

PROGRAMMING IN C LANGUAGE

UNIT-II

COMPONENTS OF COMPUTER

- *A computer comprises of some basic elements. These includes hardware, software, programme, data and connectivity.*

- *Apart from these elements, a computer system comprises of three basic components and these components are responsible for making computers function.*
- *Every computer system has the following three basic components :*
 - I . *Input Unit*
 - II . *Central Processing Unit*
 - III . *Output Unit*

INPUT UNIT

- *An input device sends information to a computer system for processing and it cannot receive data from another device.*
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- *These components help users enter the data and commands into a computer system.*
 - *Data can be in the form of numbers, words, actions, commands, etc..*
 - *Examples of input unit includes keyboards, mouse, scanners, digital cameras, webcam and microphone etc...*

Input Devices of Computer



Touch screen



Camera



Scanner



Microphone



Mouse



Keyboard



Joystick



Web cam



Track ball

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CENTRAL PROCESSING UNIT(CPU)

- *CPU is also called as central processor or main processor that executes instructions that make up a computer program.*
- *It performs basic arithmetic, logic, controlling and input/output(I/O) operations specified by the instructions in the program.*
- *The computer industry used the term “central processing unit” as early as 1955.*
- *The form, design and implementation of CPUs have changed over the course of time, but their fundamental operation remains almost unchanged.*

- *Principal components of a CPU includes Memory Unit, Arithmetic and Logic Unit and Control Unit.*

a) Memory unit

Once a user enters data using input devices, the computer system stores this data in its memory unit.

This data will now remain here until other components of CPU process it.

The memory unit uses a set of pre-programmed instructions to further transmit this data to the other parts of the CPU.

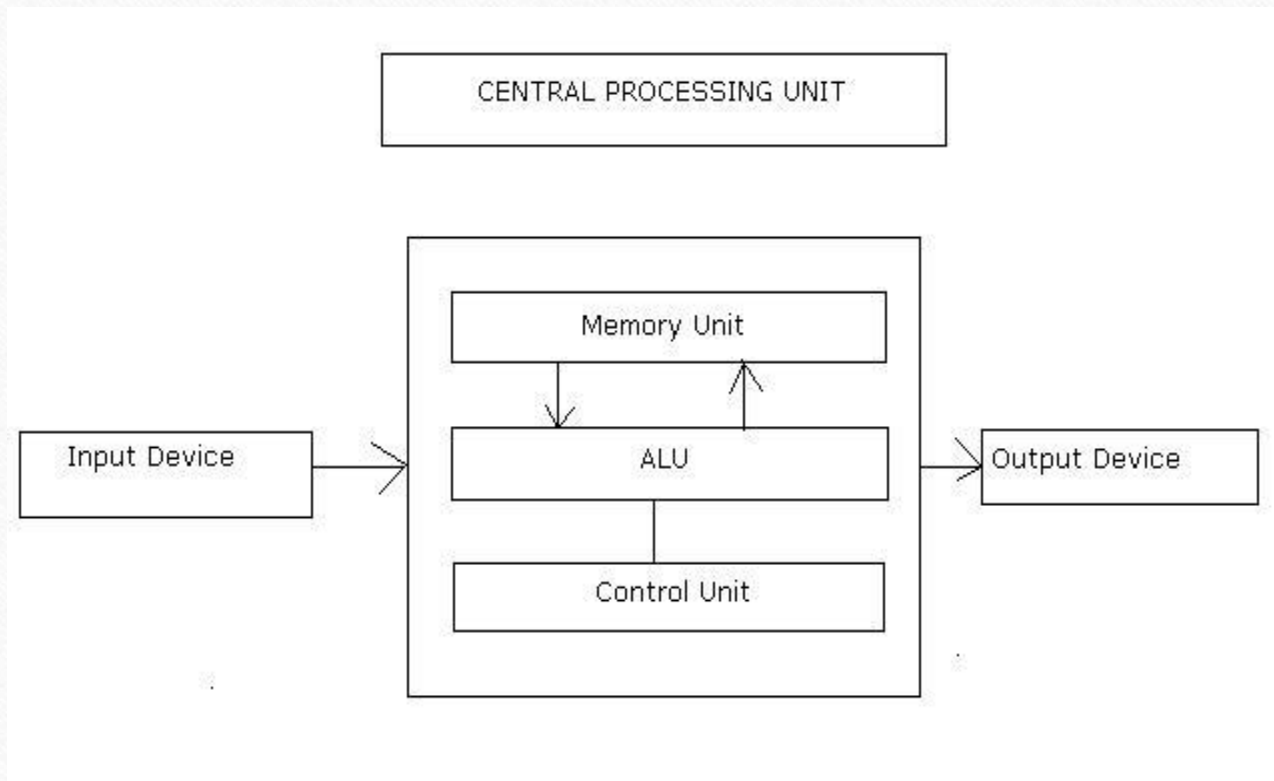
b) Arithmetic and Logic Unit

The part of the CPU that performs arithmetic and logic operations, processor registers that supply operands to the ALU and store the results of ALU operations.

c) Control Unit

This unit is the backbone of the computers and it is responsible for coordinating tasks between all components of a computer system.

The control unit collects data from the input units and sends it to the processing units depending on its nature and it also further transmits the processed data to output units for users



OUTPUT UNIT

- *Output device reproduce or display the results of that processing.*
- *It is any piece of computer hardware equipment which converts information into human readable form.*
- *It can be texts, graphics, tactile, audio and video.*
- *After processing of data, it is converted into a format which format which humans can understand and after conversion, it displays this data to users.*
- *Some of the output devices are Visual Display units i.e. a Monitor, Printer, Graphic Output devices, plotters, speakers, sound card and GPS etc....*



Webcam



Webcam

Microphone



Monitor



Speakers

Printer



Printer



Headphone



PROGRAMMING LANGUAGES

- *A programming language is a formal language comprising a set of instructions that produce various kinds of output and are used in computer programming to implement algorithms.*
- *Most of the programming languages consist of instructions for computers and there are programmable machines that use a set of specific instructions, rather than general programming languages.*
- *The description of a programming language is usually split into two components of syntax (form) and semantics (meaning)*

- *Some languages are defined by a specification document (For example : The C programming language is specified by an ISO Standard)*
- *While other languages (such as Perl) have a dominant implementation that is treated as a reference.*
- *Some languages have both ,with the basic language defined by a standard and extensions taken from the dominant implementation being common.*
- *Some of the programming languages are **java, python, C, C#, Ruby, PHP**(Hypertext Preprocessor), **JavaScript, Objective-C, SQL**(Structured Query language)*

Uses of programming language

- *Some of the programming languages are used to create programs to solve problems or interpret data.*

- *Some of them are more suitable for making or creating software or apps for entertainment or business purpose*
- *For example, Python is an open source programming language used by software engineers and back-end web developers and Java is prevalent in web based development and it was used in many companies in the health science, education and finance industries.*

ALGORITHMS

- *Algorithm is a finite sequence of well defined, computer-implemented instructions, typically to solve a class of problems or to perform a computation.*

- *It is also a finite set of steps that must be allowed to solve any problems and it is generally developed before the actual coding is done*
- *It is written by using English like language so that it is easily understandable even by the non programmers.*
- *They are always unambiguous and are used as specification for performing calculations, data processing, automated reasoning and other tasks*
- *Some of the fundamental algorithms are divide and conquer, dynamic programming, recursive, backtracking, greedy, brute force and randomized algorithm*