

Chapter 1 :



Informatics

Practices

**Class XI (As per
CBSE Board)**

An illustration of a laptop computer with a white body and a black keyboard. The screen is tilted back and displays the text "Computer System Overview" in a bold, red, sans-serif font. The background of the screen is a light orange color. The laptop is set against a background of orange binary code (0s and 1s) scattered across the page.

**Computer
System
Overview**

A purple starburst graphic with multiple points, containing the text "New Syllabus 2018-19" in a blue, sans-serif font.

**New
Syllabus
2018-19**

Visit : python.mykvs.in for regular updates

Introduction

A computer is an electronic device, under the control of instructions stored in its memory that can accept data (input), process the data according to specified rules(Program), produce information (output), and store the information for future use

Data vs Information

Data are raw numbers or other findings which, by themselves, are of limited value.

Information is data that has been converted into a meaningful and useful context.

Computers are being used extensively nowadays in everyday life/every field In the form of laptop, desktop, smartphone,gadgets etc.

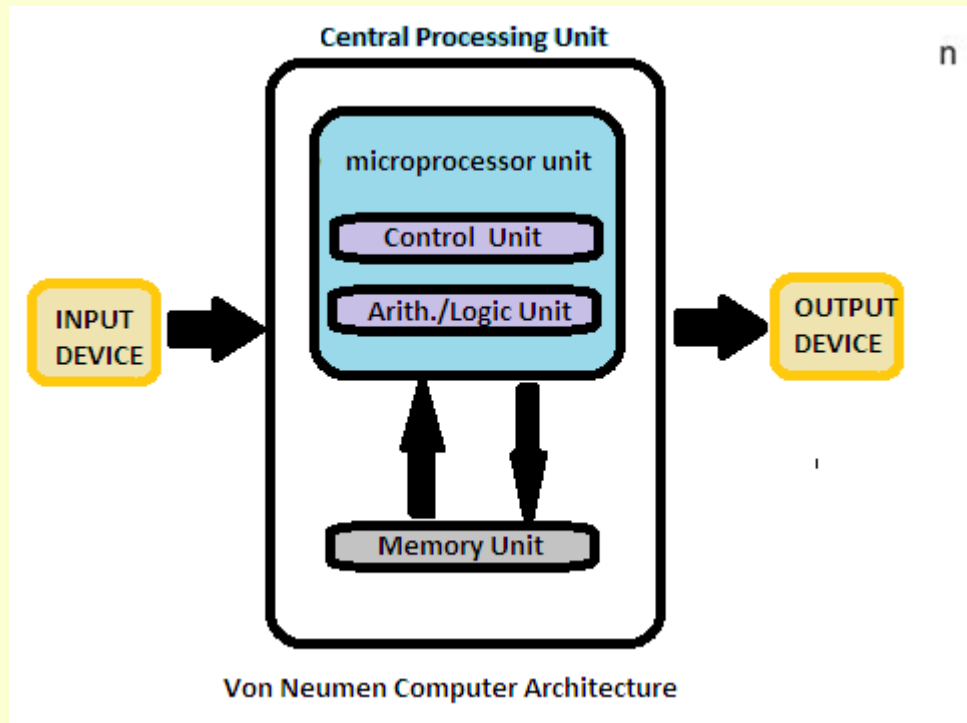
Functionalities of a computer

Any digital computer performs five functions in gross term.

1. Take data as input
2. Stores data/instructions
3. Process those stored data
4. Generate the output
5. Control all above steps

Basic Computer Organization

Functional components of a computer



Basic Computer Organization

Input/Output Units

Input Unit

A device through which data and programs from the outside world enter the computer system.

Suggest –any 3 name of input devices.

Output unit

A device through which results stored in the computer memory are made available outside the computer system.

Suggest –any 3 name of output devices.

Basic Computer Organization

Control Unit

Control unit

It organizes the computer to work computer as single unit

Arithmetic/Logic Unit

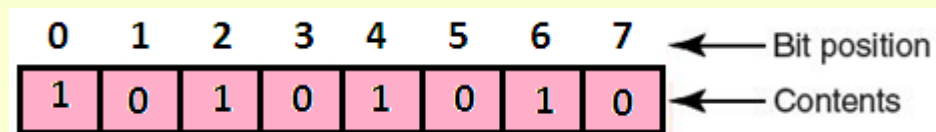
Performs basic arithmetic operations such as addition and subtraction
Performs logical operations such as AND, OR, and NOT. Most modern ALUs have a small amount of special storage units called **registers** that can be accessed faster than main memory.

Memory

A collection of cells, each with a unique physical address

Most computers are byte-addressable

Cell at address **11111110** contains 10101010



Basic Computer Organization

Memory Units

UNIT	STORAGE	ABBREVIATION
Bit	Binary Digit, Single 1 or 0	B
Nibble	4 bits	-
Byte/Octet	8 bits	B
Kilobyte	1024 bytes	KB
Megabyte	1024 KB	MB
Gigabyte	1024 MB	GB
Terabyte	1024 GB	TB
<u>Petabyte</u>	1024 TB	PB
<u>Exabyte</u>	1024 PB	EB
<u>Zettabyte</u>	1024 EB	ZB
<u>Yottabyte</u>	1024 ZB	YB

Basic Computer Organization

RAM and ROM

Random Access Memory (RAM)

Memory in which each location can be accessed and changed

Read Only Memory (ROM)

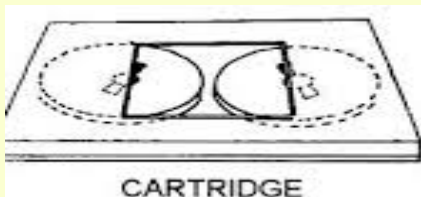
Memory in which each location can be accessed but *not* changed

RAM is volatile, ROM is not

Secondary Storage Devices

Magnetic Tape

mass auxiliary storage device

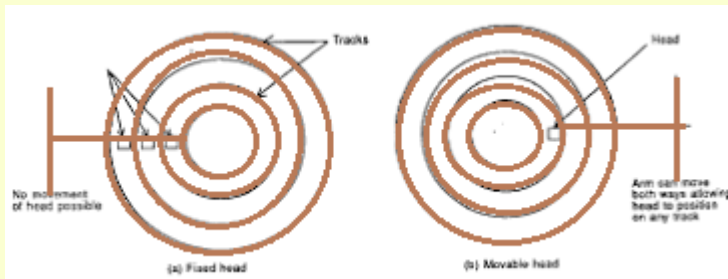


Basic Computer Organization

Secondary Storage Devices

Hard disk

Fixed Head HDD / Movable head HDD



A hard disk is a set of stacked disks. Each disk has data recorded electromagnetically in concentric circles, or tracks, on the disk

Hard Drive Types

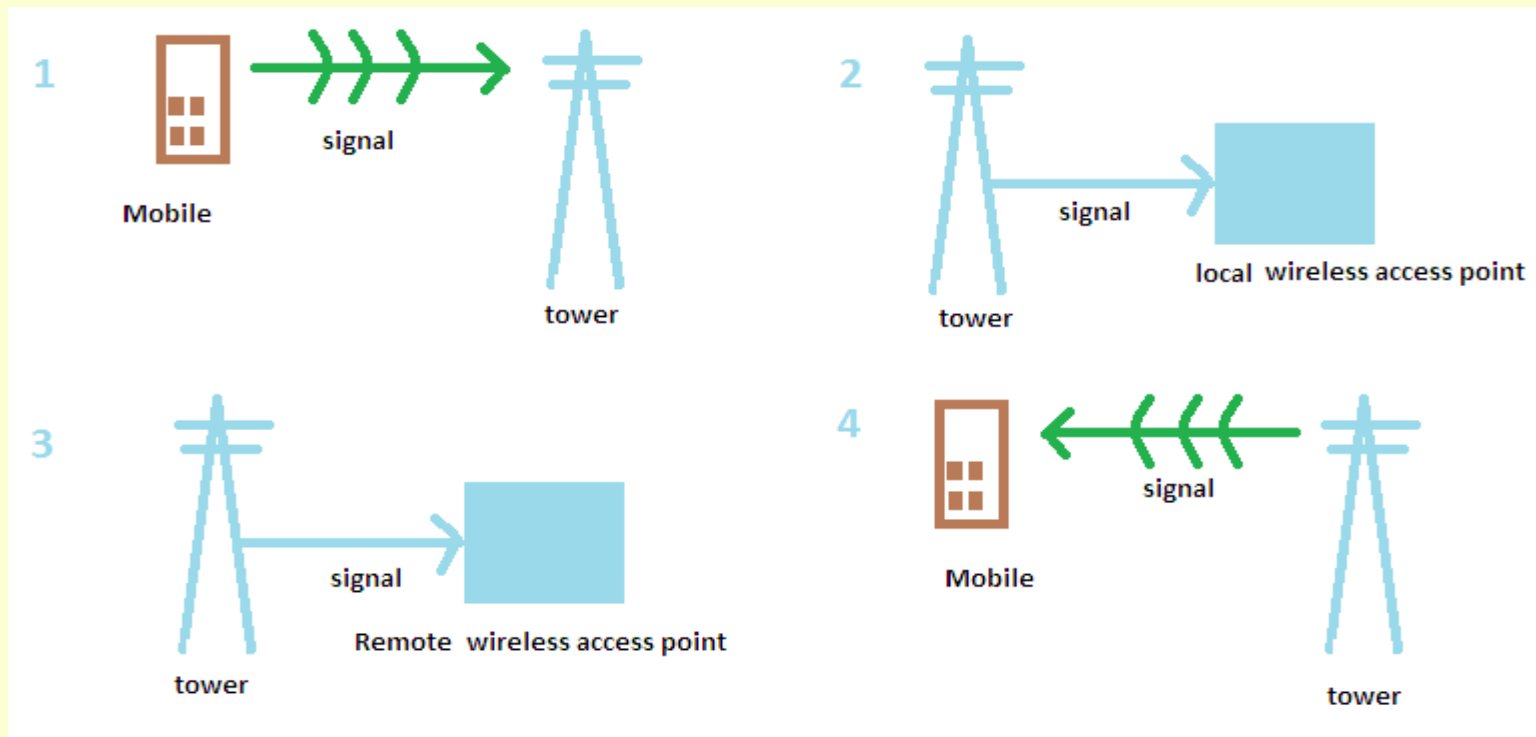
1. Parallel Advanced Technology Attachment (PATA)
2. Serial ATA (SATA)
3. Small Computer System Interface (SCSI)
4. Solid State Drives (SSD)

Upto 12 TB sized HDD is available in the market

Basic Computer Organization

Mobile System

a **Mobile Phone** is essentially a two-way radio, consisting of a radio transmitter and a radio receiver.



Basic Computer Organization

Mobile Phone Components

1. A circuit board as brains of the phone
2. An antenna
3. A liquid crystal display (LCD)
4. A keyboard / A touch screen
5. A microphone
6. A speaker
7. A battery

Basic Computer Organization

Different types of touchscreen

1. TFT (Thin Film Transistor) LCD display is used for better image quality and high resolution. Since they are cheap to manufacture, they are found in budget phones usually.

2. IPS (In-Place Switching) LCDs are somewhat the advanced version of TFT LCDs in a way that they offer improved displays and are more battery friendly. Hence, they are found in high end phones.

3. RESISTIVE AND CAPACITIVE

There are generally two types of touchscreen LCD displays; Resistive and Capacitive. Resistive touchscreen has two layers of conductive material with a small gap between them while capacitive touchscreen consists of a layer of glass coated with transparent conductor. Capacitive screens tend to be more responsive than resistive screens and are therefore found in high end phones mostly.

4. OLED (Organic Light Emitting Diode) is a newer technology used in mobiles and monitors for display. They are better than LCDs because they offer fast response times, wider viewing angles and higher brightness. AMOLED (Active-Matrix Organic Light-Emitting Diode) and SUPER AMOLED displays are types of OLED display. OLED types include passive-matrix OLEDs, active-matrix LEDs and transparent OLEDs

Basic Computer Organization

Smartphone Batteries and Their Types

Battery plays a huge role in any smartphone

Lithium Polymer batteries are the most advanced batteries available in the market right now. They are made up of plastic instead of metal, which makes them usable on a smartphone of any type. The Lithium Polymer batteries do not suffer from memory effect and offer 40 percent more battery life than others

Lithium ion batteries are advanced and allow for a high charge capacity based on the size and weight of the battery. However, these these are slightly expensive. these lithium ion batteries will not remember the charge cycle, and as a result, the battery capacity will not be reduced.

Nickel Cadmium These are the cells that suffer from memory effect. And, the memory effect will result in reducing the capacity of the battery and its lifespan as well.

Nickel Metal Hydride batteries are kind of an upgrade to the Nickel Cadmium batteries, and they boast of the same size as the latter. Nickel Metal Hydride batteries offer 30 to 40 percent more battery juice than the others

Battery Size : Measured in mAh. like 2000 mAh, 4000 mAh etc.

Basic Computer Organization

DEVELOPMENT OF COMPUTER

Abacus is known to be the first mechanical calculating device. Which was used to be performed addition and subtraction easily and speedily? This device was a first develop Ed by the Egyptians in the 10th century B.C, but it was given its final shape in the 12th century A.D. by the Chinese educationists.

NAPIER'S BONES John Napier's of Scotland invented a calculating device, in the year 1617 called the Napier Bones. In the device, Napier's used the bone rods of the counting purpose where some no. is printed on these rods. These rods that one can do addition, subtraction, multiplication and division easily.

Pascal's calculator In the year 1642, Blaise Pascal a French scientist invented an adding machine called Pascal's calculator, which represents the position of digit with the help of gears in it.

Leibniz Calculator In the year 1671, a German mathematician, Gottfried Leibniz modified the Pascal calculator and he developed a machine which could perform various calculations based on multiplication and division as well.

Analytical Engine In the year 1833, a scientist from England known to be Charles Babbage invented such a machine. Which could keep our data safely? This device was the first mechanical computer. Charles Babbage is also known as the father of the computer.

Basic Computer Organization

GENERATION OF COMPUTER

Generatio	Year	Characteristic
1st	1944-59	Use Valves (Vacuum tubes)
2nd	1959-64	Use transistors
3rd	1964-75	Large Scale Integrated Circuits
4th	1975-	Very Large Scale Integrated Circuits
5th	Under development	"Artificial Intelligence" based computers