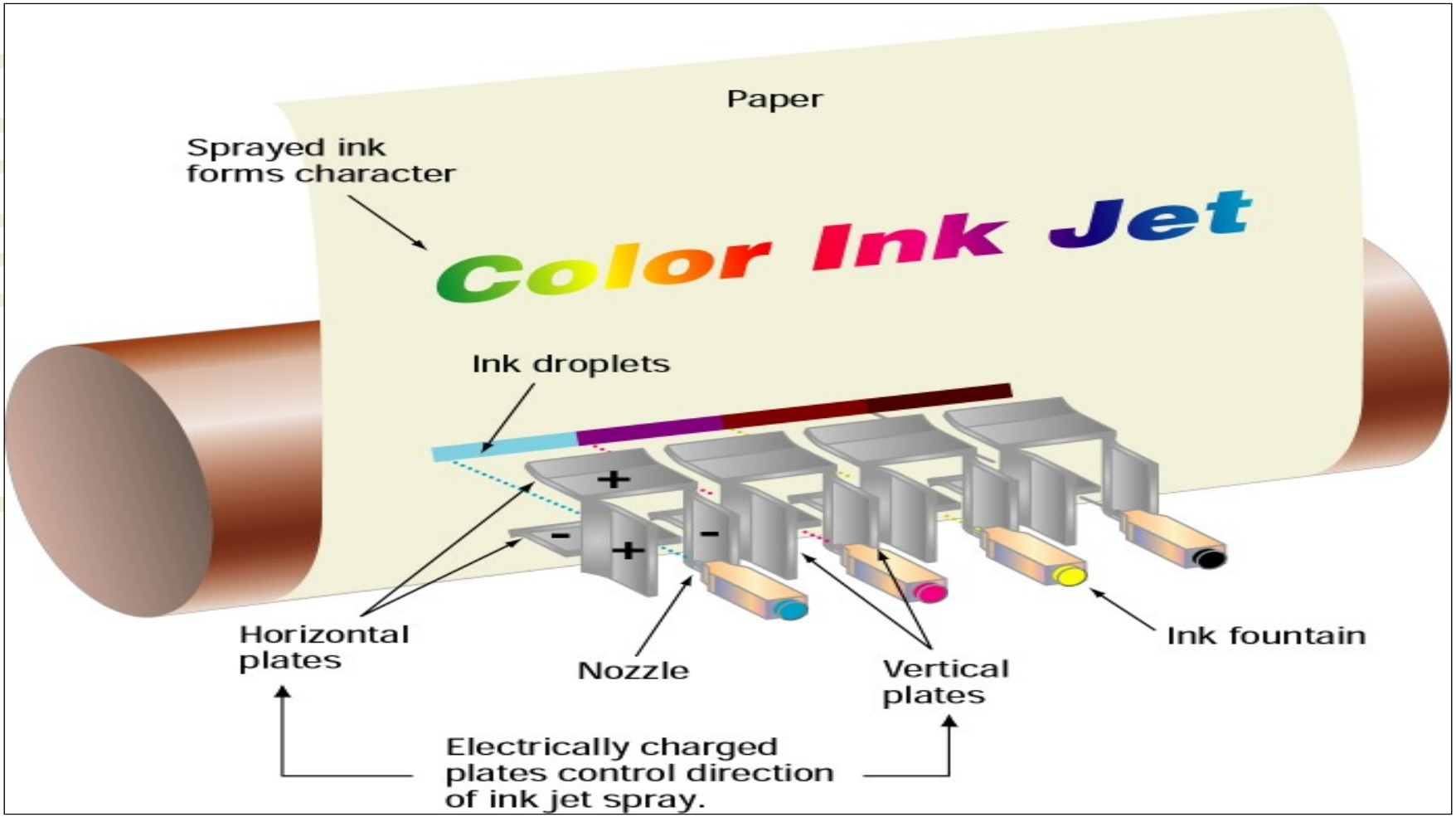
Dot Matrix Printer

- A Dot matrix printer is an impact printer. The print head is the important hardware, which produces the character using pins arranged in a matrix form. Normally a print head has 9 pins or 24 pins arranged in a matrix form. Different combinations of pins strike an inked ribbon during the printing process. While printing the print head also moves in a line and the pattern of dots required for each character is printed on the paper. After printing a line, the paper rolls to print the next line

Ink Jet Printers

- The character is produced by spraying small droplets of ink through ting nozzles in a dot matrix pattern
- The ink can be sprayed either by heat or pressure
- Each nozzle consists of 50 to several hundred small holes for spraying ink
- The most Inkjet Printers support from 360 to 1440 dots per inch (dpi) thus producing high quality characters

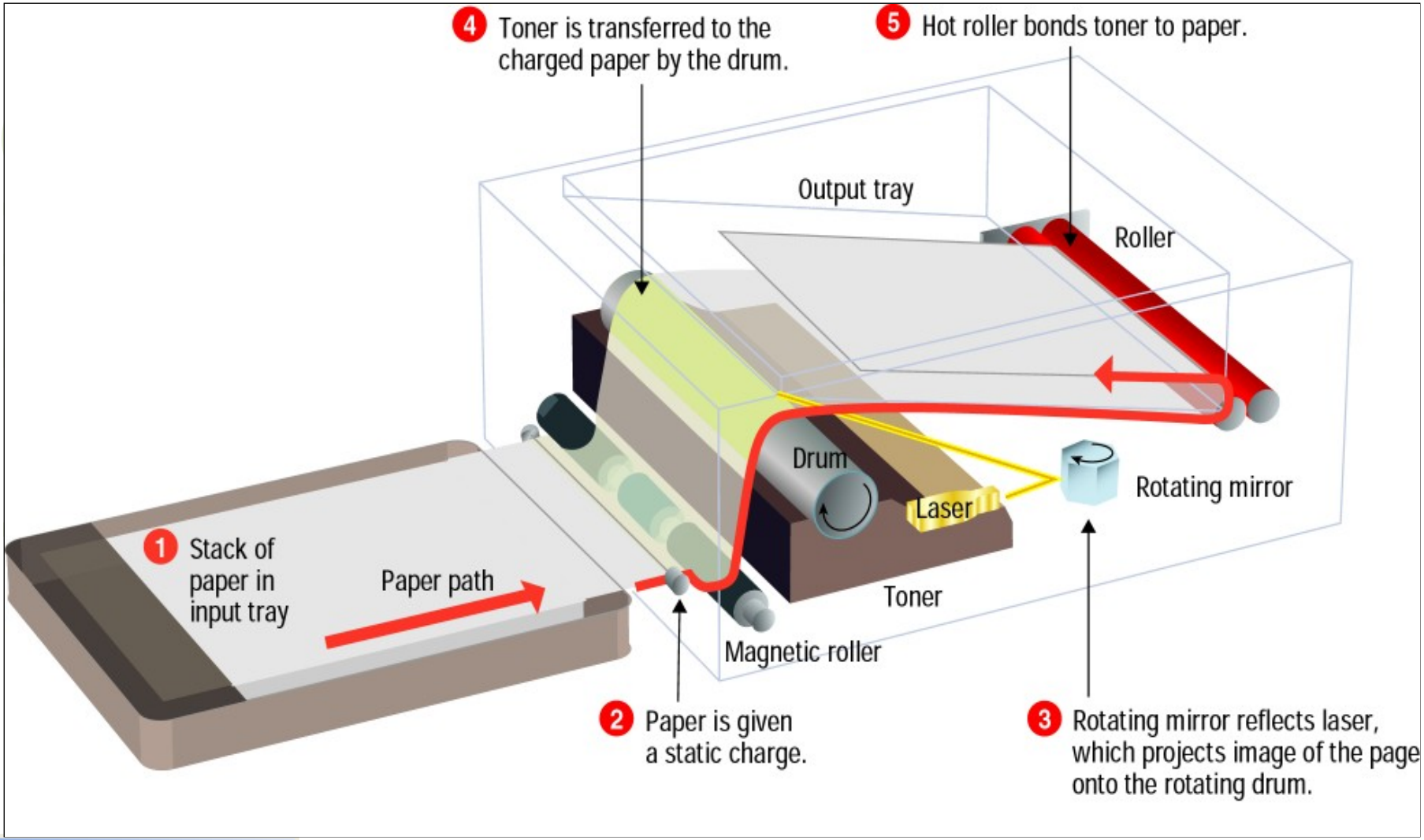
Ink Jet Printers



Laser Printers

- All laser printers are non-impact type
- The laser beam is used to create the image on the drum
- When the laser beam moves across the drum, the portion of drum, which is exposed to the laser beam, attracts the tone particles
- The image is transferred to the paper electro statically. Quality is measured by the no. of dpi i.e., dots per inch

Laser Printers



Laser Printers

- In a laser printer, the controlled beam of intense laser form images on a electrically charged rotating drum. The drum is rotated near the fine black powder called the toner. These charged images attract toner particles and produces images, which sticks to the paper due to pressure and heat. The toner is composed of oppositely charged ink particles, which sticks to the drum in the places where the laser has charged

Q & A ??

End of Unit - I