

CS & IT ENGINEERING

C-Programming

C Programming Fundamentals

Lecture No.- 03

By- Satya sir



Recap of Previous Lecture



Program Development steps

1. Understand Problem
2. Analyze the Problem
3. Algorithm
4. Flow chart
5. Pseudo Code
6. Program



Topics to be Covered



- Types of Programming Languages
- Evolution of Programming Languages

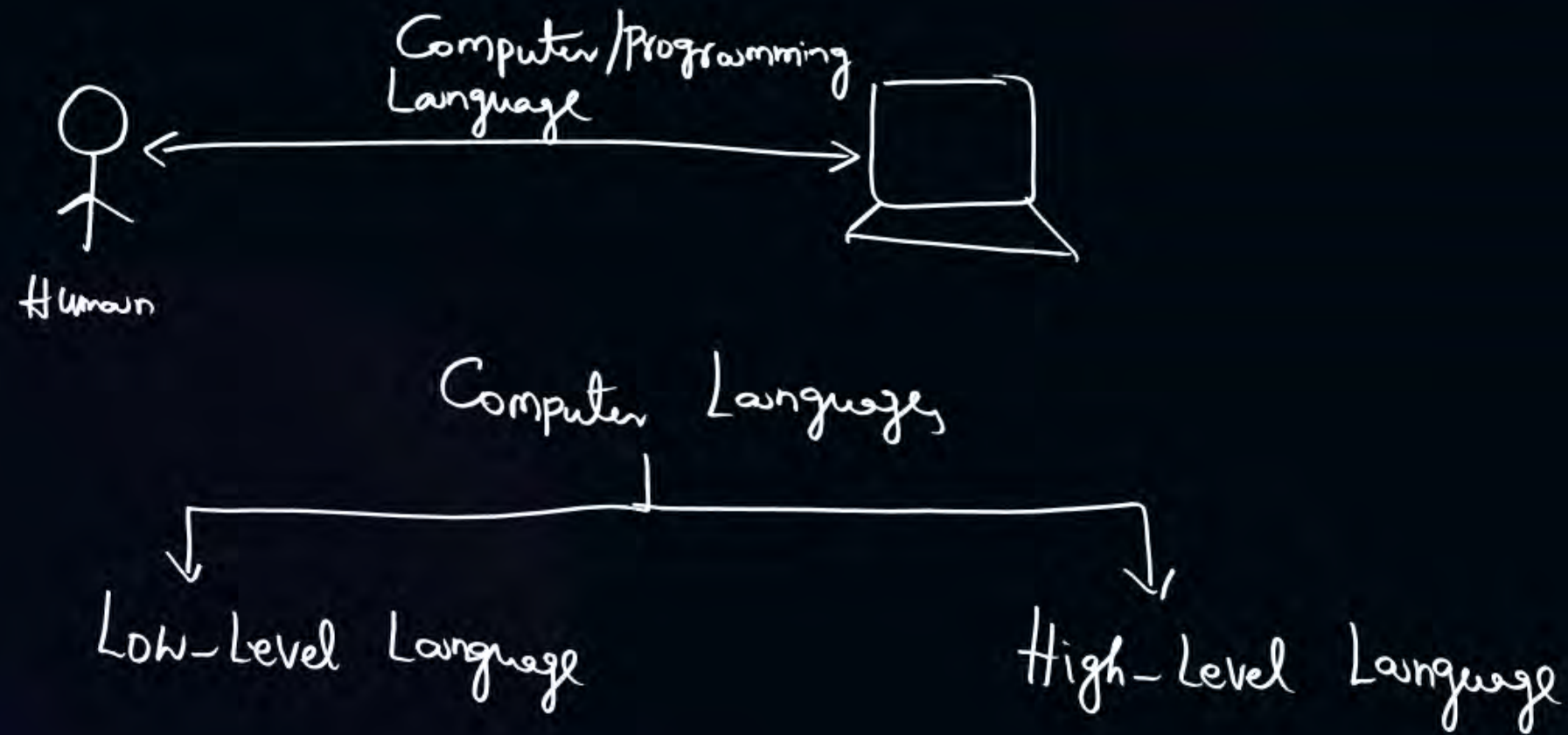




Topic : Evolution Of Programming Languages



- Language \Rightarrow Tool (or) means for Communication





Topic : Evolution Of Programming Languages

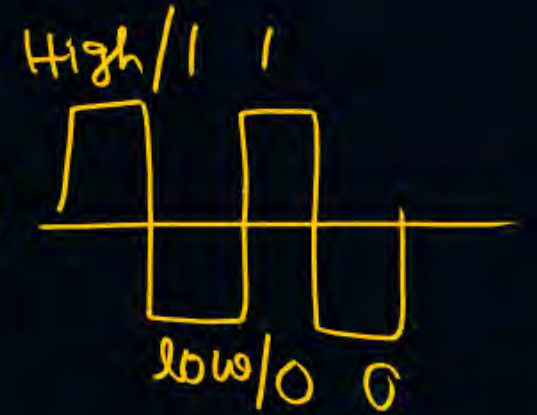


Low-Level Language : Language, which is Easy (or) Directly understandable by Machine

- 2 Types of Low-Level Languages

- Machine Language — Directly understandable :

- Assembly Language — Easy understandable



- Machine Language Uses only 2 Voltage levels represented as 1 (High) - 0 (low).

- So, Machine Language is also known as Binary Language



Topic : Evolution Of Programming Languages



Decimal to Binary

$$(87)_{10} = (1010111)_2$$

| | | | |
|---|----|---|---|
| 2 | 87 | | |
| 2 | 43 | - | 1 |
| 2 | 21 | - | 1 |
| 2 | 10 | - | 1 |
| 2 | 5 | - | 0 |
| 2 | 2 | - | 1 |
| | 1 | - | 0 |

Binary to Decimal

$$(110001101101)_2 = (3181)_{10}$$

| | | | | | | | | | | | |
|----|----|---|---|---|---|---|---|---|---|---|---|
| 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 |

$$\begin{aligned} & (1 \times 2^0) + (\cancel{0 \times 2^1}) + (1 \times 2^2) + (1 \times 2^3) + (\cancel{0 \times 2^4}) \\ & + (1 \times 2^5) + (1 \times 2^6) + (\cancel{0 \times 2^7}) + (\cancel{0 \times 2^8}) + (\cancel{0 \times 2^9}) \\ & + (1 \times 2^{10}) + (1 \times 2^{11}) \end{aligned}$$

$$= 1 + 4 + 8 + 32 + 64 + 1024 + 2048 = 3181$$

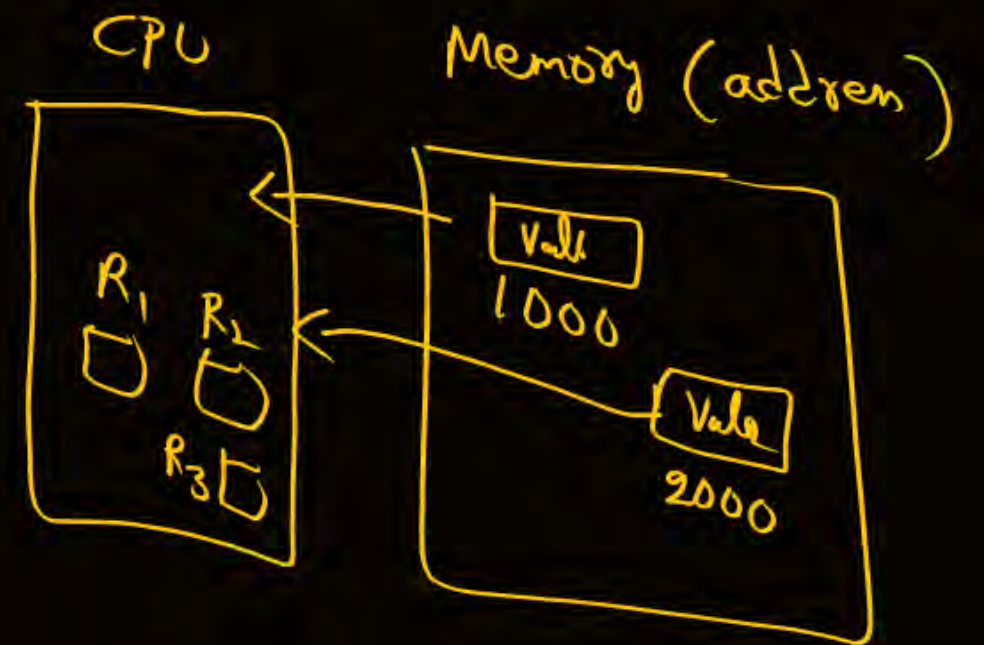
Assembly Language : It is also known as Symbolic Language

- It uses Symbolic codes (Mnemonics or opCodes) to represent Operation to be performed

Example : Add 2 numbers from R_1, R_2 registers, store result in R_3 .

ALP
(Assembly Language Program)

:
LD $R_1, 1000$
LD $R_2, 2000$
ADD R_1, R_2
ST R_3, R_1
Symbolic Codes



High-Level Programming Language

- A language which is Easily Understandable by user ( )

Examples :

- C ✓
- C++
- Java
- Python ✓
- PHP
- PERL
- R
- COBOL
- BASIC
- PASCAL ---



Topic : Evolution Of Programming Languages

| Year | Languages / Machine | Invented by |
|---------------|--------------------------|--|
| <u>1843</u> | First Machine Algorithm | <u>Ada Lovelace</u> |
| <u>1940's</u> | <u>Plankalkul</u> | <u>Konrad Zuse</u> |
| <u>1943</u> | <u>Turing Machine</u> | <u>Alan Turing</u> |
| <u>1949</u> | <u>Assembly Language</u> | <u>William Schmitt</u> |
| <u>1952</u> | <u>Autocode</u> | <u>University Of Manchester</u> |
| <u>1957</u> | <u>Fortran</u> | <u>John Backus</u> |
| <u>1958</u> | <u>ALGOL, LISP</u> | <u>American and European scientists, John McCarthy</u> |
| <u>1959</u> | <u>COBOL</u> | Dr. Grace Murray Hopper |
| <u>1964</u> | <u>BASIC</u> | <u>Bill Gates</u> |
| <u>1970</u> | <u>PASCAL</u> | <u>Niklaus Wirth</u> |
| <u>1972</u> | <u>SmallTalk, C, SQL</u> | <u>(Alan Kay, Adele Goldberg, and Dan Ingalls,) Dennis Ritchie,</u> <u>(Raymond Boyce and Donald Chamberlain)</u> |



Topic : Evolution Of Programming Languages

| Year | Languages / Machine | Invented by |
|--------------|--------------------------------------|--|
| <u>1980s</u> | <u>Ada</u> | <u>Jean Ichbiah's team</u> |
| <u>1983</u> | <u>C++</u> , Objective C | Bjarne Stroustrup, (Brad Cox and Tom Love) |
| <u>1987</u> | <u>PERL</u> | Larry Wall |
| <u>1990</u> | <u>Haskell</u> | Haskell Brooks Curry |
| <u>1991</u> | <u>Python</u> , VB | Guido Van Rossum, Microsoft |
| <u>1993</u> | <u>Ruby</u> | Yukihiro Matsumoto |
| <u>1995</u> | <u>Java</u> , Javascript, <u>PHP</u> | James Gosling, Brendan Eich, Rasmus Lerdorf |
| <u>2000</u> | <u>C#</u> | Microsoft |
| <u>2003</u> | <u>Scala</u> , <u>Groovy</u> | Martin Odersky, (James Strachan and Bob McWhirter) |
| <u>2009</u> | <u>GO (Google)</u> | Google |
| <u>2014</u> | <u>Swift</u> | Apple |



Topic : Evolution Of Programming Languages



C Language

- Developed by Dennis Ritchie
- In the year 1972
- ALGOL \rightarrow Bcpl \rightarrow B \rightarrow C
- at AT & T Bell Labs



2 mins Summary





THANK - YOU