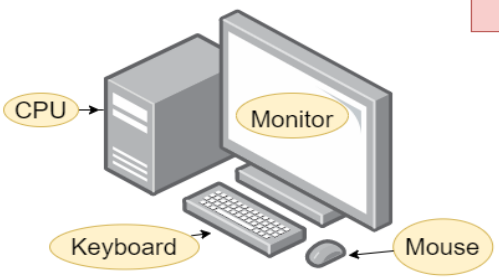
S.P.M College,Udantpuri

Bachelor Of Computer Application (BCA)

Part -3 **– Hira Kumar**

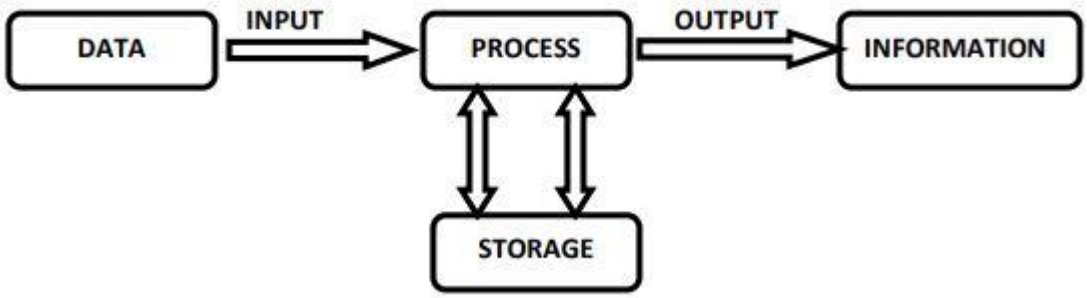
❖ Computer

- **Computer is an electronic machine which take input, process and take output.**
- **Example :-** **input :** **10+20**
  Process: **Addition**
  Output: **30** **(IPO cycle)**



Computer Stands for

C: Common
O: Operating
M: Machine
P: Purposely
U: Used for
T: Technological
E: Educational
R: Research



❖ Data

- Data is any collection of raw, unorganized facts, figures, symbols, or signals that a computer can process, store and transmit.
- **Example :-** alphabets (A-Z, a-z), digits (0-9) and using special characters (+,-.#,$, etc)

❖ Instructions

- Step by step commands telling a computer what to do.
- **Example :-** Add 25+27, Store/save file.

❖ Information

- Processed data that is meaningful and useful (i.e. final result), is called information.
- **Example :-** "The age of Ram is 25".

❖ File

- A file is a named collection of related information that is recorded on secondary storage such as magnetic disks, magnetic tapes and optical disks.

❖ Directory/Folder

- A directory is a container that is used to contain folders and file.
- Example :- J:\Application\bca → file (C++.pdf)

❖Program

- A Set of instruction given to a computer. (कंप्यूटर को क्या करना हैं, कैसे करना हैं, कब करना हैं.....ये सब प्रोग्राम बताता है)
- Example :- Take 2 number by user, again addition and print this result. (this is a program)

❖ Programming

- The Process of written program.

❖ Programming Language

- Those language which communicate with computer.
- **Example:-** C,C++,Java,Python,HTML,CSS,JS,Kotlin,……
- **Two types → (**i) High level language → C,C++, Java,python,php,……
  (ii) Low level language → Machine & assembly language

❖ Algorithm

- An algorithm is a finite, step-by-step set of instructions or rules designed to solve a specific problem or perform a task, taking inputs and producing an output.
- Example:- Sum of two numbers
  - ✓ Step1 → Start
  - ✓ Step2 → Input A,B
  - ✓ Step3 → Sum = A + B
  - ✓ Step4 → Print Sum
  - ✓ Step5 → Stop

❖ Flowchart

- Pictorial image/Visual Diagram of Algorithm in which use standard Shap, symbols and arrows.
- **Common symbol** → Oval = start/stop, Parallelogram = Input/output, Rectange = Processing, Diamond = Decision, Arrow = Flow direction.

Programming Concepts

❖ Variable

- A variable is a name given to a memory location where data is stored.
- Variable value always may be change.
- Example :- int a = 20;

❖ Data Type

- Data type defines what type of data a variable can store.
- Example :

Data type	Use	Example
Int	Integer number	10,20,5,….
Float	Decimal	12.5,…
Char	Single character	‘A’,’5’,….
Double	Large decimal	12.3456,…
Bool	True/false	true

❖ Constant

- A constant is a value that cannot be changed.
- Example :- const int pi = 3.14;

❖ Operator

- Operators perform operations on variables.
- Many types of operators
  - ✓ Airthmetic Operators (+,-, ,/,%,……)
  - ✓ Relational Operators (< > <=, ==, >== !=)
  - ✓ Logical Operators (&&, ||, !)
  - ✓ Assignment operators (=)

❖ Expression

- Combination of Variables,Constants and operators.
- Example :- a+b c-d

❖ Decision Making / Statement

- Decision making is used to choose b/w conditions.
- Types =2 a) If statement (b) if-else

❖ Loop

- Loop is used to repeat statements.
- Types = 3 a) For loop b) While loop c) do while

❖ Comment

- Comments are ignored by compiler.
- Single line comment → // , Multi-line comment → / ..... /

==========HIRA KUMAR==========

Roadmap to Master C++ in 50 Days!

Week 1–2: Basics & Syntax

- Day 1–5: C++ setup, input/output, variables, data types
- Day 6–10: Operators, conditionals (if/else), loops (for, while)

Week 3–4: Functions & Arrays

- Day 11–15: Functions, scope, pass by value/reference
- Day 16–20: Arrays, strings, 2D arrays, basic problems

Week 5–6: OOP & STL

- Day 21–25: Classes, objects, constructors, inheritance
- Day 26–30: Polymorphism, encapsulation, abstraction
- Day 31–35: Standard Template Library (vector, stack, queue, map)

🗓️ Week 7–8: Advanced Concepts

- 🔹 Day 36–40: Pointers, dynamic memory, references
- 🔹 Day 41–45: File handling, exception handling

🎯 Final Stretch: DSA & Projects

- 🔹 Day 46–48: Sorting, searching, recursion, linked lists
- 🔹 Day 49–50: Mini projects like calculator, student DB, or simple game