

## **Chapter-1: Introduction to Programming Languages**

### **Topics :**

What is language?

Types of programming languages

What is a Translator?

Types of translators

1. Compiler
2. Interpreter

What is scripting language?

Difference between programming language and scripting language

What is the programming paradigm?

Types of programming paradigms

### **What is language?**

Language is a medium of communication between user and computer.

Language provides a set of instructions to communicate with computers in order to perform operations.

Language is software, which provides a set of instructions.

Language provides set of instructions to develop software's

Programming languages are classified into 2 categories :

1. Low Level Programming Languages
2. High Level Programming Languages

## Low Level Programming languages

Computer understandable languages are called low level programming languages.

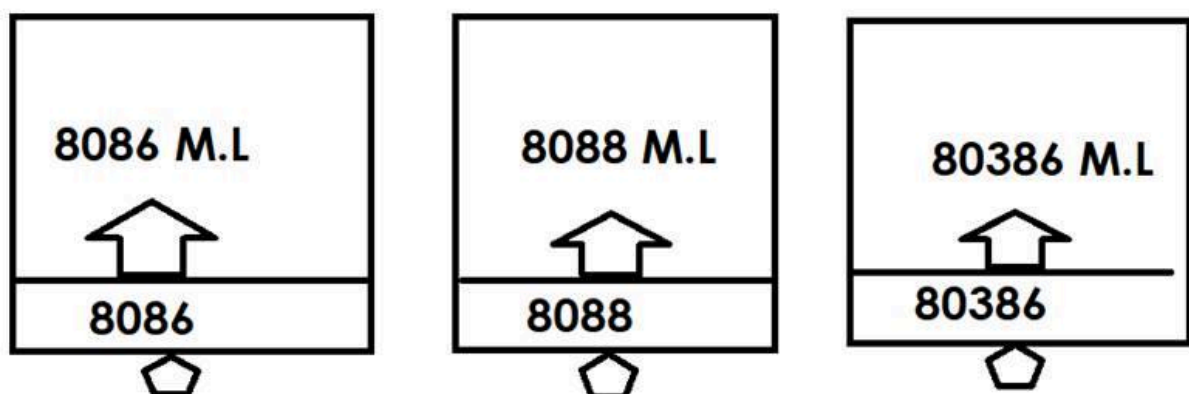
Low level programming languages are 2 types :

1. Machine Language
2. Assembly Language

### Machine Language

Machine language instructions are represented in 0's and 1's

Computer understand only one language called machine language.

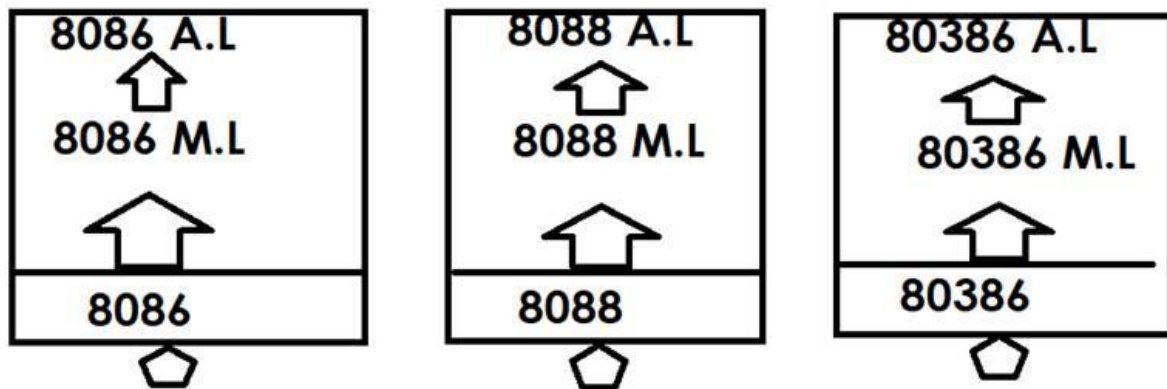


Machine language is non portable language or hardware dependent.  
Machine language is not easy to understand because everything is defined in the form of 0's and 1's

### Assembly Language

Assembly language instructions are represented as mnemonics (verbs).  
For every machine language instruction there is equal mnemonic code.

For every machine language there is an equal assembly language.



## **Assembler**

Assembler is a translator, which converts or translates instructions of assembly language into machine language.

The limitations of low level programming languages are non portability.

## **High Level Programming Languages**

All high level programming languages are in simple English.

Example: C,C++,Java,C#.Net,Python,Javascript,...

High level programming languages are portable or machine independent or hardware independent.

## **What is a Translator?**

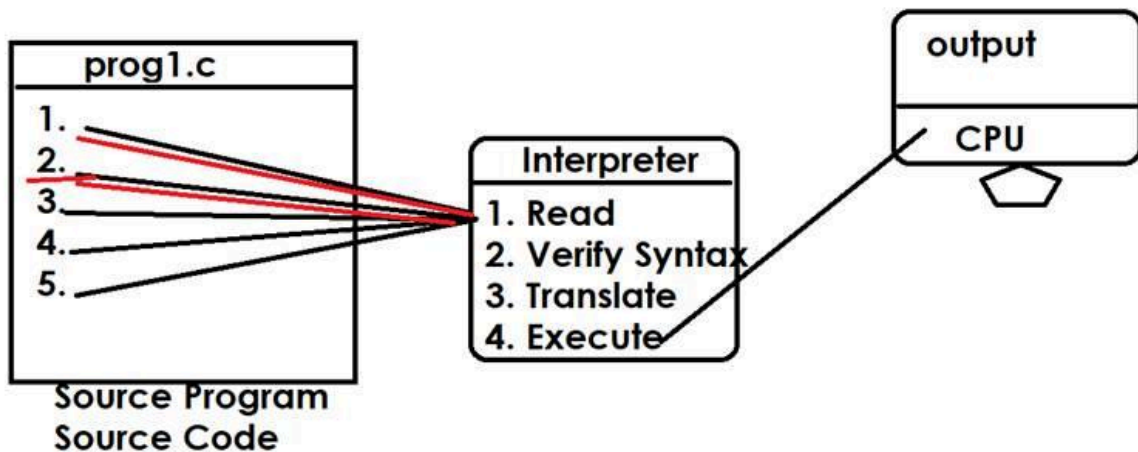
A translator is software which converts or translates instructions of one language into another language.

High level languages use 2 types of translators :

1. Interpreter
2. Compiler

## What is an interpreter?

Interpreter is a translator which translates and executes instructions line by line.

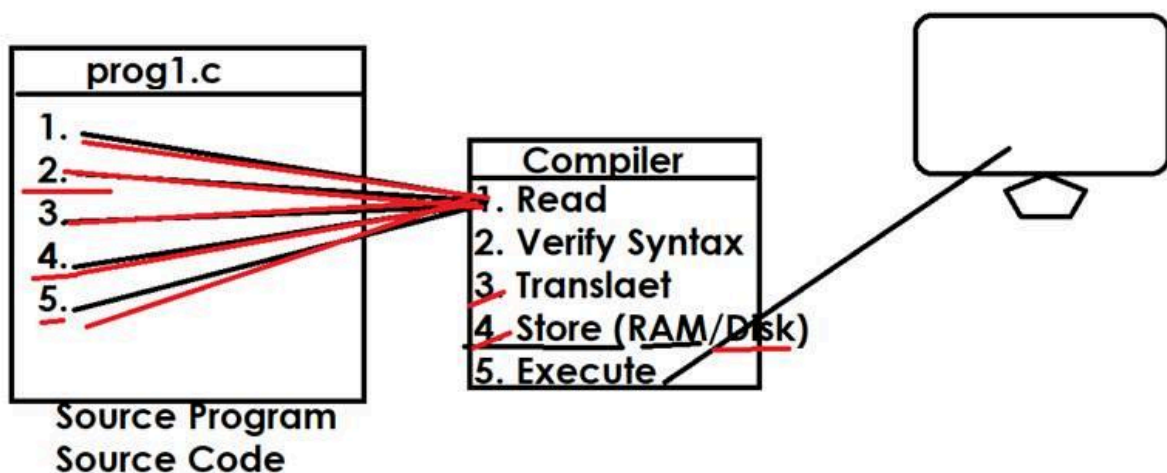


Interpreter stop translating and executing when there is an error.

Interpreter shows only one error at a time.

## What is an Compiler?

Compiler translates whole program and execute



Compiler store translated code within RAM/DISK.

Compiler shows all the syntax errors that exist within the program.

## What is Scripting Languages?

Scripting language is one type of programming language used for writing scripts. A script is a small program.

Scripting languages are used for automation, customizing the operations of existing software, used with other languages.

**Example:** VBA, Javascript, VBScript, typescript, shellscript,...

A programming language can have the features of a scripting language.

A scripting language cannot have the features of a programming language.

## What is the difference between programming languages and scripting languages?

Programming Languages	Scripting Languages
Programming languages can be used to build applications or software from scratch or beginning.	Scripting languages can be used to extend or customize or automate operations of existing software or application
Programming languages are compiler based.	Scripting languages are interpreted based

## What is the programming paradigm?

A programming paradigm defines a set of rules and regulations for organizing code or instructions. (OR) How to write a program is defined by the programming paradigm.

## **Types of Programming Paradigms**

1. Procedural Oriented Programming (POP)
2. Modular Oriented Programming (MOP)
3. Functional Oriented Programming (FOP)
4. Object Oriented Programming (OOP)
5. Declarative Programming

