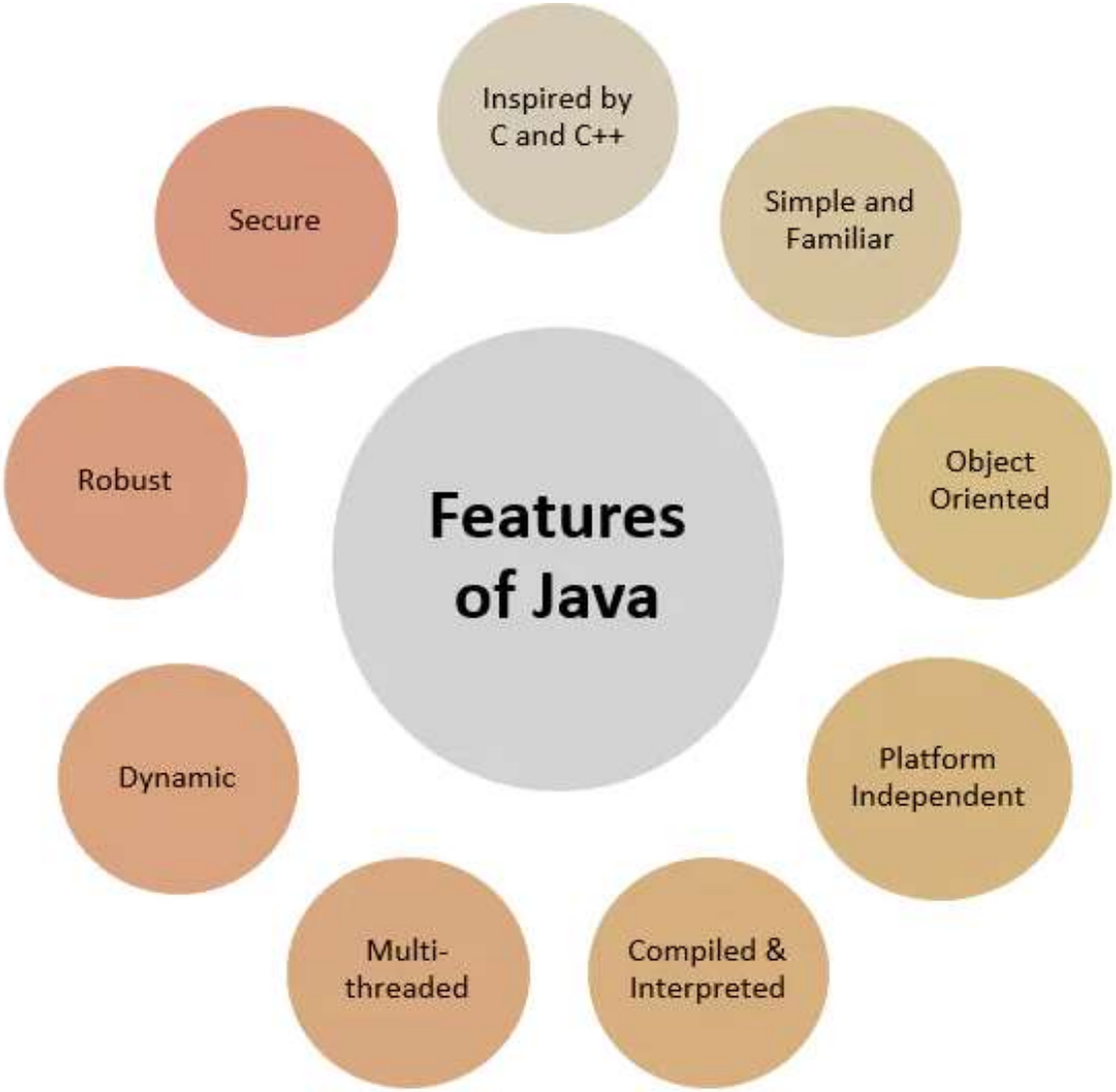
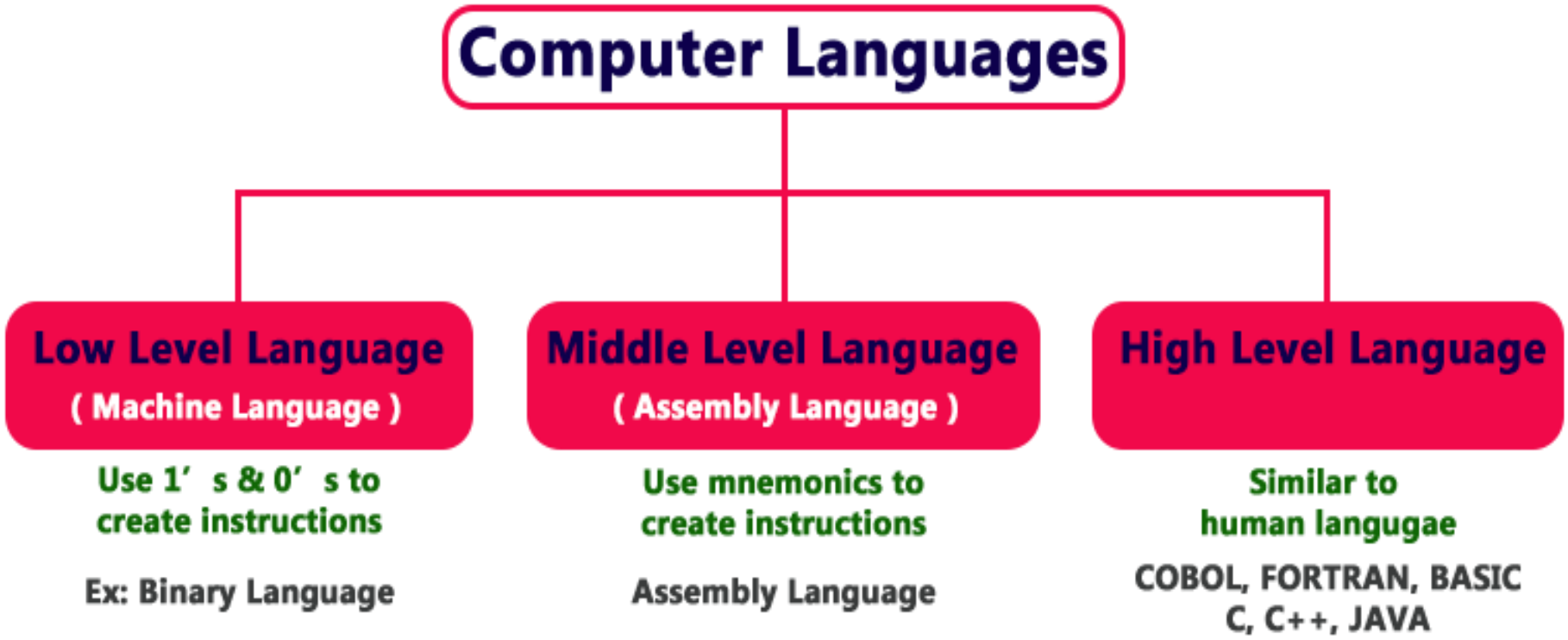
JAVA FEATURES



What is Programming language?

- The language which is used to communicate with a computer to perform a specific task is known as programming language.
- Three levels of programming language

1. Low Level Language
2. Assembly Level Language
3. High level Language


Computer Languages
Low Level Language
(Machine Language)
Use 1' s & 0' s to create instructions
Ex: Binary Language
Middle Level Language
(Assembly Language)
Use mnemonics to create instructions
Assembly Language
High Level Language
Similar to human langugae
COBOL, FORTRAN, BASIC
C, C++, JAVA

Low level Language

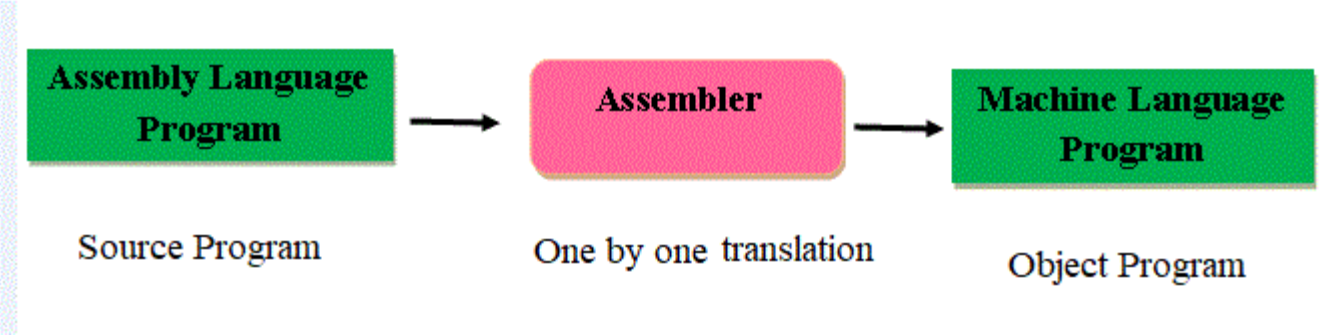
- Also known as Machine level programming Language.
- A language which is understandable ,readable, executable by

a machine is known as machine understandable language.

- Machine understands only binary language i.e. 0's and 1's.
- Machine level language s quite easy for a machine to understand but not for humans.

Assembly Level Language

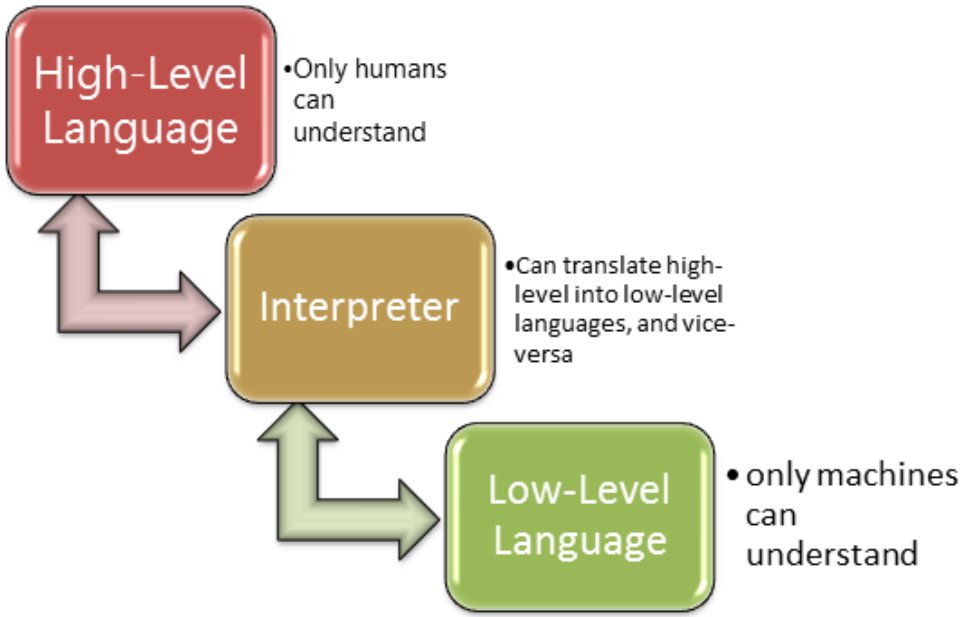
- The language which is understandable by microprocessor is known as assembly level language.
- **Assembly language** is an example of middle-level language.
- In Assembly level language we have some predefined words known as Mnemonics.
- **Example:** ADD,SUB,MUL etc.



High Level Language

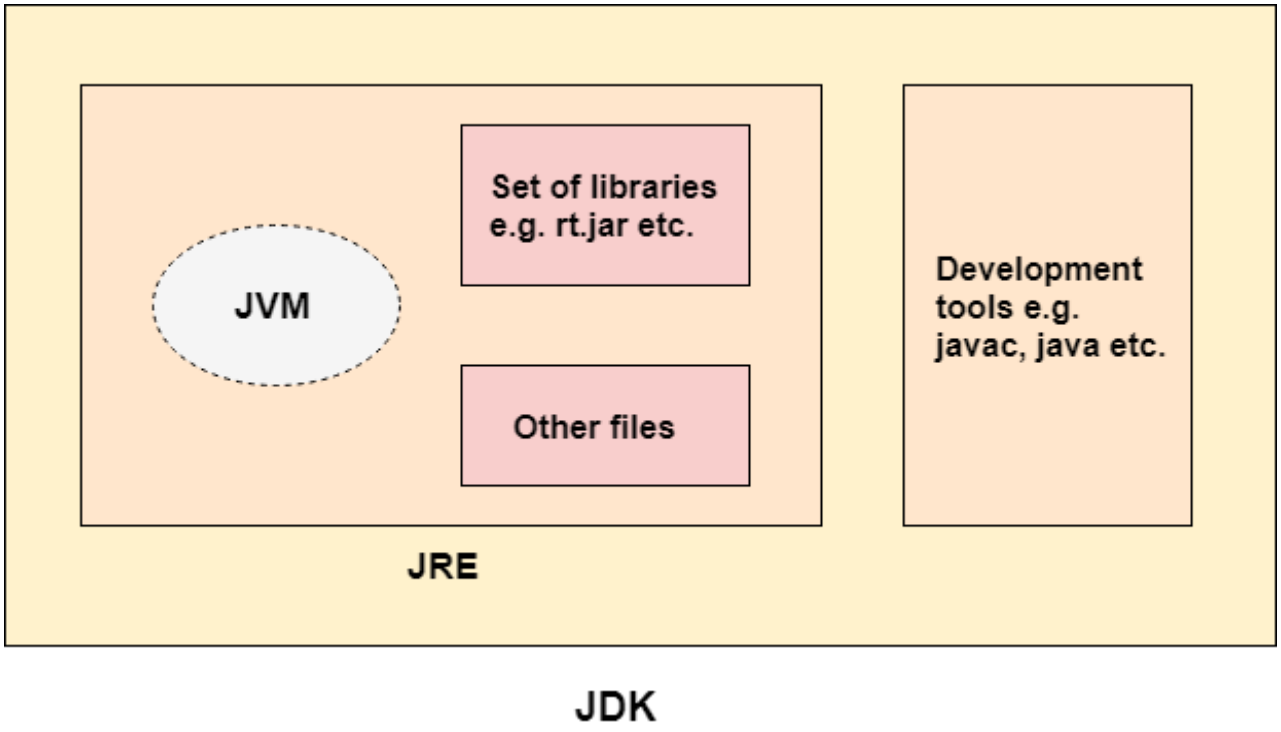
- High Level language is easy to read, write and understand the instructions.
- The high level language is understandable by the machine with the help of software called as compiler or Interpreter.
- **Example:**

  Java,Python.



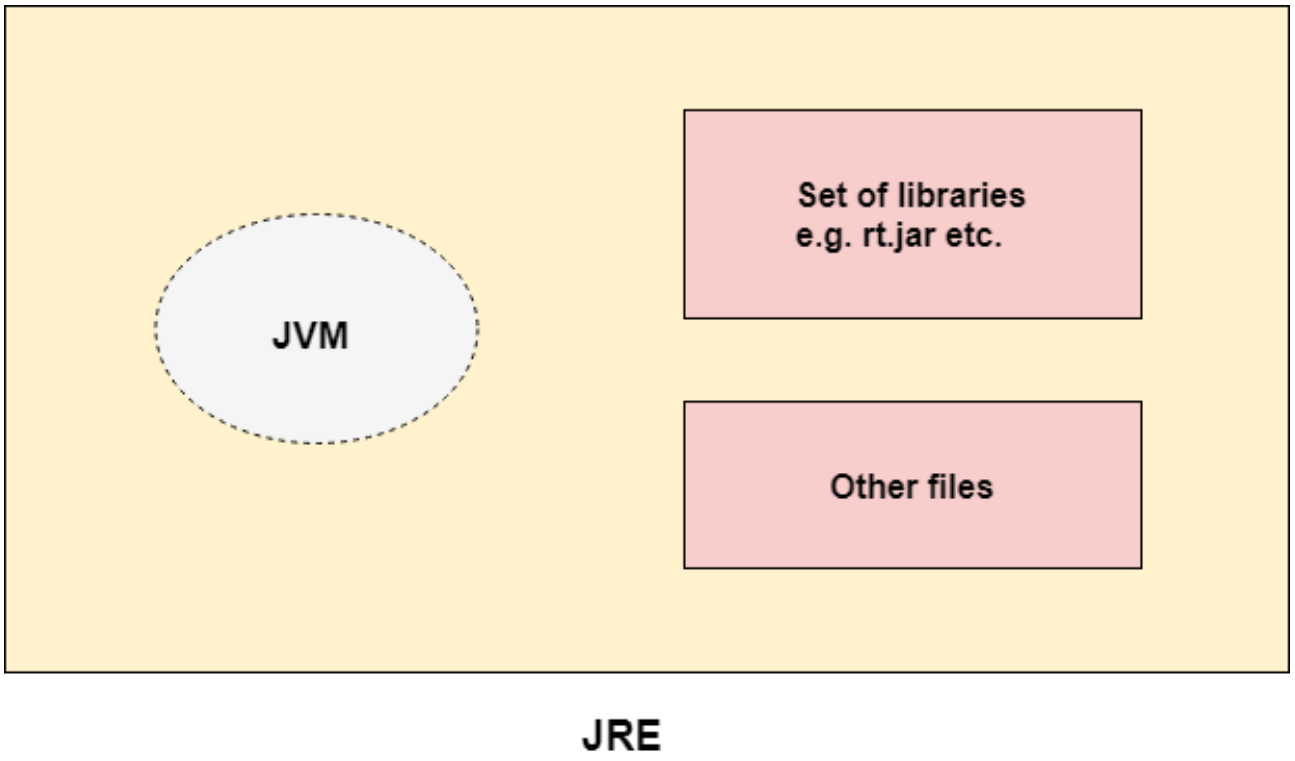
What is JDK?

- Abbreviated as **Java Development Kit** is a package which consists of java development tools like java complier and JRE for execution.



What is JRE?

- Abbreviated as Java Runtime Environment. It is a Environment which consists of JVM and built In classes which is required for the execution of java program.



What is JVM?

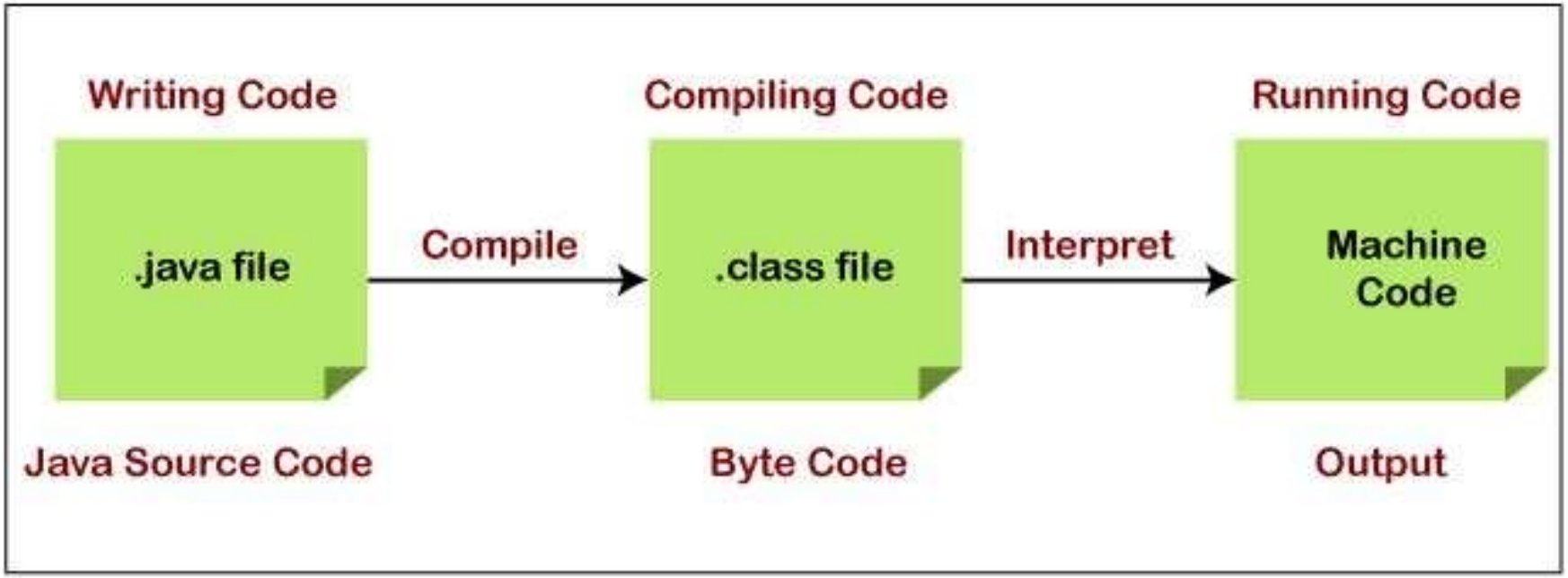
- Abbreviated as Java Virtual Machine.
- It converts byte code instruction line by line into machine level language with help of an interpreter.
- It is called a virtual machine because it doesn't physically exist.

Complier

- A compiler is a computer program that transforms code written in a high-level programming language into the platform independent file.
- It is the software that converts java source file into bytecode an intermediate language to generate the class file.

Interpreter

- **Java interpreter** is a computer program (system software) that implements the JVM. It is responsible for reading and executing the program.
- It is designed in such a way that it can read the source program and translate the source code instruction by instruction.
- **It converts the intermediate-level program into machine language**.

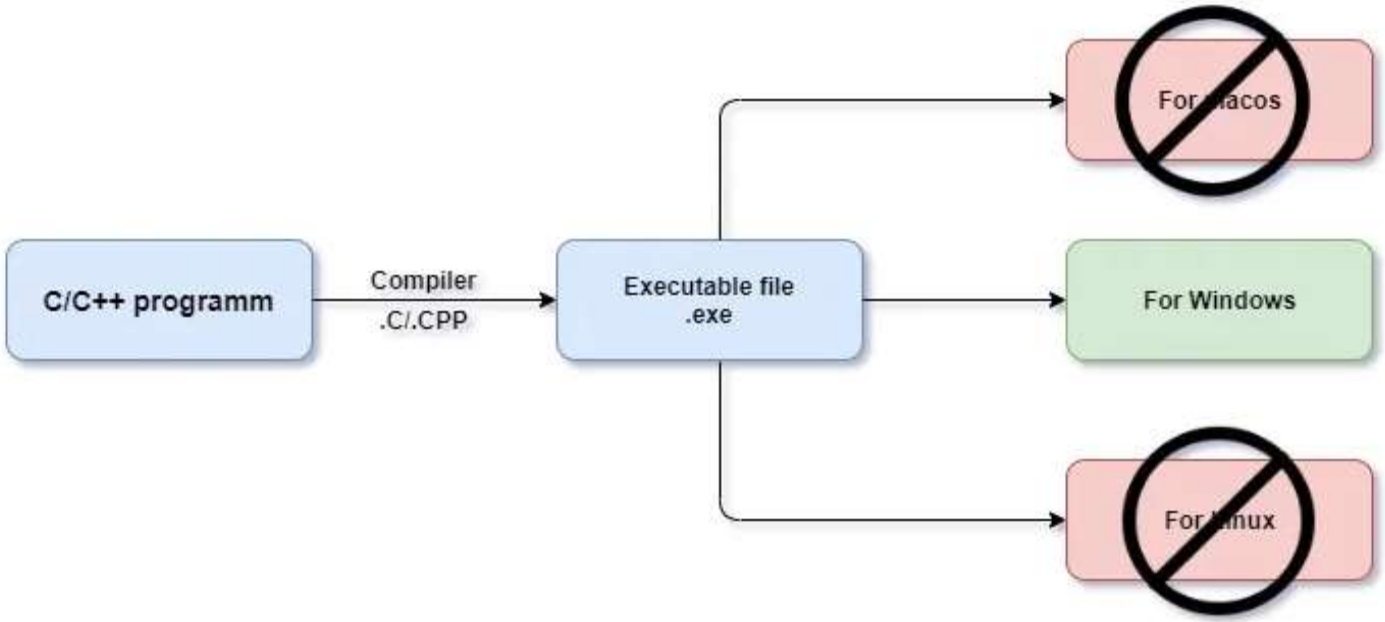

Writing Code
Compiling Code
Running Code
.java file
Compile
.class file
Interpret
Machine Code
Java Source Code
Byte Code
Output

Compiler vs. Interpreter

Interpreter	Compiler
It translates the code instruction by instruction.	It translates the entire program at once.
Its execution is slower.	Its execution is faster.
Its compile time is less.	It takes more time to compile the code.
It does not generate the intermediate object code.	It generates the intermediate object code.
It compiles the program until an error is found.	All the errors show once at the end of the compilation.
Python, PHP, Ruby, and Perl use an interpreter.	Java, C++, Scala, and C uses a compiler.

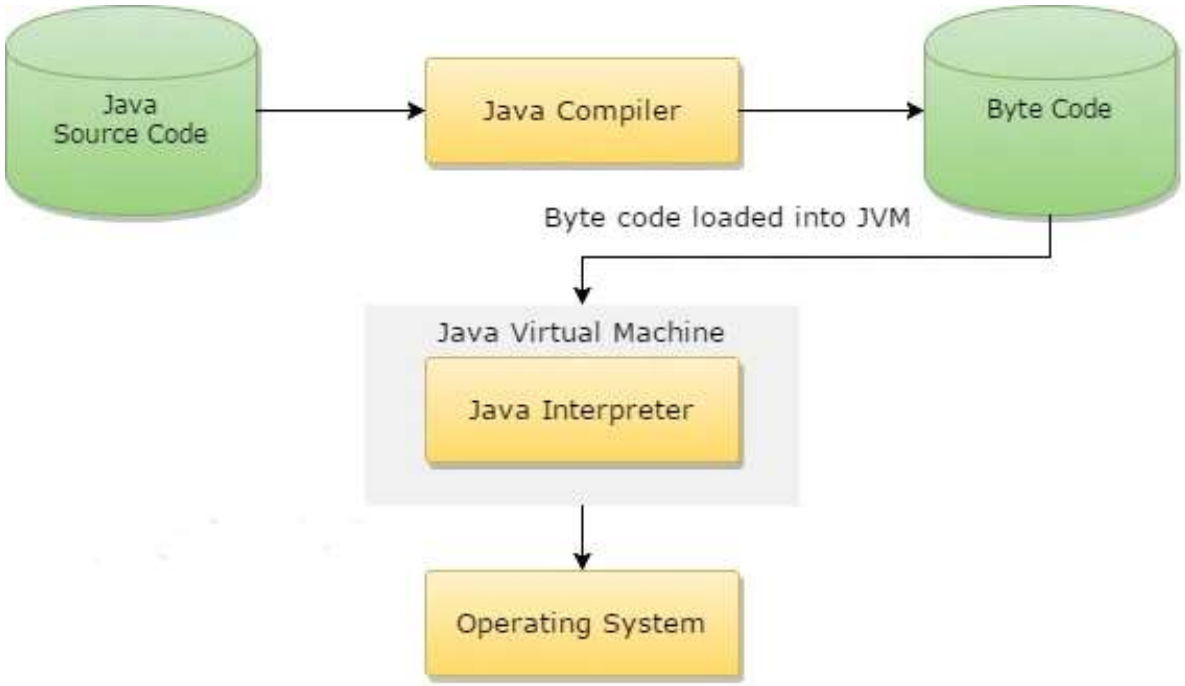
Platform Dependent

- A software developed on one platform and executed on the same platform is known as platform dependent.
- **Example:** C, C++.



Platform Independent

- A software developed on one platform and executed on any platform is known as platform independent.



Why java is platform independent?

- Java compiler does not directly convert high level language into a machine understandable language, instead it converts java instructions into intermediate language called as ByteCode.
- The file is known as the class file with extension .class.
- Once the class file is ready it can be executed in any machine which has JVM in it. This makes the java a platform independent.

Cont.....

- Note: Java is platform independent language but, it is JVM dependent language.
- We cannot execute the class file or byte code in which the system does not contain JVM.