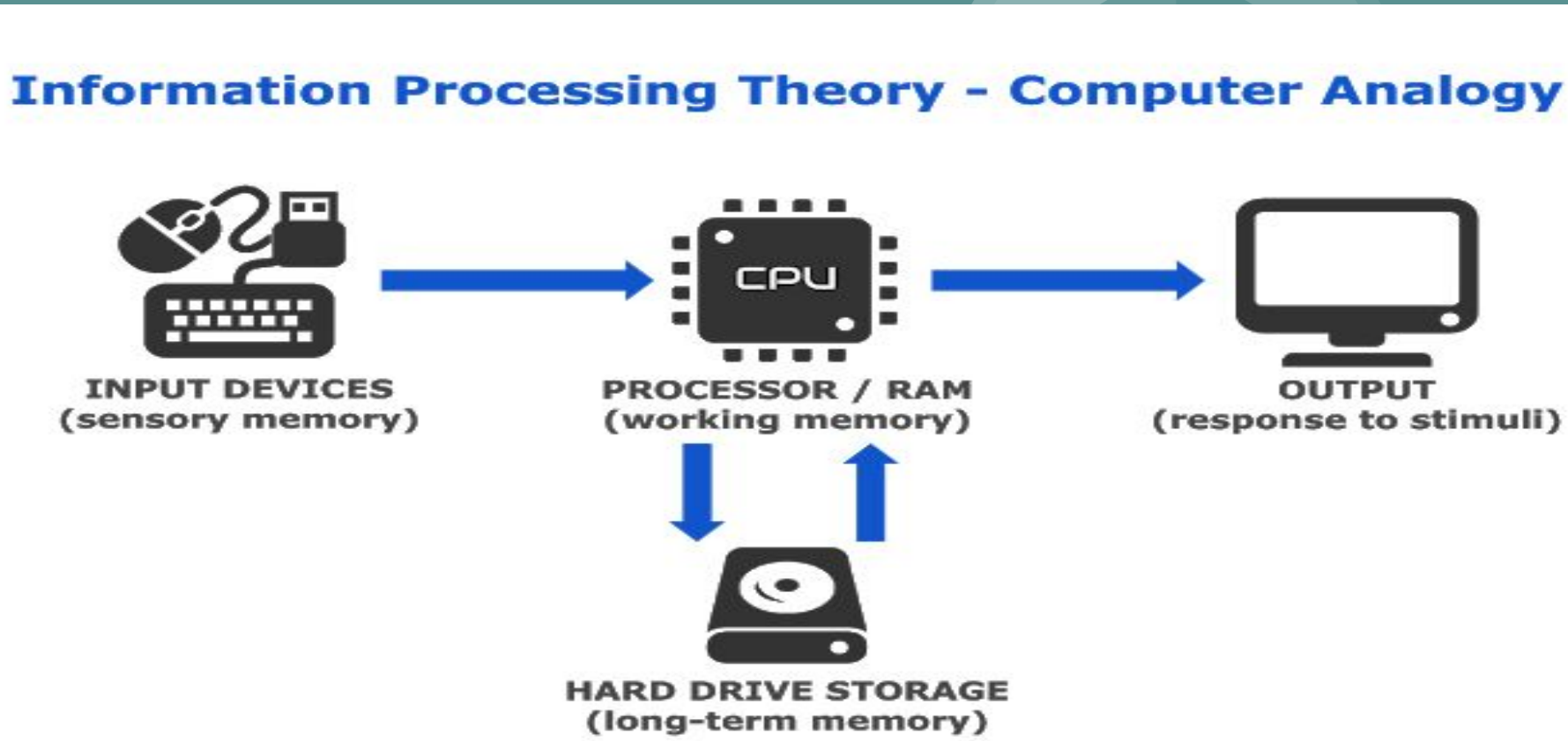
Java Masterclass

Class - 1 : A Deep dive Into Fundamentals

Presenter : Shailesh Singh

Information Theory



Computer?

Typical Computer Structure

Main components:

- CPU
- Main Memory
- Secondary: disk
- IO devices:

  Input:

  • Keyboard

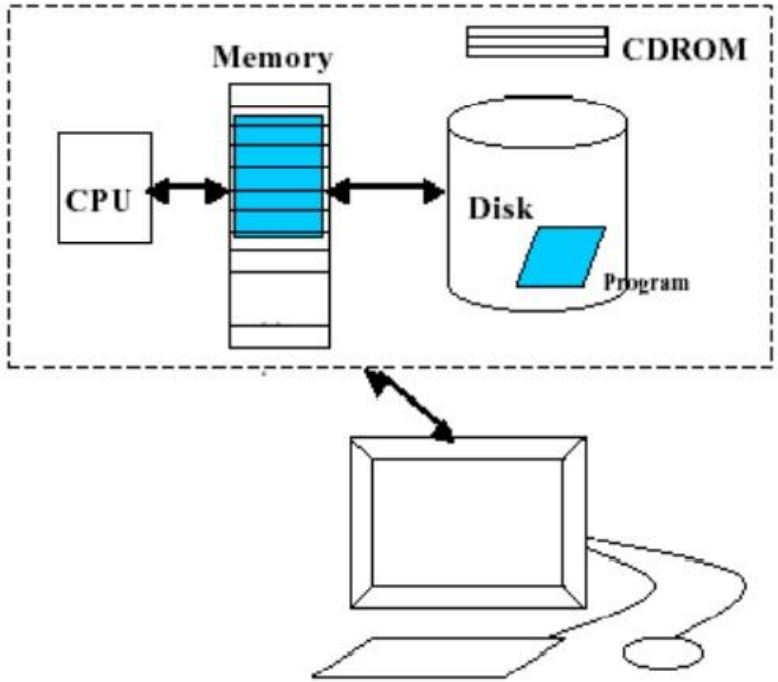
  • Mouse

  • CDROM

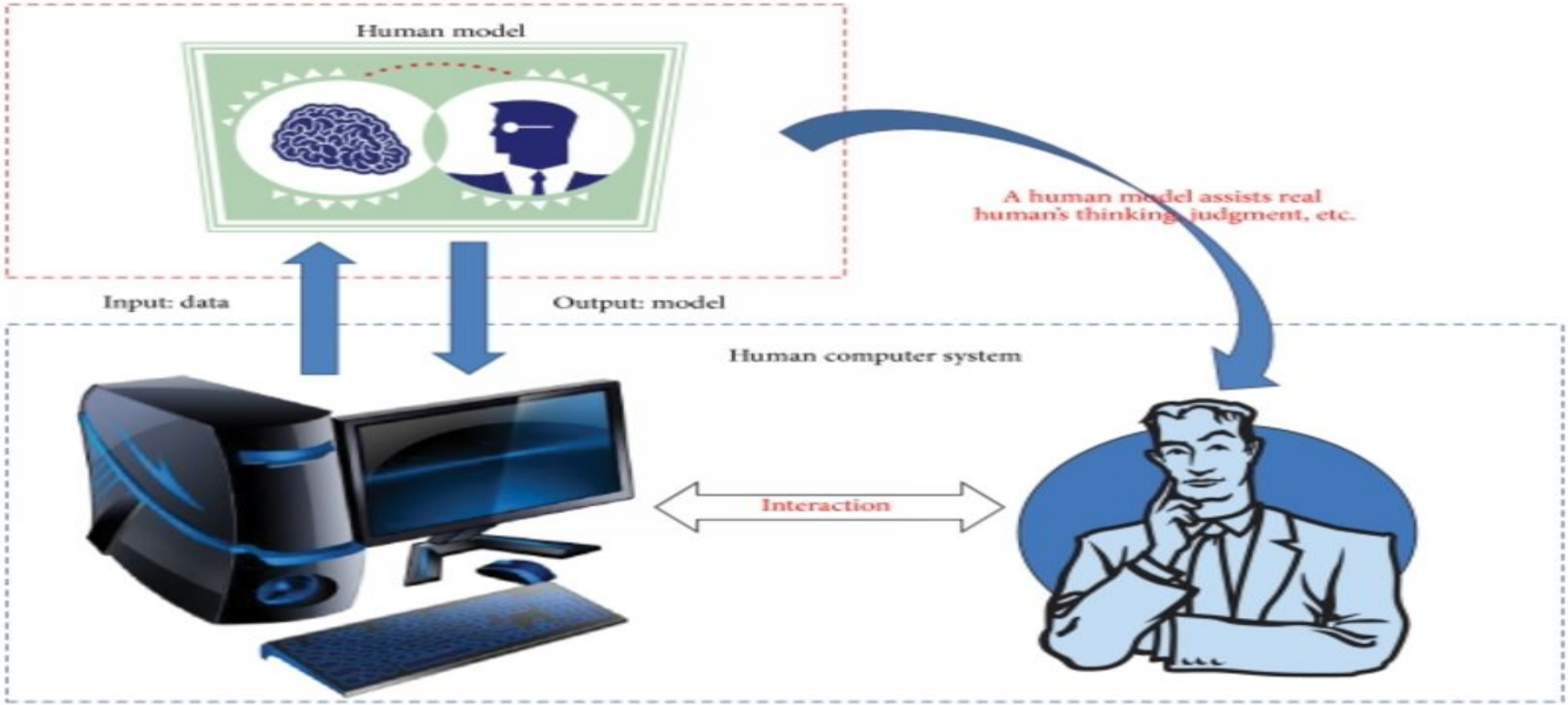
  Output:

  • Display

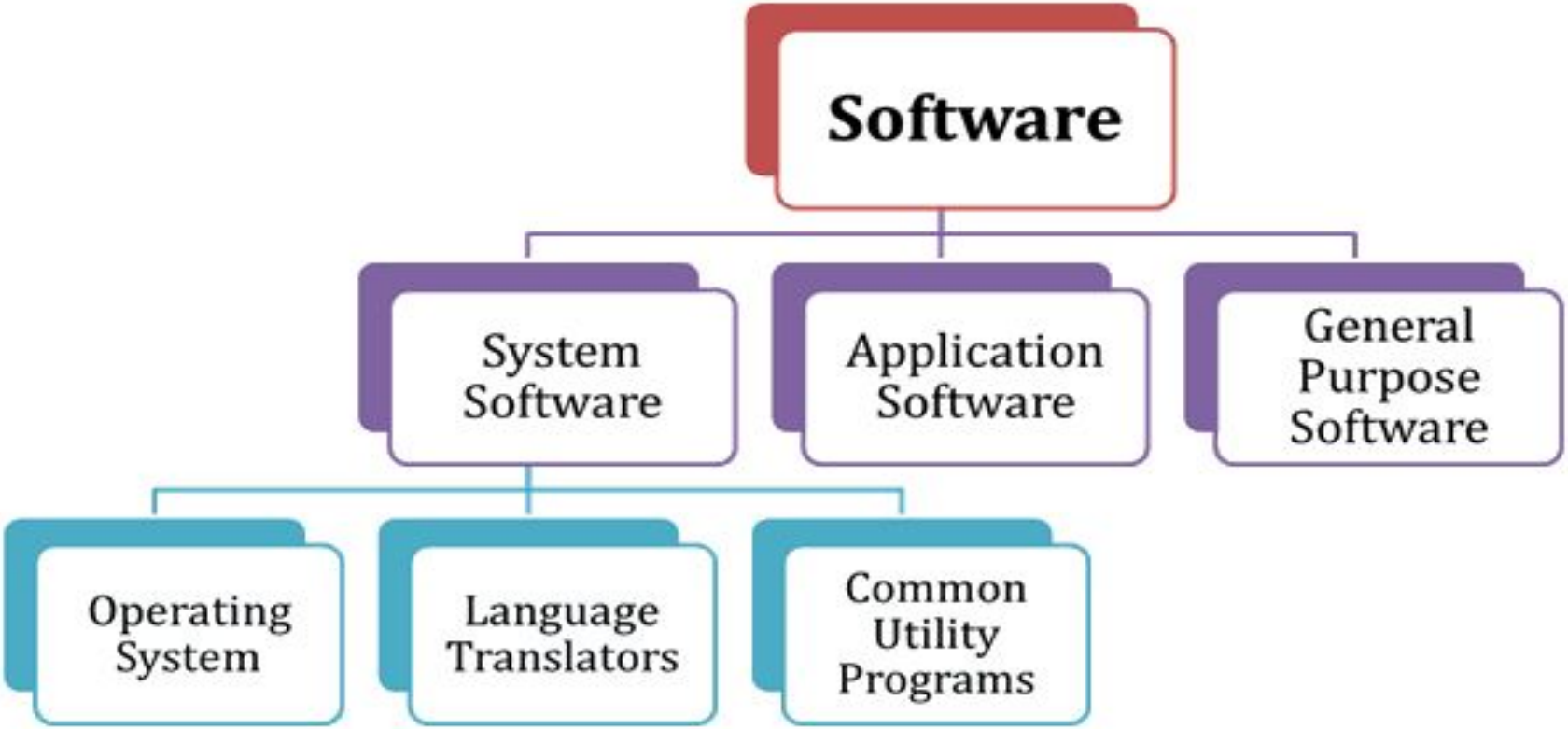
  • Printer



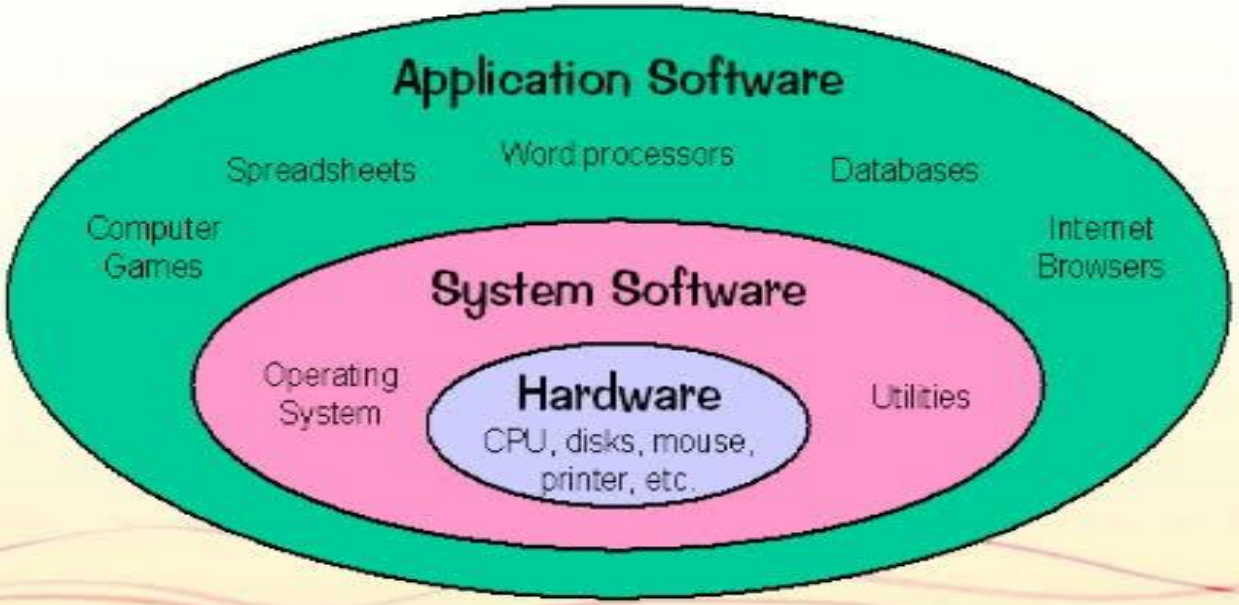
Human vs Computers



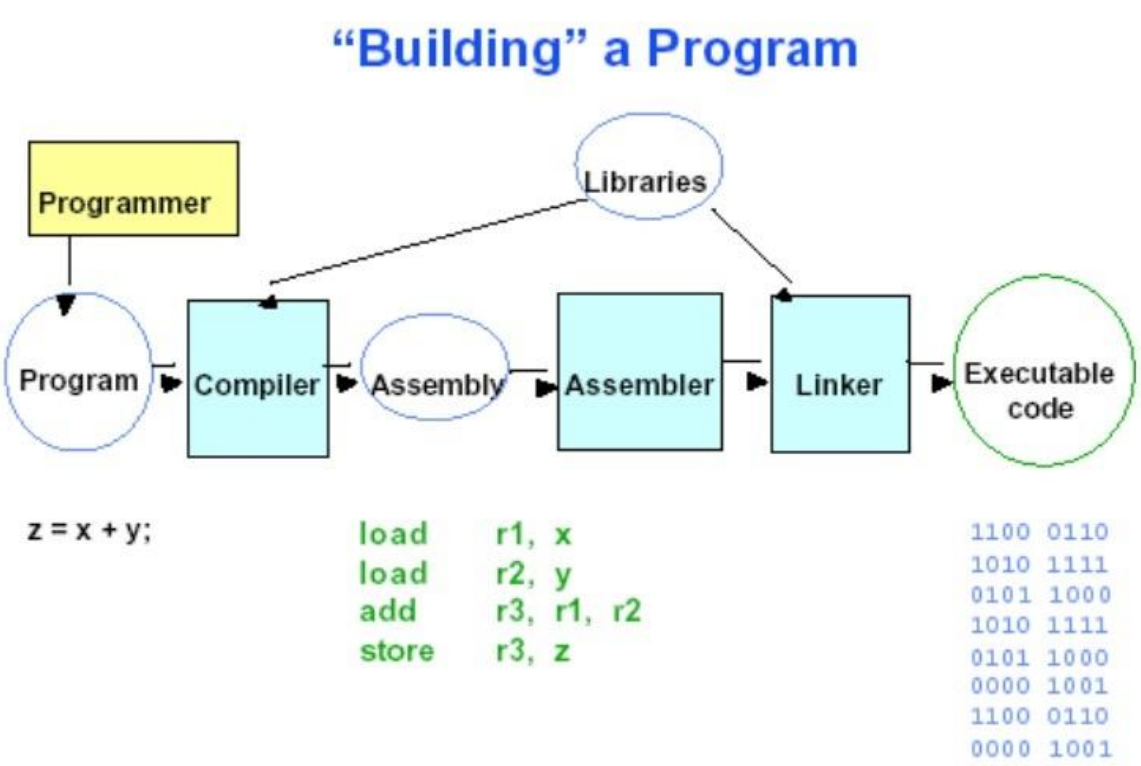
Software Categorisation



Classification With Examples



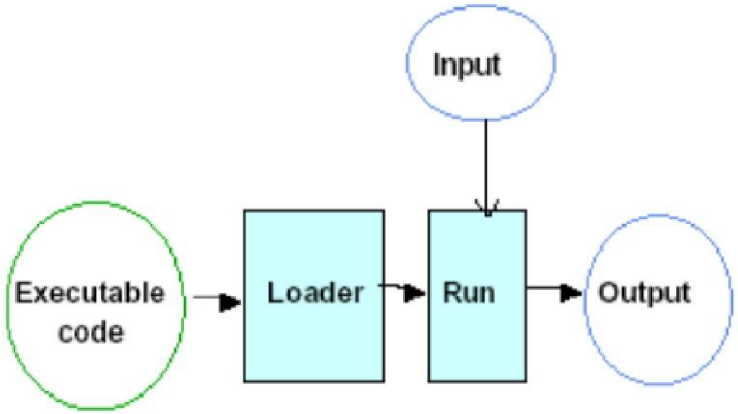
What happens after coding?



Running Program

Running the Program

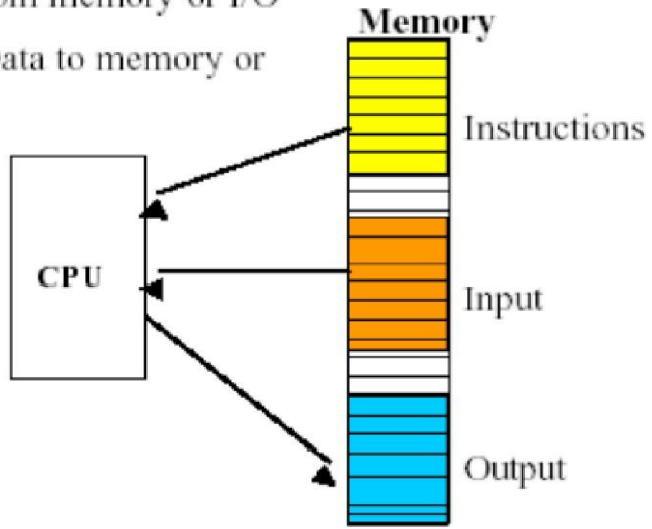
- *Loader* puts the program into the computer memory
- Running the program is done by an Operating System command
- Input are read from the I/O devices and from Memory
- Output is written to I/O devices and to Memory



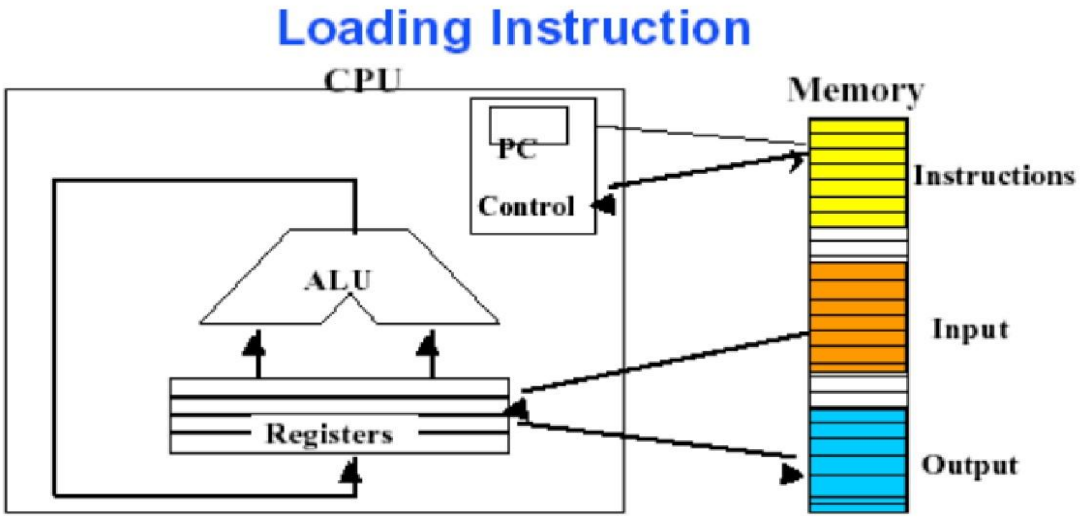
Program Execution

Execution of a Program

- CPU executes the Instructions
- CPU reads Input Data from memory or I/O
- CPU stores the Output Data to memory or to I/O



Instruction Loading



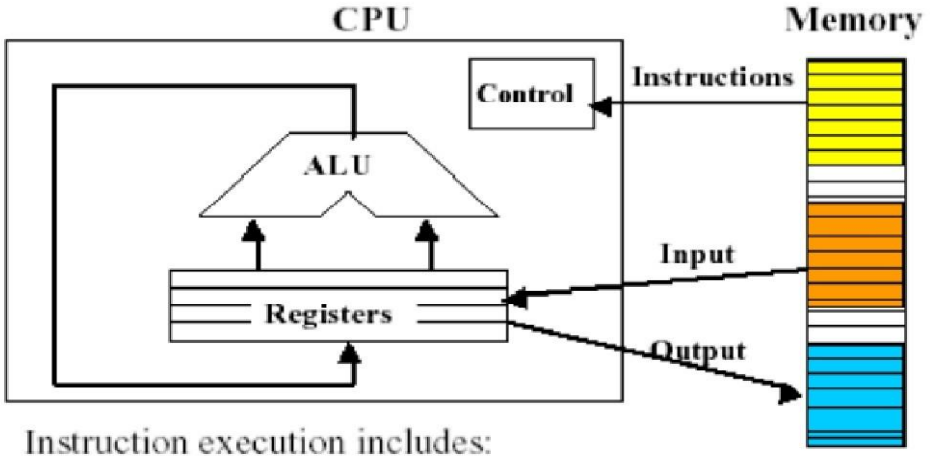
To load an **instruction**:

- Need an "instruction address"
- Pointed by ***PC*** (Program Counter)

Next instruction is usually in ***PC + 4***, except for jumps

Instruction Execution

Execution of the Instructions



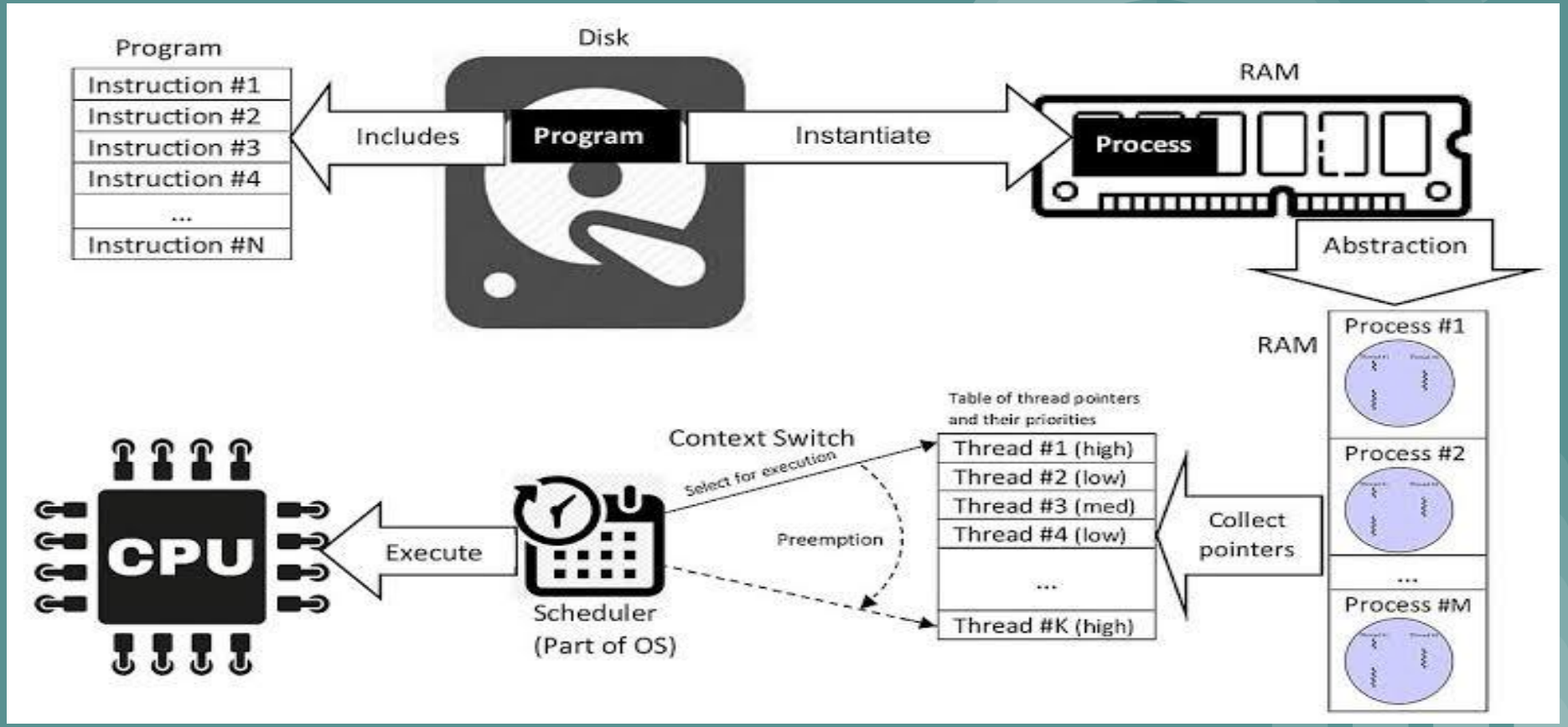
Instruction execution includes:

1. Load instruction from memory
2. Decode instruction
3. Load data from memory/registers
4. Execute the operation
5. Store result in register/memory

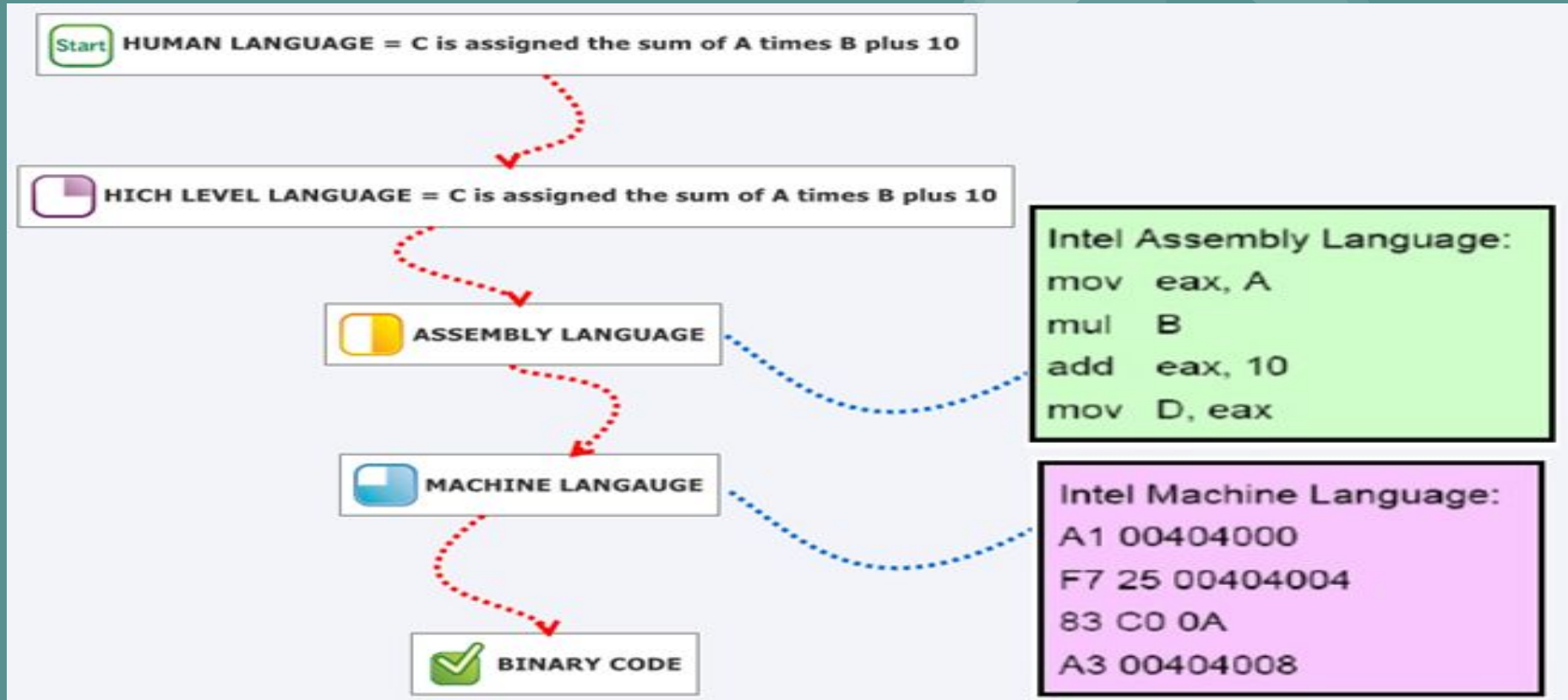
z = x + y;

```
load    r1, x
load    r2, y
add     r3, r1, r2
store   r3, z
```

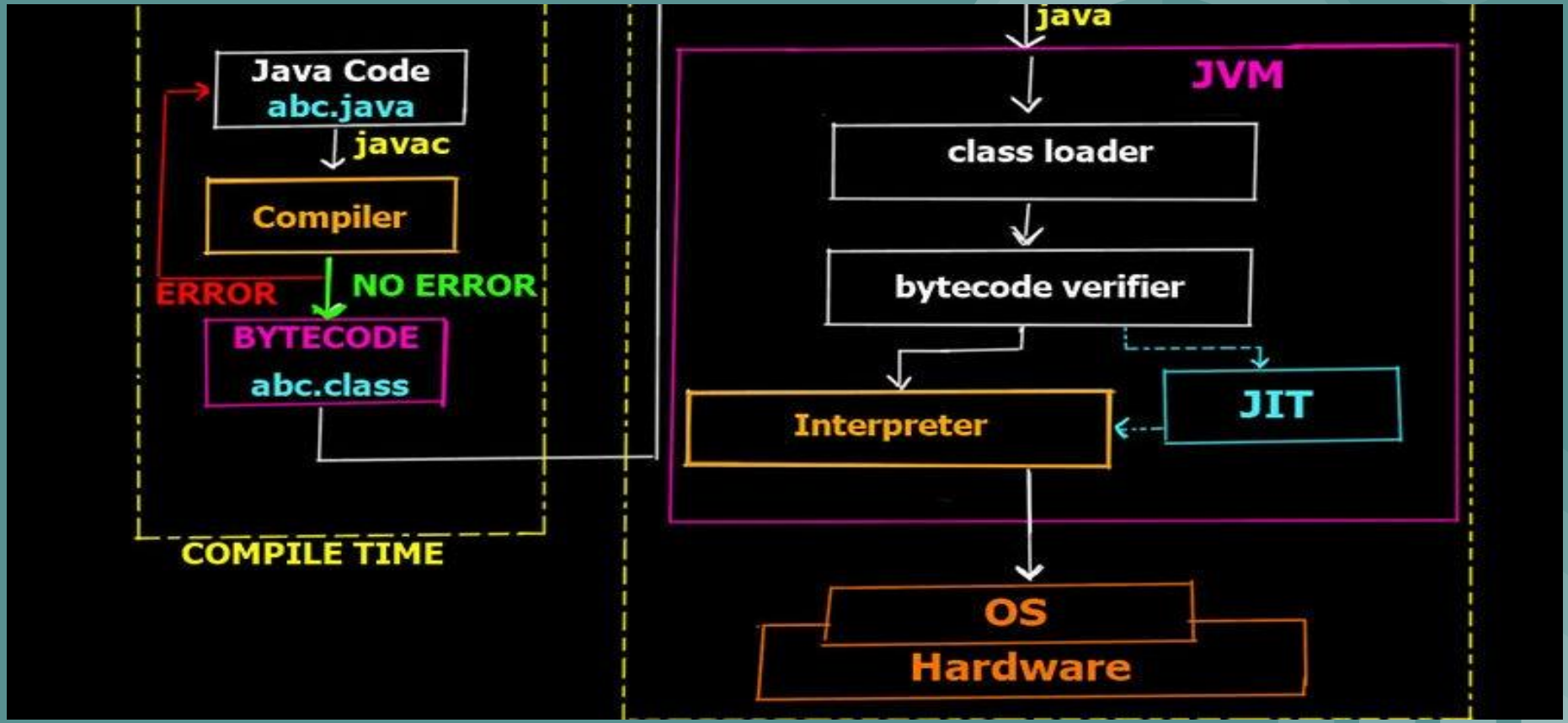
Process Execution



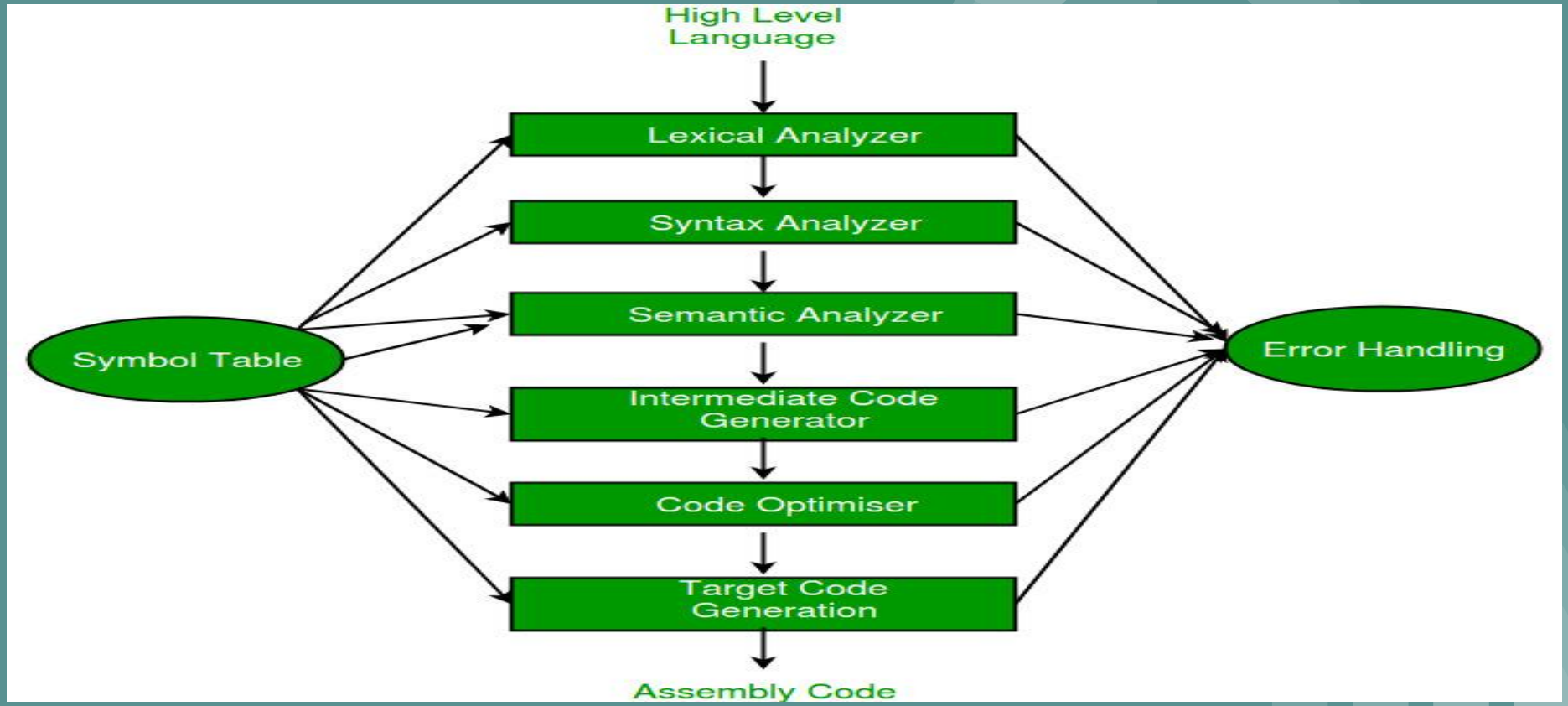
Human Code Conversions



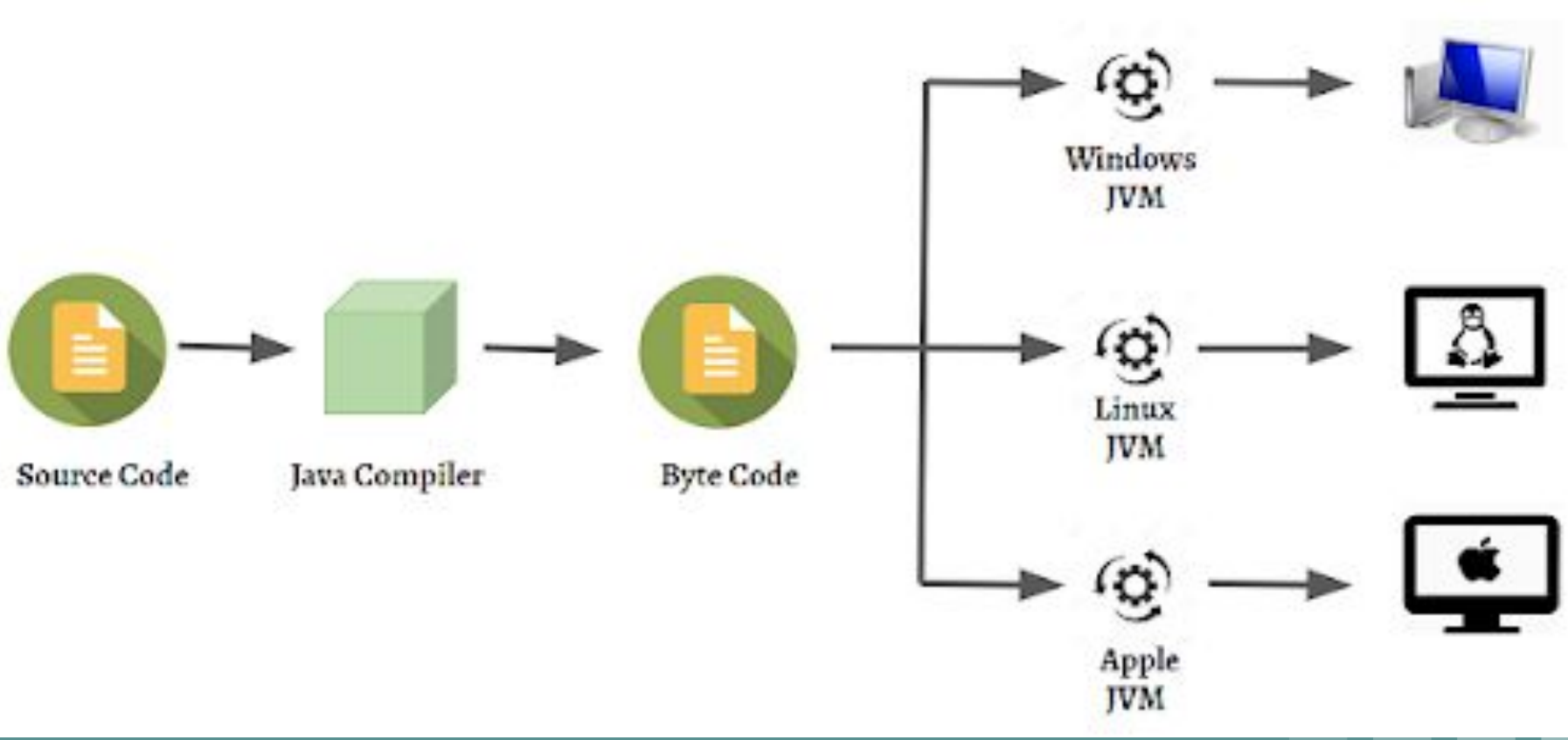
Java Code Conversion to Machine Code



Stages In Compiler ??



Platform Independant ??



Open Source ???

publicly accessible—anyone can see, modify, and distribute the code as they see fit

- Free Distribution
- Source Code
- Derived Code
- Integrity of Author’s source code.