



# S.P.M College, Udaipur

Bachelor Of Computer Application (BCA)

Part -1

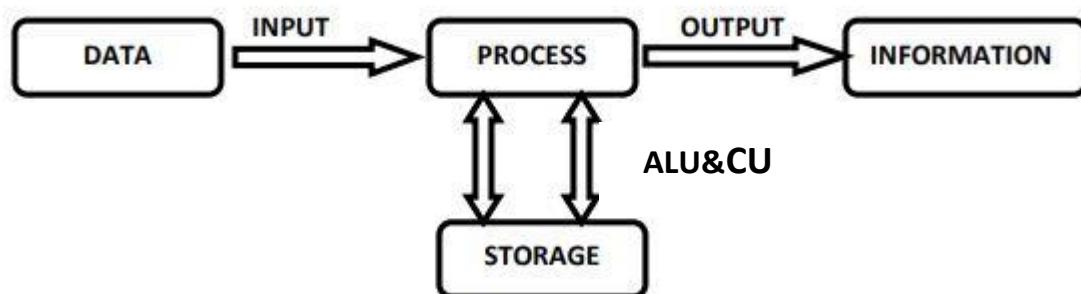
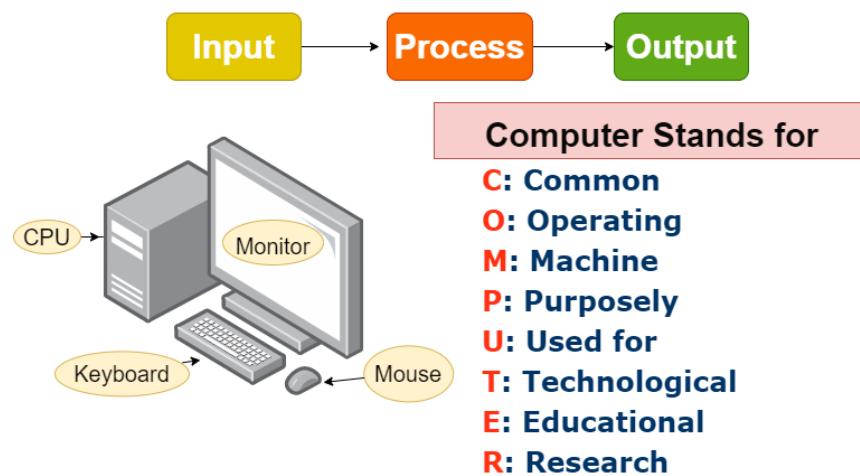
– Hira Kumar

## Computer Fundamentals

### Introduction to computer

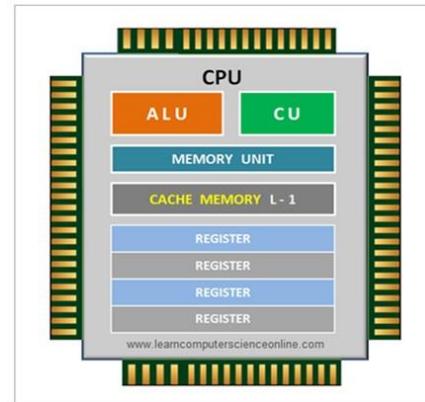
#### 1. What is Computer ?

- A computer is an electronic device which takes input from the user, processes it and gives the output as per user's requirement.



**Input Device**

**Output Device**



## Process Device & Unit

- The word “computer” is comes from the word “TO COMPUTE” means to calculate.
- A computer is normally considered to be a calculation device which can perform the arithmetic operations very speedily.
- Example of Computer** – voltmeter, smart Watch, Mobile, Speedometer, desktop, laptop, Calculater, ECG, Digital Fuel Pump...



**Digital Voltmeter**

- Input - Voltage
- Process - Process through ADC convertor
- Output - Digital Number Show



**ECG (Electro cardiogram) machine**

- Input - patient ke body se heart ke electrical signals (electrodes ke through)
- Process - Amplify + filter + convert + analyze
- Output - ECG graph (waves), heart rate, printout

## 2. Characteristics / Feature / Advantage of Computer

- Speed (गति)** - The computer can process data very fast at the rate of millions of instructions per second. While talking about computer speed we do not talk in terms of seconds & milliseconds. can talk in microseconds ( $10^9$  part of a second.)
- Accuracy (त्रुटीरहित)** - The accuracy of a computer is very high. Errors can occur by the computer. But these are due to human weakness, due to incorrect data, but not due to the technological weakness.

- iii. **Storage Capacity (भंडारण क्षमता)** - Computer can store and recall any amount of data because of its high storage capacity of its storage devices (Hard disk, floppy disk, cd, magnetic tape).
- iv. **Secrecy (गोपनीयता)** - Leakage of information is reduced by creating login system with password protection.
- v. **Diligence (सक्षमता)** - It can continuously work for hours without creating any error, external environment & without grumbling/noise.
- vi. **Versatile (बहुउद्देशीय)** – Different types of work are done with the help of computers. Modern computers have the ability to do different types of work simultaneously in different fields/area.
- vii. **Reliability (विश्वनीयता)** - Computers are more reliable than human beings. Computers always produce exact results.
- viii. **Automatic (स्वः संचालित)** - Computers are automatic machines because it works by itself without human intervention. Once it started on a job they carry on until the job is finished.
- ix. **Multi-tasking (अनेक काम)** - A human being cannot do more than one task at the same time without losing his concentration or with his full efficiency. But for a computer, it is a normal thing to do many tasks simultaneously without compromising in its efficiency.
- x. **Consistency (स्थिरता)** - Suppose you make a set of calculations, and the result displayed will be the same result you saw a hour before/days before when you made the same calculations. Any action performed by a computer will always maintain consistency.

### **3. Disadvantage of computer**

- i. **Physical and Mental Health Risks:** Prolonged use of computers can lead to physical and mental health problems. This includes stiff joints, back pain, neck pain, eyestrain, headaches, sleeping disorder, and fatigue.

- ii. **Security Risks:** Computers are vulnerable/unsafe to viruses, malware, and external threats, thus, making them prone to security risks. It is important to install various antivirus and antimalware software to protect the computers from such threats.
- iii. **Privacy Risks:** The increasing use of computers has also created several privacy risks like identity theft, data breaching/misuse, and so on. It is recommended to use a firewall and update security software regularly to protect the data stored in computers.
- iv. **Costly:** Computers can be very costly and the price of repairing or taking care of a computer can add up quickly. Moreover, computers require up-gradation frequently to make use of the latest technology.
- v. **Can Reduce Jobs :** As computers become smarter and more capable, they also replace the need for many jobs.
- vi. **Power Consumption :** Computer not open without electricity, so use more power consumption.
- vii. **No I.Q.** - A computer is not a magical device; it processes no intelligence of its own.

## **4. Computer Applications / Uses of Computer**

- i. **Banking** - In the banking sector, computers are used to store details of customers and conduct transactions, such as withdrawal and deposit of money through ATMs.
- ii. **Home** - Computers are used at homes for several purposes like online bill payment, watching movies or shows at home, home tutoring, social media access, playing games, internet access, etc.
- iii. **Medical Field** - Computers are used in hospitals to maintain a database of patients' history, diagnosis, X-rays, ECG, live monitoring of patients, etc.

- iv. **Entertainment** - Computers help to watch movies online, play games online; act as a virtual entertainer in playing games, listening to music, Photo Editing, Video Editing etc.
- v. **Industry** - Computers are used to perform several tasks in industries like managing inventory, designing purpose, creating virtual sample products, interior designing, video conferencing, etc. Online marketing has seen a great revolution in its ability to sell various products.
- vi. **Education** - Computers are used in education sector through online classes, online examinations, referring e-books, online tutoring, etc.
- vii. **Government** - In government sectors, computers are used in data processing, maintaining a database of citizens and supporting a paperless environment.
- viii. **Science and Engineering** - Computers with high performance are used to stimulate dynamic process in Science and Engineering. Supercomputers have numerous applications in area of Research and Development (R&D).
- ix. **Military/defence** - Computers have contributed in controlling aeroplanes, radars, missiles and making modern equipment.
- x. **Press** – Computer use to print Newspaper, Book print.....
- xi. **Transport** – Computers have provides many works – car navigation, Train control, Mapping, Online Booking, Weather forecast.
- xii. **Communication** - Telephone or internet have made great achievements in the field of communication.

## **5. Comparison/Different b/w Computer & Human brain**

## Brain



## Computer



### BASIS FOR COMPARISON

- i. **Construction**
- ii. **Memory growth**
- iii. **Backup systems**
- iv. **Memory power**
- v. **Energy consumption**
- vi. **Information storage**
- vii. **Size and weight**
- /viii. **Transmission of information**
- ix. **Information processing power**
- x. **Input/output**
- xi. **Structural organization**
- xii. **Reliability and damageability properties**

### BRAIN

- Neurons and synapses
- Increases each time by connecting synaptic links
- Built-in backup system
- 100 teraflops (100 trillion calculations/seconds)
- 12 watts of power
- Stored in electrochemical and electric impulses.  
The brain's volume is 1500 cm<sup>3</sup> and weight is around 3.3 pounds.
- Uses chemicals to fire the action potential in the neurons.
- Low
- Sensory organs
- Self-organized
- Brain is self-organizing, self-maintaining and reliable.

### COMPUTER

- ICs, transistors, diodes, capacitors, transistors, etc.
- Increases by adding more memory chips
- Backup system is constructed manually
- 100 million megabytes
- Gigawatts of power
- Stored in numeric and symbolic form (i.e. in binary bits).
- Variable weight and size from few grams to tons.
- Communication is achieved through electrical coded signals.
- High
- Keyboards, mouse, web cameras, etc.
- Pre-programmed structure
- Computers perform a monotonous job and can't correct itself.

=====Hira Kumar=====

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