ARCHITECTURE OF COMPUTER & ITS CHARACTERISTICS

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WHAT IS COMPUTER:-

- A **computer** is defined as an electronic device. It takes input from the user, stores and process the instructions and provide output as per the instructions given to it by the user.

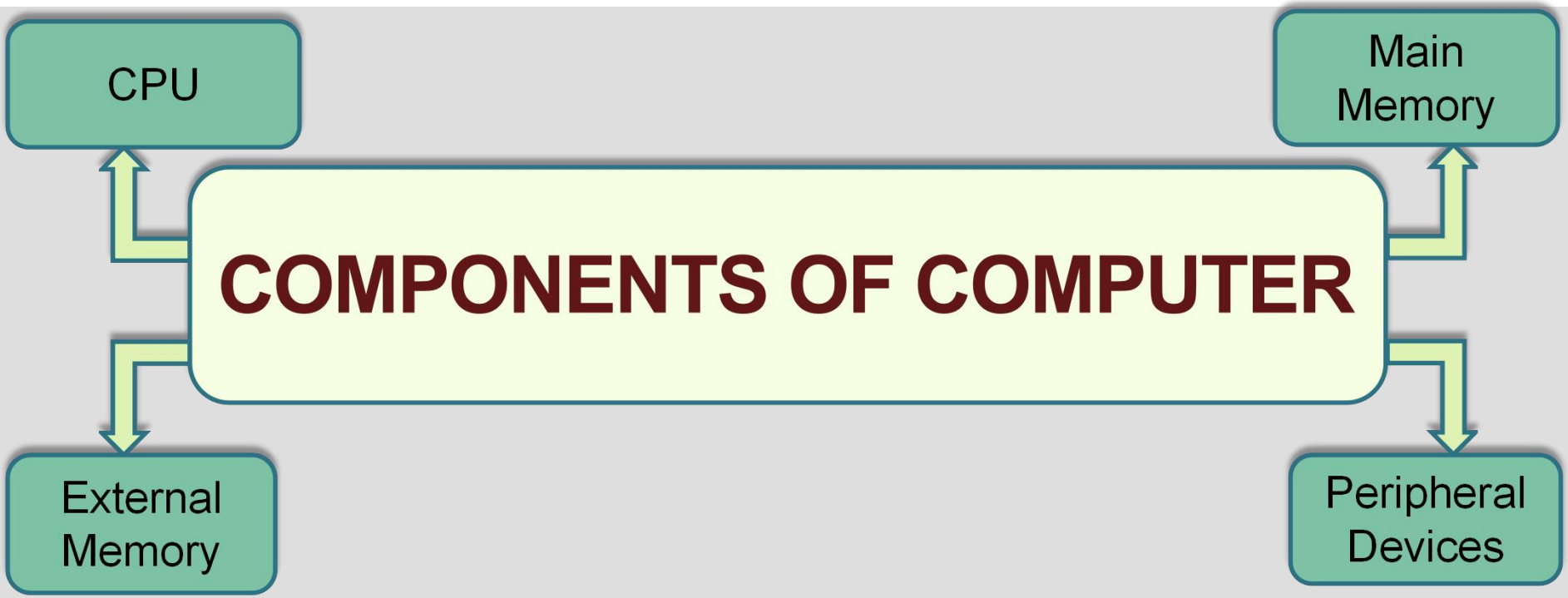
HOW COMPUTER WORKS:-

- A computer cannot think itself. A set of instructions that directs the computer to execute any task is called **Program.** and it is written by the **Programmer.**

Actual instructions vary from program to program.

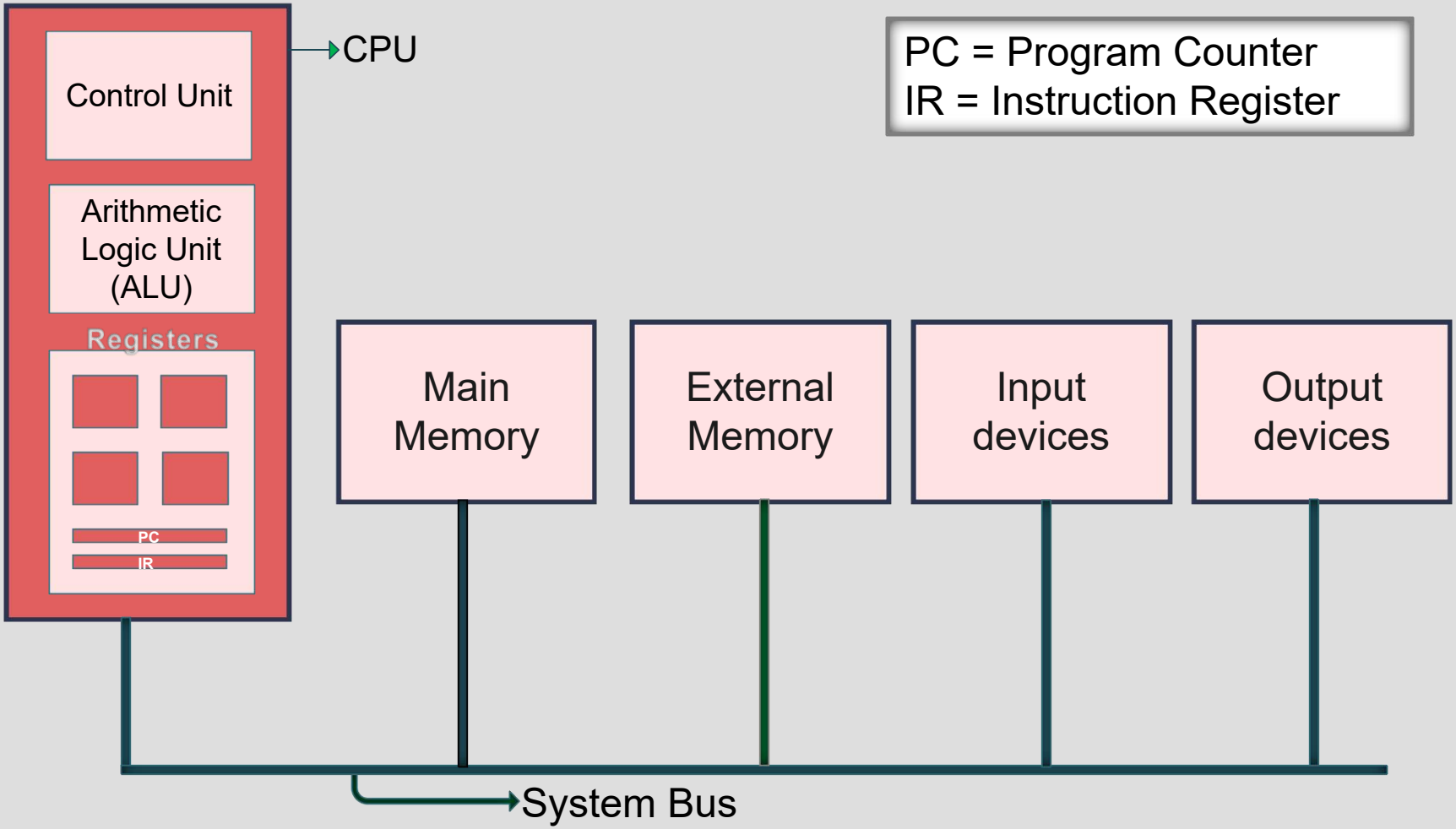
THE I.P.O. CYCLE :-

- **INPUT :-** Input devices feed the computer raw matter, facts or data.
- **PROCESSING:-** The storage of data, numerical comparisons, arithmetic operations are done on the instructions to produce the results (OUTPUT).
- **OUTPUT :-** The program and instructions are sent to the output devices connected with a computer.
- **STORING:-** The processed data is permanently stored in the secondary storage devices.



- **CPU:-** It is the brain and heart of the computer. It overall controls the computer and carries out computation.
- **MAIN MEMORY:-** It is temporary in nature. It holds the instructions and program while the computer is running.
- **EXTERNAL MEMORY:-** It holds the large amount of information. It is used to store the permanent copy of instruction and program.
- **PERIPHERAL DEVICES:-** They are also known as Input/Output devices. It is the device that allows the computer communicate with the outside world.

BLOCK DIAGRAM :-

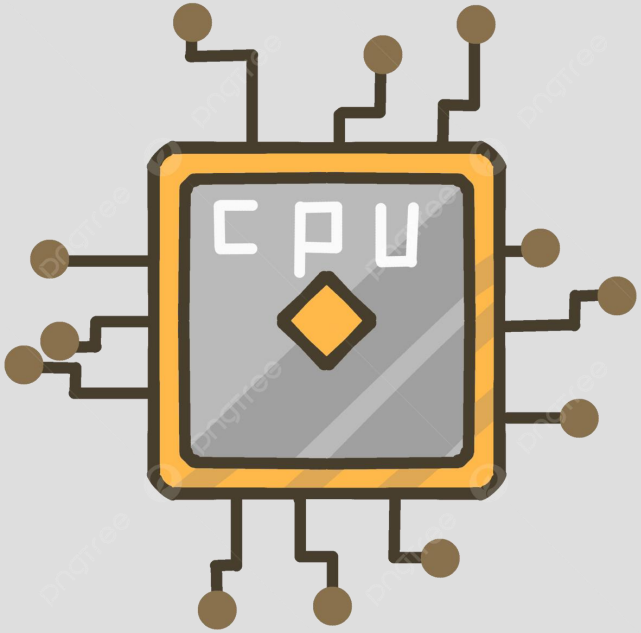


EXPLANATION OF BLOCK DIAGRAM:-

- A Block Diagram is a visual representation of a system that uses simple, labelled blocks that represent single or multiple items, entities and concepts connected by lines to show relationship between them.
- Block diagram allows the communication of information with the component of computer and between the computer.
- **System Bus:-** The speed of the system bus is very important because if it's too slow then the CPU may have the speed restricting by having to wait for the data.
- **Some possible transfer of information are :-**
- The data is transmitted from main memory to the CPU.
- The input devices such as keyboard helps to transfer the information to the main memory.
- The information is transferred from external memory to the main memory.

COMPONENT OF CPU AND THEIR ROLES:-

- **CONTROL UNIT :-** Control Unit control the fetching of instructions from main memory. It interprets and executes the instructions and then process the data to arithmetic logic unit for computation.



- **ARITHMETIC LOGIC UNIT:-** ALU carries out arithmetic operations on integer(whole no.) and floating point(with a decimal point) operands. It also perform simple logical operation on logical operands and are also used to do the numerical comparisons.

REGISTERS AND ITS TYPES :-

- **REGISTERS:-** The registers are small units of memory that Control Unit(CU) and ALU uses for the storage of intermediate results and control information.

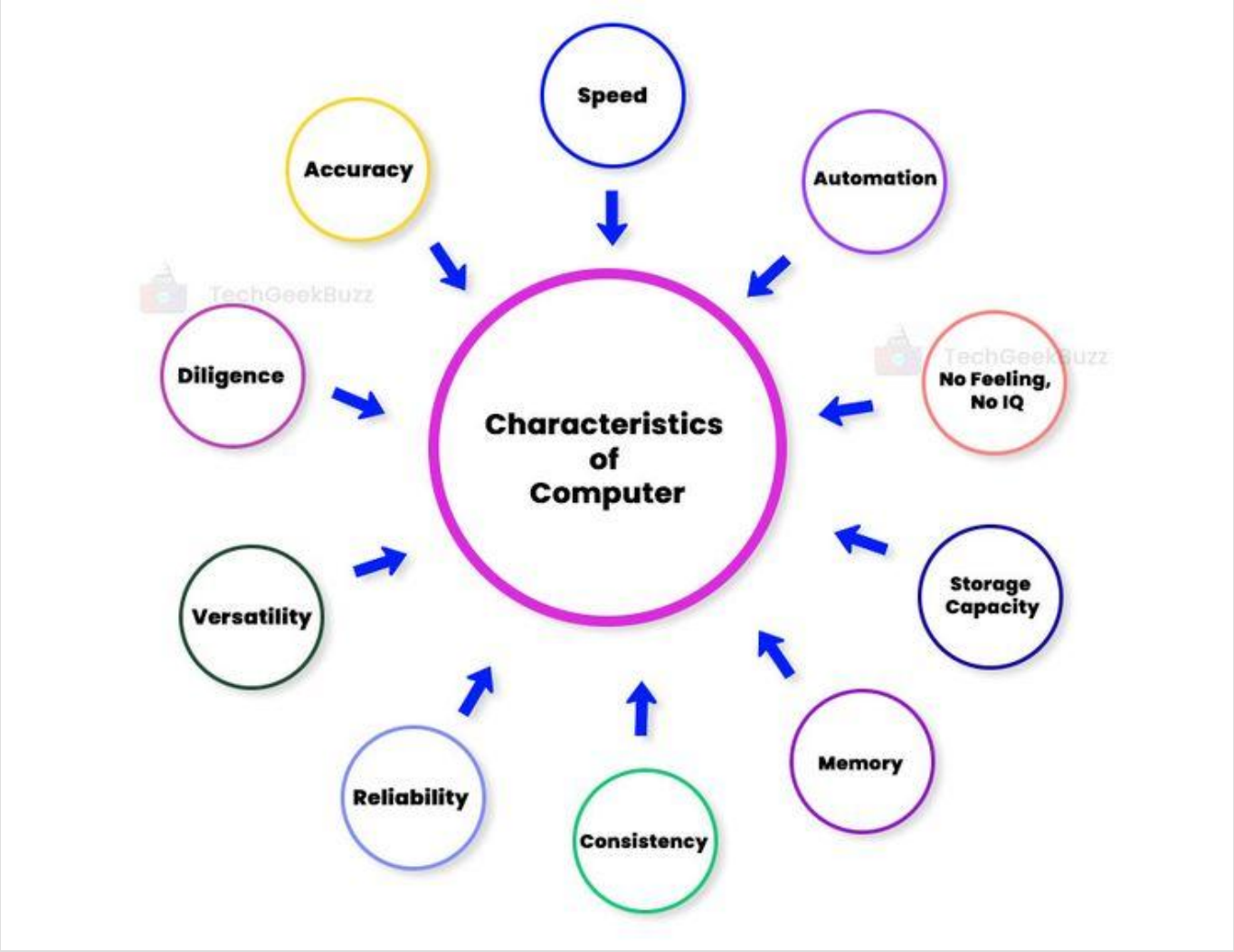
- **GENERAL PURPOSE REGISTER:-** The size of register depends upon the particular computer. Typically there are 160032 general purpose registers.

- **SPECIAL PURPOSE REGISTER:-** Special purpose registers are very important to the computer. There are Program Counter and Instruction Register.

- **PROGRAM COUNTER:-** Program counter holds the address of the next instruction of the program.

- **INSTRUCTION COUNTER:-** Instruction Counter holds the address instruction that are currently being executed.

CHARACTERISTICS OF COMPUTER:-



EXPLANATION:-

- **SPEED:-** A computer perform operations with very high speed. It can process millions of instructions in fraction of seconds. The speed of computer varies from computer to computer. It is basically measured in nanoseconds(10^{-9} seconds) and picoseconds(10^{-12} seconds).

- **ACCURACY:-** Computer system produces accurate results with valid data and instruction. *In simple terms,* One cannot expect correct and accurate results when the instruction set to manipulate the data is incorrect or the data which user is supplying to the computer is wrong.

- **DILIGENCE:-** Unlike human beings, the computer can work continuously without getting tired. It can perform the same task repeatedly with same processing speed. Without the lack of concentration to help use in doing a number of jobs that require a great accuracy.

- **VERSATILITY:-** A computer is a Versatile machine. It can perform a number of jobs at the same time depending upon the instructions fed to it.

- **RELIABILITY:-** Computerized storage of data is much more reliable than the manual storage. We can store the data in computer's storage for a long period of time except until any kind of system failure occurs.

- **LARGE STORAGE CAPACILTY:-** A computer has large storage capacity. It can store large volume of data. We can store any kind of data in computer's storage. This data can be text, picture, sound, video, etc.

- **NO IQ:-** computer has no intelligence of its own. It depends upon user's instructions for any kind of task, Nowadays, some artificial intelligent(AI) has been introduced that helps the computer to take some decisions on its own. E.G. Robots.

- **AUTOMATIC:-** A machine that works itself without any human involvement is said to be automatic machine. Computers are automatic machines; they can work on any given job automatically till it gets finished without any human interference.


THANK YOU