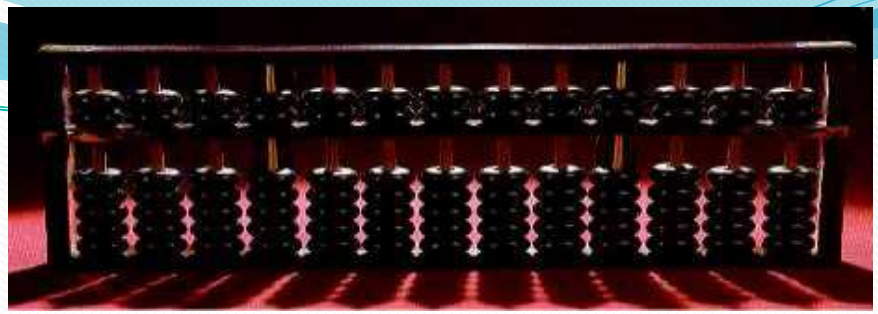
History of COMPUTERS

What is a Computer?

- Computer is a machine which can perform many tasks.
- It was originally invented to do speedy and accurate calculations, it can be used for other purposes too.
- It can perform any kind of work involving arithmetic and logical operations on deta,process it as per the instruction or input given and give the information as output.


APPLE
COMPUTER

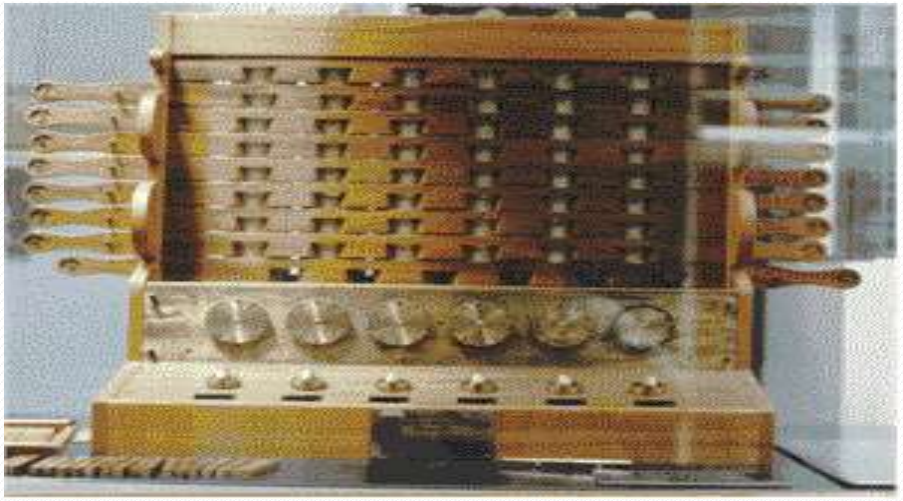
Abacus



- The ***Abacus*** was an early aid for mathematical computations.
- The abacus is often wrongly attributed to China.
- The oldest surviving abacus was used in 300 B.C. by the Babylonians.
- A skilled abacus operator can work on addition and subtraction problems at the speed of a person equipped with a hand calculator.
- The abacus is still in use today, principally in the far east.

Schickard's Calculating Clock

- The first gear-driven calculating machine to actually be built was probably the ***calculating clock***, so named by its inventor, the German professor Wilhelm Schickard in 1623.
- This device got little publicity because Schickard died soon afterward in the bubonic plague.

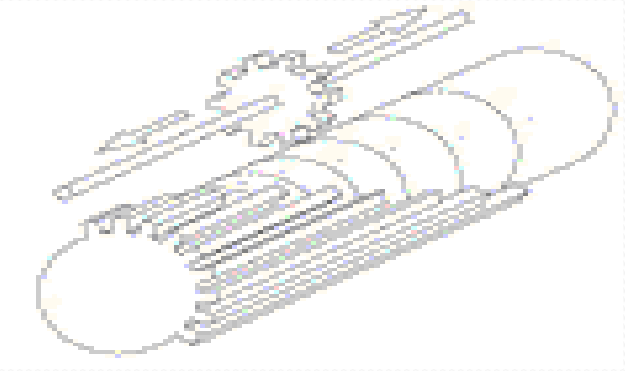


Pascal's Pascaline

- In 1642 Blaise Pascal, at age 19, invented the ***Pascaline*** as an aid for his father who was a tax collector.
- Up until the present age when car dashboards went digital, the odometer portion of a car's speedometer used the very same mechanism as the Pascaline to increment the next wheel after each full revolution of the prior wheel.
- Pascal went on to invent probability theory, the hydraulic press, and the syringe.

Leibniz's Stepped Reckoner

- Just a few years after Pascal, the German Gottfried Wilhelm Leibniz managed to build a four-function (addition, subtraction, multiplication, and division) calculator that he called the ***stepped reckoner***
- Leibniz was the first to advocate use of the binary number system which is fundamental to the operation of modern computers.

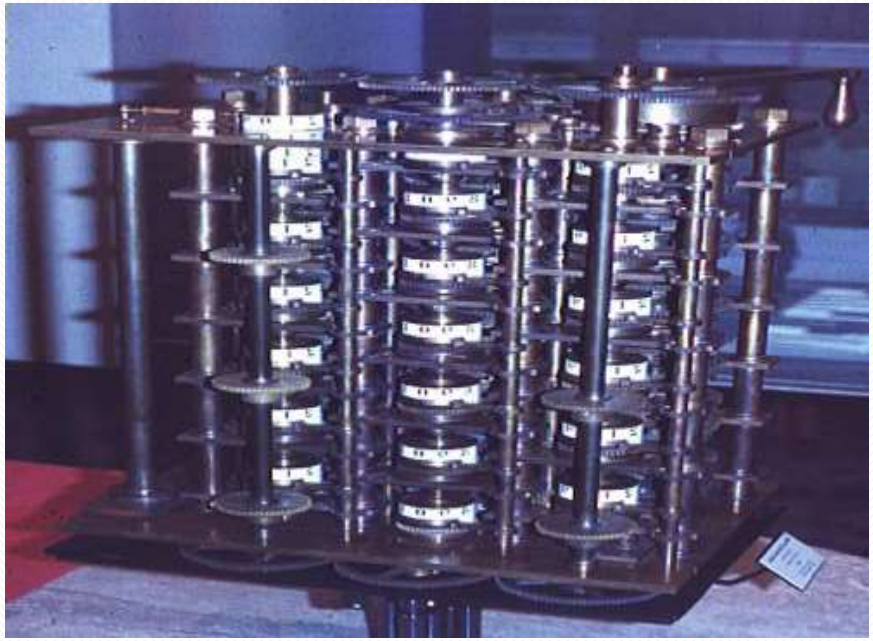


punched cards

- In 1801 the Frenchman Joseph Marie Jacquard invented a power loom that could base its weave upon a pattern automatically read from punched wooden cards, held together in a long row by rope.
- Descendents of these ***punched cards*** have been in use ever since.

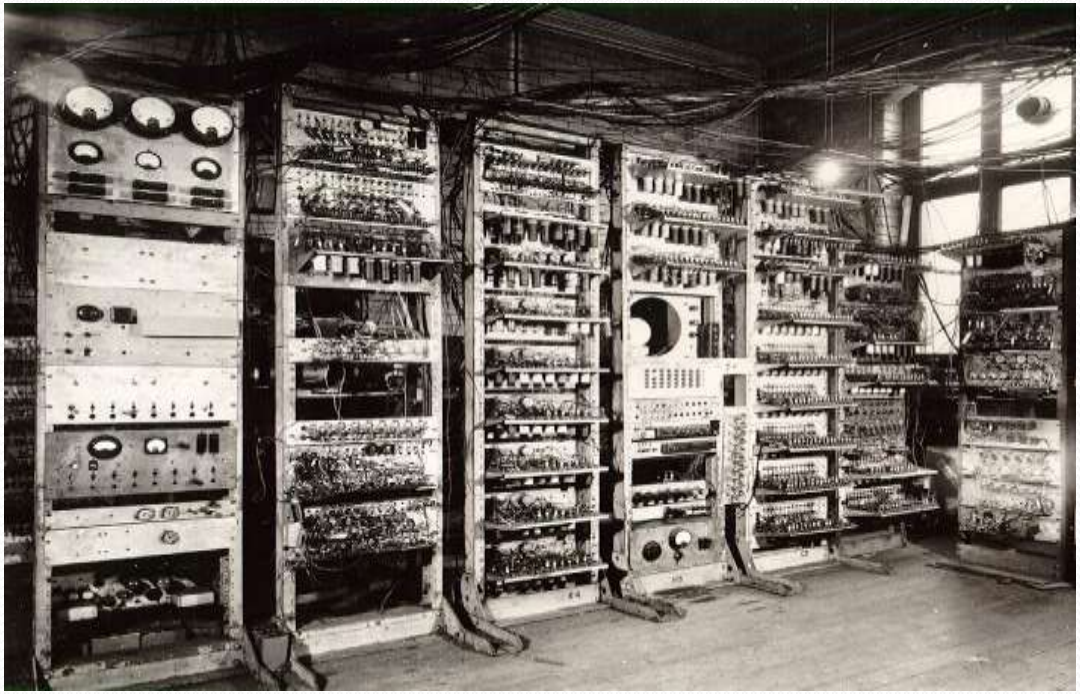
Babbage's Difference Engine

- By 1822 the English mathematician ***Charles Babbage*** was proposing a steam driven calculating machine the size of a room, which he called the ***Difference Engine***.
- This machine would be able to compute tables of numbers, such as logarithm tables.



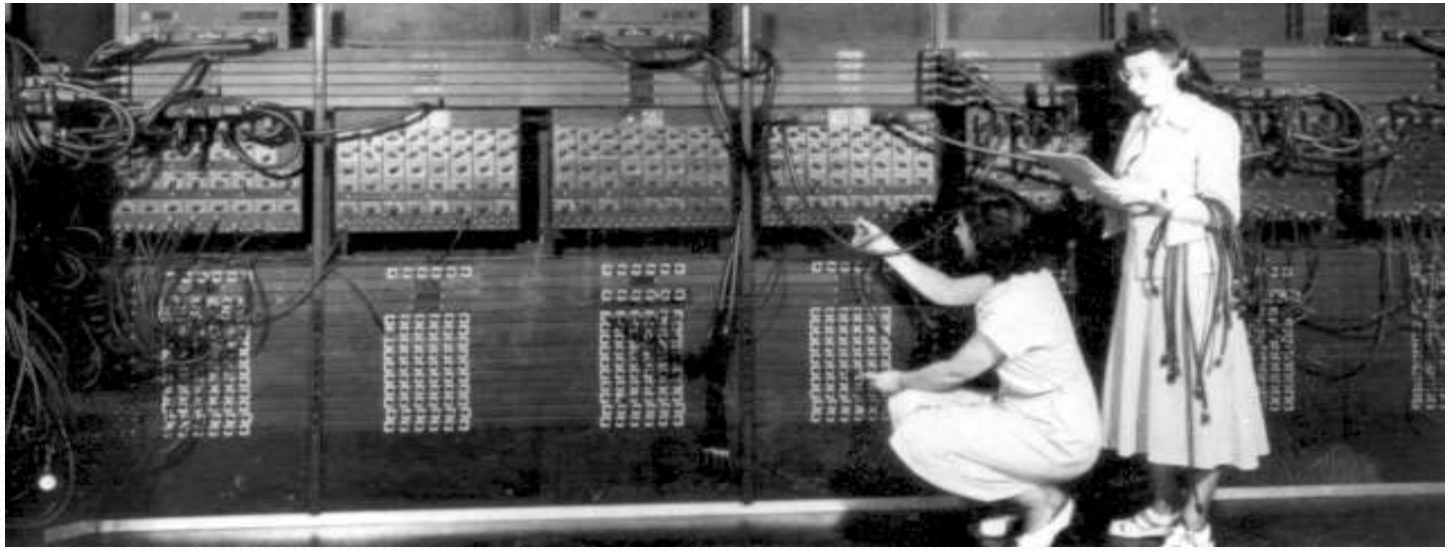
Mark 1

- The MARK 1 computer was made in 1944.
- This is a special step in computer history. Because MARK 1 is the first automatic digital computer in the world.



Eniac

- The ENIAC computer was very large in size.
- Its technology is ***Vacuum tubes.***
- It was the first general purpose computer.



Univac

- The UNIVAC computer was made in 1951.
- This computer was faster and smaller than ENIAC and Mark 1 computer.

STEP TO THE MODERN computer

Computer Generations

- 1st Generation - Vacuum tubes
- 2nd Generation - Transistors
- 3rd Generation - IC(Integrated Circuits)
- 4th Generation - Micro Processor
- 5th Generation - Artificial intelligence

First Generation Computers (1940s-1956)

- Generally, the computers built during the World War II era are known as the first generation computers.
- These are considered the first computers, and were extremely different from the computers we see today.
- They were designed for a specific task.
- These primitive computers relied on vacuum tubes and magnetic drums.
- The 1st generation computers were also extremely slow.

First Generation Computer

Second Generation Computers (1956-1963)

- The computers built in the 1950s and 1960s are considered the 2nd generation computers.
- These computers make use of the transistors invented by Bell Telephone laboratories.
- They had many of the same components as the modern-day computer
- For instance, 2nd generation computers typically had a printer, some sort of tape or disk storage, operating systems, stored programs, as well as some sort of memory.
- These computers were also generally more reliable and were solid in design.

Second Generation Computers

Third Generation Computers (1964-1971)

- The 3rd Generation Computers were generally much smaller in size than the 2nd and 1st generation computers.
- This is because these newer computers made us of integrated circuits and semiconductors
- 3rd generation computers also contained operating systems, which acted as overseers to the performance of a computer and which allowed computers to run different programs at once.
- Another function of operating systems is to make sure everything is flowing smoothly inside the computer.
- The 3rd generation computers made the transition from transistors to integrated circuits and from punch cards to electronic computer systems.

Third Generation Computer

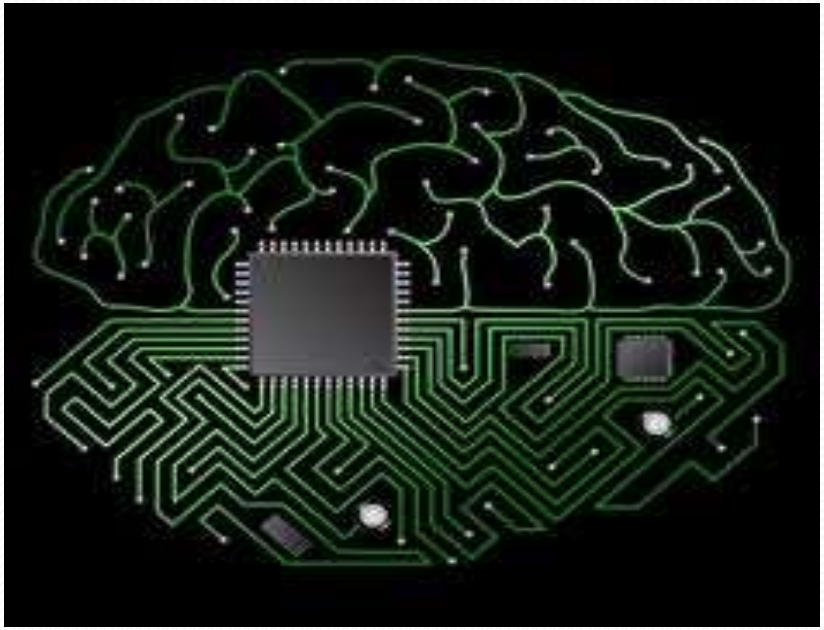
Fourth Generation Computers (1971-Present)

- The 4th generation computers are marked by the usage of integrated circuits and microprocessors.
- Computers became smaller and smaller, and their prices became lower and lower.
- Millions of components could be placed onto a single silicon chip.
- Computers became more efficient and more reliable, and they could perform more and more operations.
- They began to catch the eye of the general public, and soon more sophisticated software and equipment were designed.
- Networks became commonplace, and the whole world was connected by the Internet and by the World Wide Web.

Fourth Generation Computers

Fifth Generation (Present and Beyond)

- Fifth generations computers are only in the minds of advance research scientists and being tested out in the laboratories.
- These computers will be under Artificial Intelligence(AI)
- Many of the operations which requires low human intelligence will be perfomed by these computers.
- Parallel Processing is coming and showing the possibiliy that the power of many CPU's can be used side by side,
- Computers will be more powerful than thoes under central processing.
- Advances in Super Conductor technology will greatly improve the speed of information traffic.



Fifth Generation computer

Contents

- **What is Computer Hardware?**
- **Processing Hardware?**
- **Processor?**
- **Memory?**
- **Input device?**
- **Output devices?**
- **Storage devices?**

What is hardware?

- **HARDWARE IS THE PHYSICAL COMPONENT OF A COMPUTER SYSTEM.**
- **IT REFERS TO THE ELECTRICAL PARTS AND DEVICES THAT MAKE UP A COMPUTER.**
- **Generally, hardware is categorized according to the five basic operation it performs:**

  Input devices *(we use to send data to computer processor/memory)*

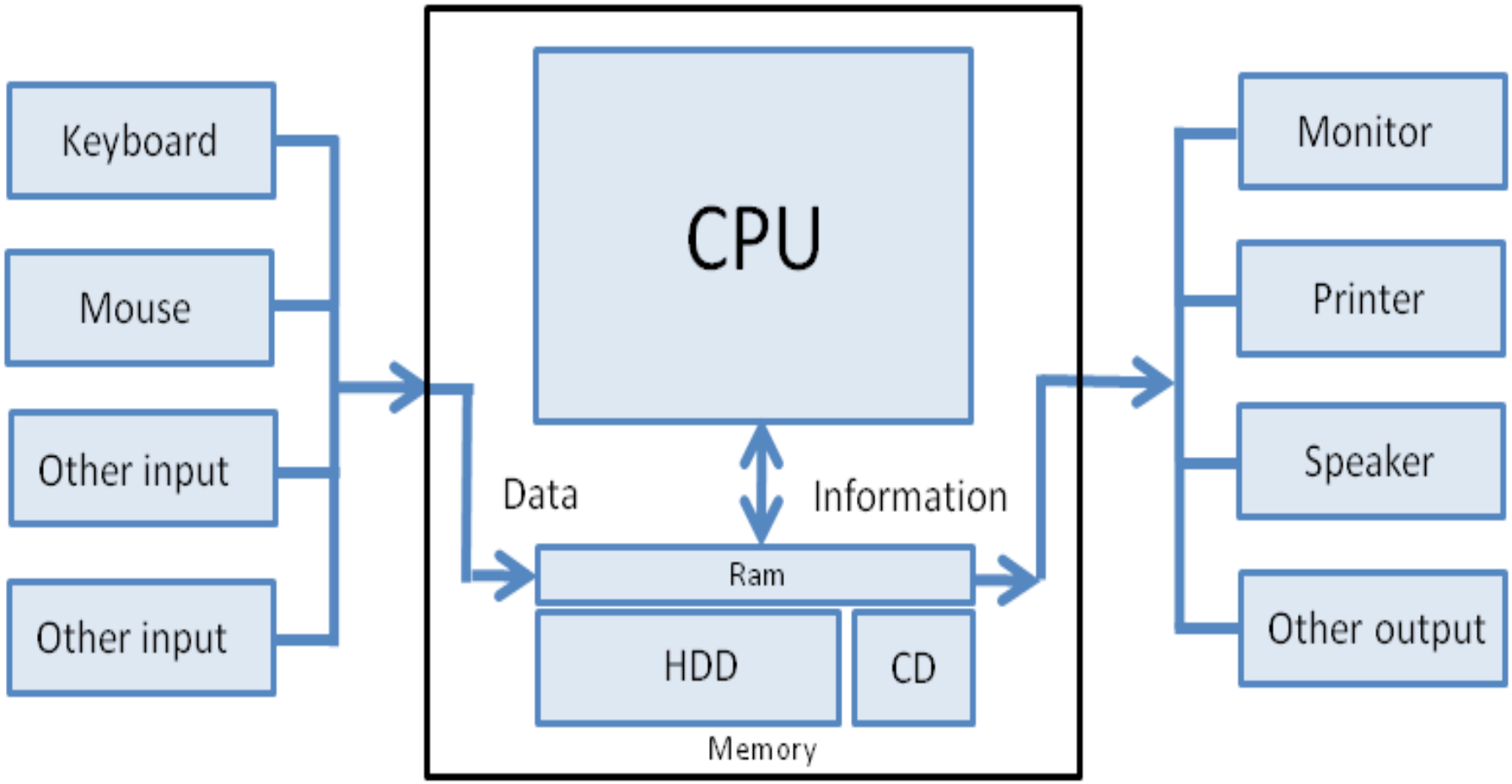
  Processors *(fetch, decode and execute data into information)*

  memory *(it holds data/instructions that CPU needs)*

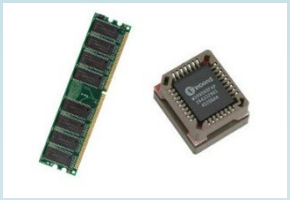
  Output devices *(display information/results)*

  Secondary storage devices *(Store data/information for later use)*

Computer System Hardware



What is processing & Processing hardware?

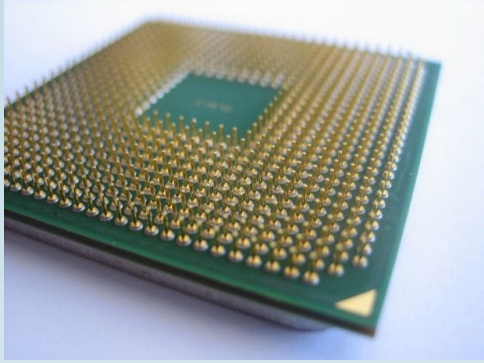


- **THE PROCEDURE THAT TRANSFORMS RAW DATA INTO USEFUL INFORMATIN IS CALLED PROCESSING,**
- **THE PROCESSOR AND THE MAIN MEMORY DEVICES ARE THE PROCESSING HARDWARE.**

- **The processor also known as the CPU (central processing unit) interprets and executes instructions.**

- **The basic function of a CPU is to fetch, decode and execute instructions held in ROM or RAM.**

What is the processor?



- **THE DEVICE THAT INTERPRETS AND EXECUTES INSTRUCTIONS. ALSO CALLED THE MICROPROCESSOR.**
- **It is called the brain of the computer,**
- **The faster the speed of the processor, the faster the execution of instructions.**

What is the processor?

A **central processing unit** *(***CPU***) is the electronic circuitry that carries out the instructions of a computer program by performing the basic arithmetic, logical, control and input/output (I/O) operations.*

Microprocessors must perform the following activities:

- *Provide temporary storage for addresses and data*
- *Perform arithmetic and logic operations*
- *Control and schedule all operations.*

Some examples of processors (CPU)

- *Intel CPU's = Celeron, Pentium III, Pentium 4; from 500 MHz – 3.0 GHz*

- *Apple/Motorola CPU's = Power PC G3, G4; from 500 MHz - 700 MHz*

- *AMD CPU's = K6, K7, Duron, Athlon; 500 MHz - 1.5 GHz*

What is memory?

- **In computing, memory refers to the physical devices used to store programs (sequences of instructions) or data. i.e. Text, Images, Videos etc.**

- **Computer memory is the storage space in computer where data is to be processed and instructions required for processing are stored.**

Memory is of three types

- *Cache Memory*
- *Primary Memory/Main Memory*
- *Secondary Memory*

Cache Memory

- *The cache is a smaller, faster memory which stores copies of the data from frequently used main memory locations (RAM).*
- **It acts as a buffer between the CPU and main memory.**
- **It is used to hold those parts of data and program which are most frequently used by CPU.**
- **Computer microprocessor can access cache memory more quickly than it can access regular RAM.**

Primary Memory (Main Memory)

It is divided into two subcategories ROM and RAM.

- **The computer has a ROM (Read only memory) which is used to store the boot program and other low-level information that enable the computer to start up and to recognize its hardware parts.**

- **ROM permanently store its data even if the computer is turn off.**

- **ROM is called non-volatile memory**

Read Only Memory (ROM)

- **The other major function of the BIOS is to identify the boot device (CD-ROM, floppy disk or hard disk) and transfer the operating system code to RAM.**
- **It contains information about its hardware devices.**
- **It is faster then Secondary Memory.**

Random Access Memory (RAM)

- **The area in a computer in which data is stored for quick access by the processor (CPU).**
- **Data is held in the RAM is erased when the computer is reset or the power is turned off.**
- **RAM is also called read/write memory or Auxiliary Memory.**
- **Computer cannot run without Primary Memory (RAM/ROM)**

Random Access Memory (RAM)

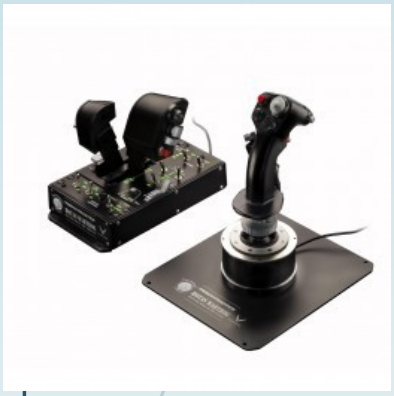
- **RAM is a volatile memory, where stored information is lost if computer is turn off.**

What are input devices?

INPUT HARDWARE ARE USED TO ENTER DATA INTO A COMPUTER BY ENCODING VIA KEYBOARD, DIRECT READING THROUGH SCANNERS AND POINTING DEVICES LIKE THE MOUSE.

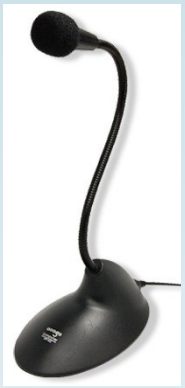
- Input hardware converts data, e.g.. text, image, drawings into a form that a computer can understand and use.

Input Devices



joystick

mouse



mic

camera

touch tablet

hand-held scanner

keyboard

flatbed scanner

Output devices

- **HARDWARE USED TO DISPLAY/ PRODUCE THE OUTPUT OF THE COMPUTER SYSTEM AFTER PROCESSING DATA**
- **The output of computer processing is the usable information that the user requires.**
- **This information can be presented to the user in a variety of forms, depending on the output device.**

Output Devices

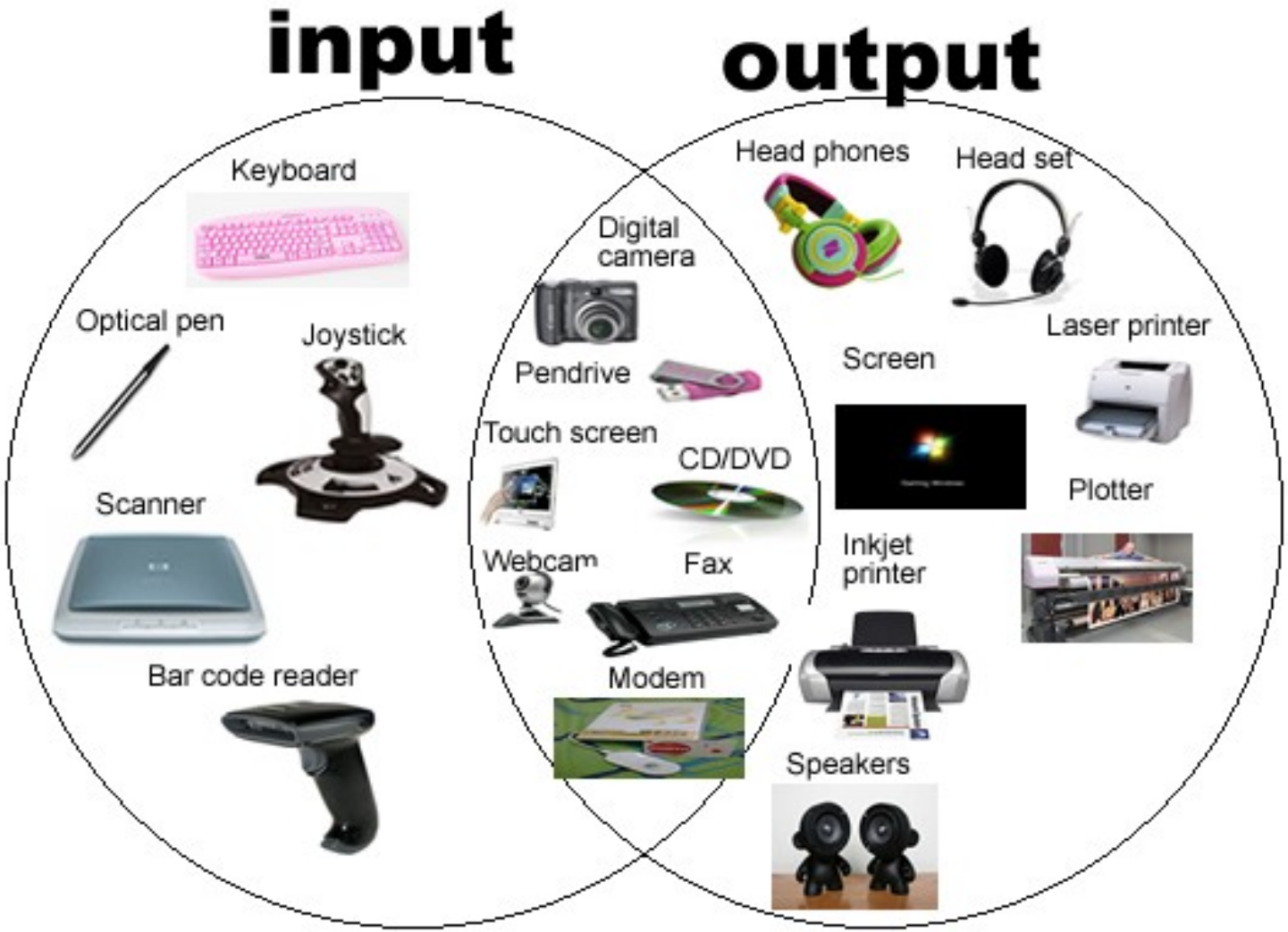
Speakers

Multimedia Projector

monitor

laser printer

Input & Output Devices



What are storage devices?

A data storage device is a device for recording (storing) information/data.

The hardware used to store data for future use are called storage devices.

- *These devices may be found inside or outside the computer.*
- *There are different kinds of storage devices.*

Examples of storage devices

- *Magnetic: Hard disk, Floppy disk, Flash Drive, External Hard Drive, Memory Cards.*
- *Optical--CD-ROM, DVD (Digital Versatile Disk)*

Hard disk

- *The hard disk is the mass storage device for software applications and data files.*
- *It provides a semi-permanent storage place for data. At present hard disks have high capacities.*
- *For the PC users, hard disks ranging from 80GB to 1TB or 1 PB of storage space*
- *Big companies and corporations can go as high as Peta Bytes or Zeta Bytes of storage space.*

What are CD-ROMs?

- **CD-ROMS (COMPACT DISC READ ONLY MEMORY) ARE OPTICAL STORAGE DEVICES. THEY READ AND WRITE DATA WITH THE HELP OF LASERS.**

- *CD-ROM can store up to 650MB to 700 MB of data.*

CD-R and CD-RW

- *CD-R (CD-Recordable) are discs used to record data. Data recorded in a blank CD-R can not be rewritten.*

- *Data written in CD-RW (CD-Read Write) can be erased and rewritten without a lost of storage space just like a hard disk drive or USB.*

DVD and rewritable DVD

- *DVD (Digital Versatile Disc): are optical discs share the same overall dimensions of a CD, but have significantly higher capacities.*
- *DVD+RW. allow data storage and recording digital video onto 4.7 GB.*
- *However rewritable DVD is still in its infancy stage.*


Thank
You