

Section 2 : Essential Fundamentals

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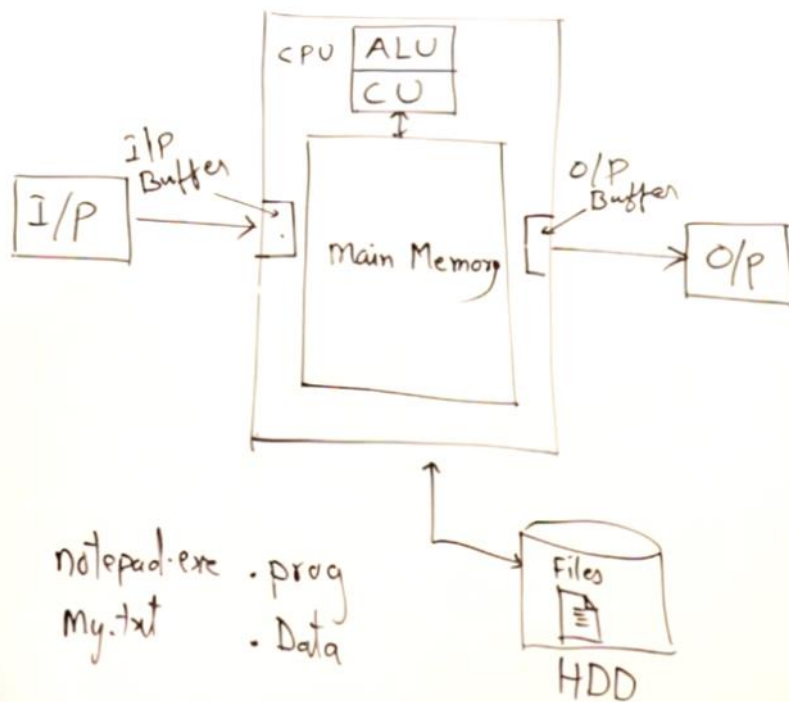
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Section 2 : Essential Fundamentals

How Computer Works : Computer works on binary number system. Because it's based on electronic, and in electronic signals are 0 or 1, low or high.

Block Diagram



Number Systems :

Number System

Binary = {0, 1}

Octal = {0, 1, 2, 3, 4, 5, 6, 7}

Decimal = {0, 1, 2, 3, 4, 5, 6, 7, 8, 9}

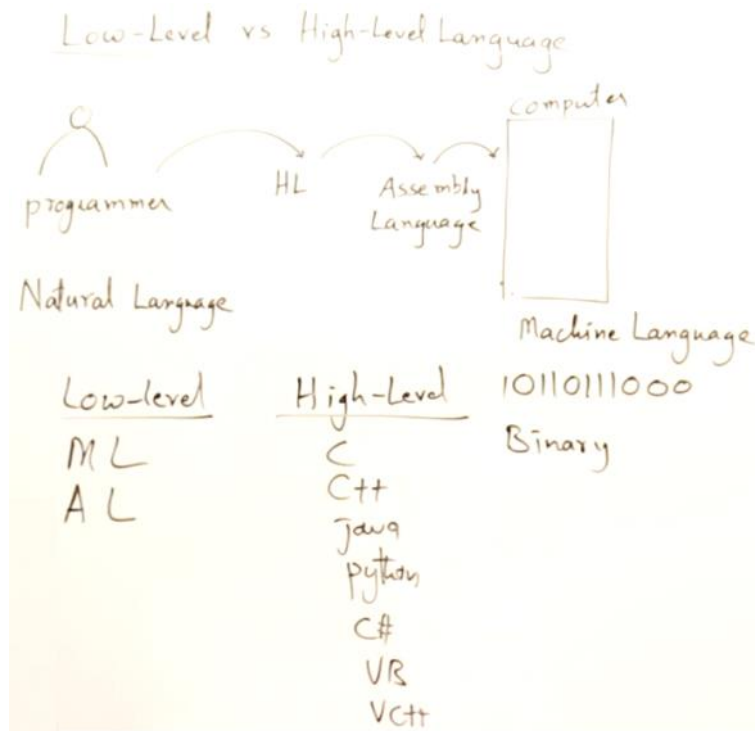
HexaDecimal = {0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, F}

Decimal	Binary	Octal	HexaDecimal
0	0	0	0
1	1	1	1
2	10	2	2
3	11	3	3
4	100	4	4
5	101	5	5
6	110	6	6
7	111	7	7
8	1000	10	8
9	1001	11	9
10	1010	12	A
11	1011	13	B
12	1100	14	C
13	1101	15	D
14	1110	16	E
15	1111	17	F
16	10000	20	10

- Computer is a programmable computation device.
- A Program contains Data and set of Instructions.
- Intermediate language between human language and machine language is called programming language.

Low-level and High-Level Languages :

- Low level language.
 - Machine Language (Binary)
 - Assembly
- High level languages : C, C++, Java, Python, C#, etc
 - Compiler bases languages - C++
 - Interpreter based languages - Javascript
 - Hybrid languages



Compiler vs Interpreter :

- Compiler :
 - Compiler converts source code to machine code (only if no error).
 - Generate executable file.
 - For running program we don't require compiler.
 - Compiler programs are faster, run independently.
- Interpreter :
 - Chrome works is an interpreter for java script.
 - Chrome translate one line and execute it also.
 - Line by line translation as well execution.
 - Will not create exe file.
 - Interpreter languages are easier compared to compiler based languages.

Example : Preparing a Chinese dish from reading a Chinese recipe book.

Hybrid Languages : Java, dot net languages - C#

- They have both compiler and interpreter
- It's 2 step stages.
- Compiler just check for error, not generate machine code, it's just byte code. JVM (interpreter) will generate machine code and also execute.
- Interpreter for byte code not for source code.

Operating System : A master program

Operating system

1. Window
2. Linux
3. Mac osx
4. Android
5. ios

