



JAVA-SESSION-1

- ✓ Programming language and types.
- ✓ Introduction to java
- ✓ Simple activity

Definition: The languages used to communicate with a computer to perform a specific task is known as programming languages.



PROGRAMMING LANGUAGE

Types of programming languages

Low Level language

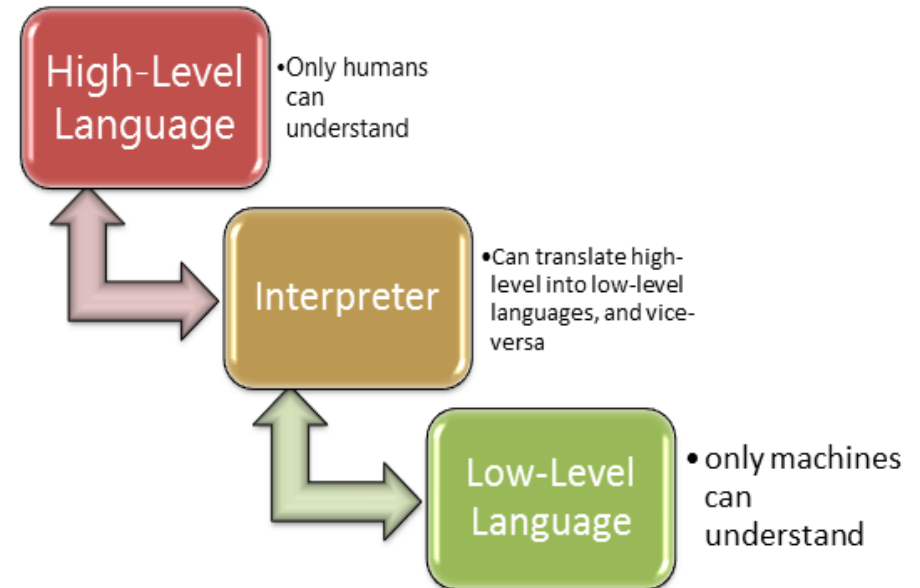
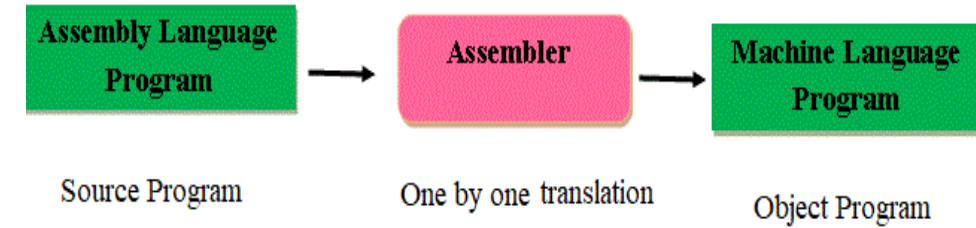
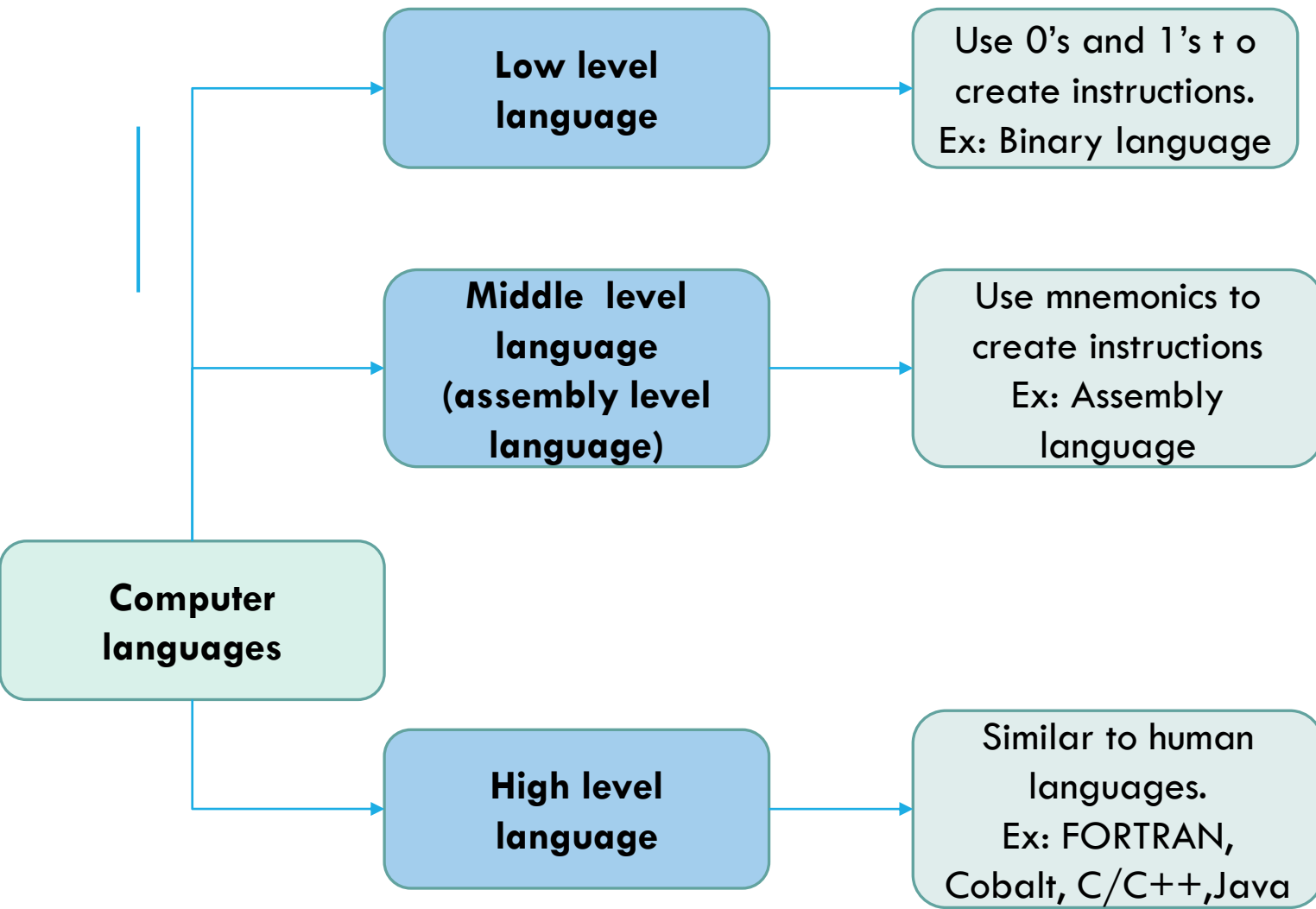
Also known as machine level language. A language which is understandable, readable by a machine. Machine understands only binary language i.e. 0's and 1's. which is easy for a computer to understand but not for humans.

Assembly Level language

Language understandable by microprocessor is known as assembly level language.

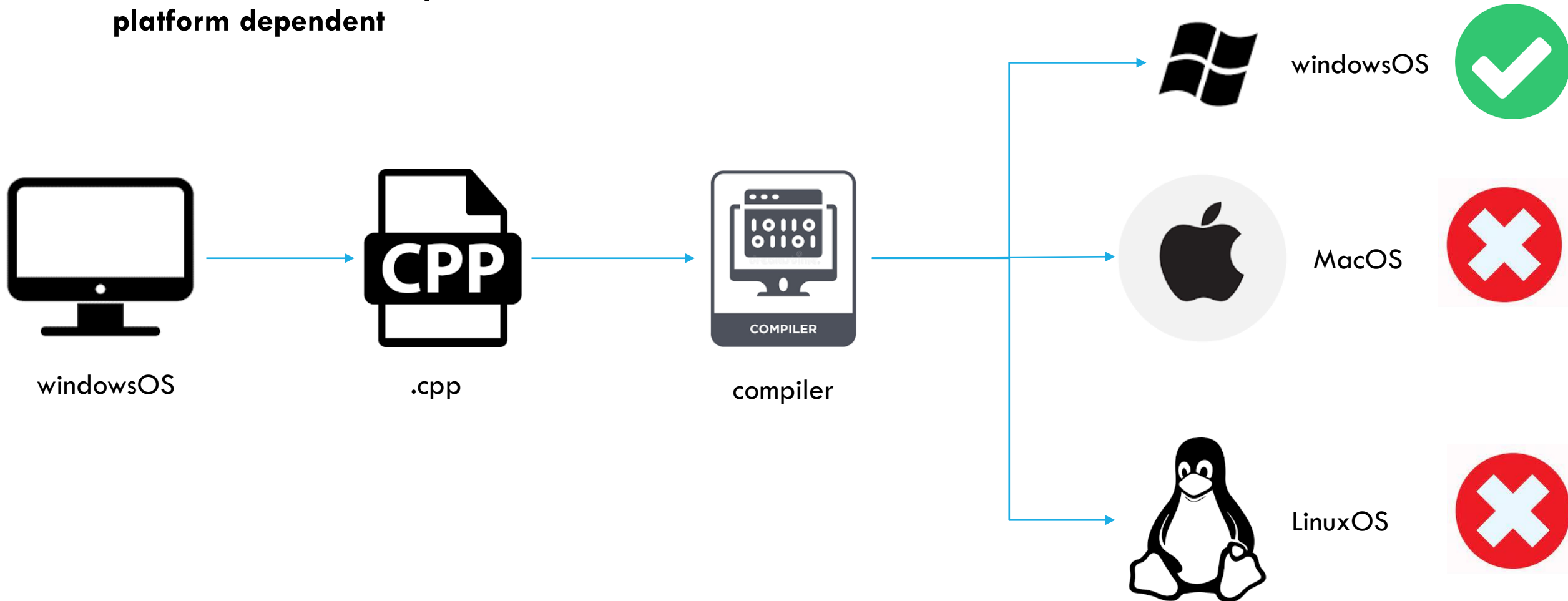
High Level language

The languages which is easy to read, write and understand the instructions is known as High level language.
The high level language is understandable by the machine with the help of a software called **compiler**.



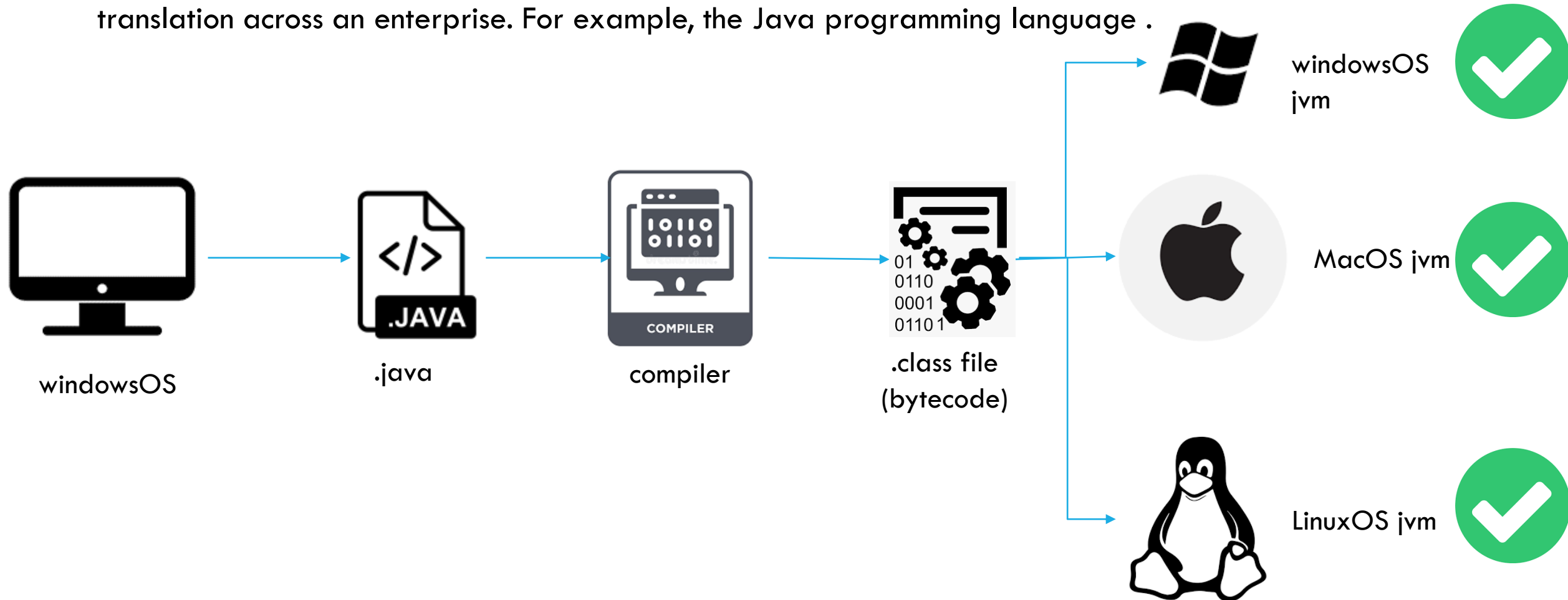
PLATFORM DEPENDENT LANGUAGES

A software developed on one platform and executed on the same platform is known platform dependent



PLATFORM INDEPENDENT LANGUAGES

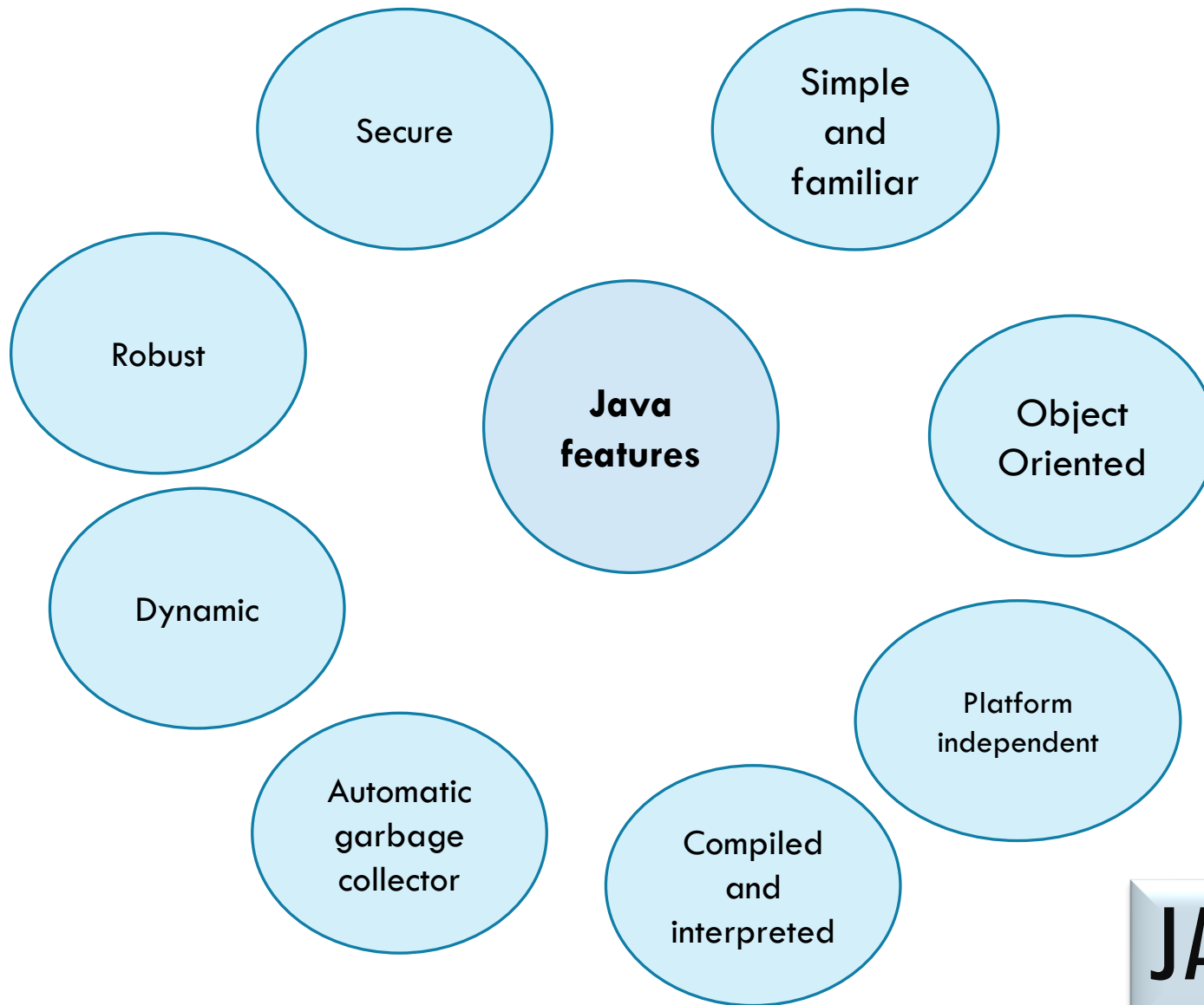
Software that can run on a variety of hardware platforms or software architectures. Platform-independent software can be used in many different environments, requiring less planning and translation across an enterprise. For example, the Java programming language .



WHAT IS JAVA??

Java is a high level , platform independent ,object oriented programming language.





JAVA FEATURES

Why is Java platform independent?

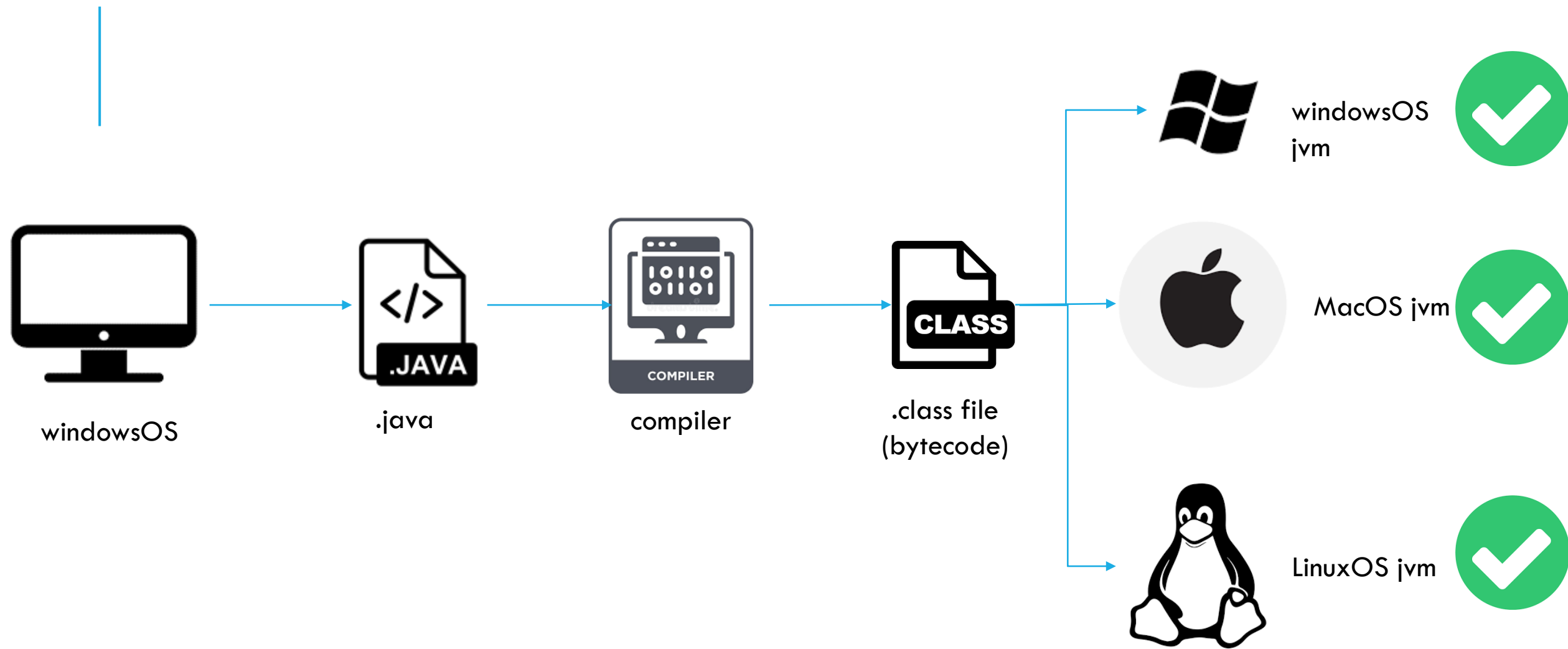
Java compiler does not directly convert high level language into a machine understandable language, instead it converts the java instructions into an intermediate language called **Bytecode**.

The file is known as class file with the 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.

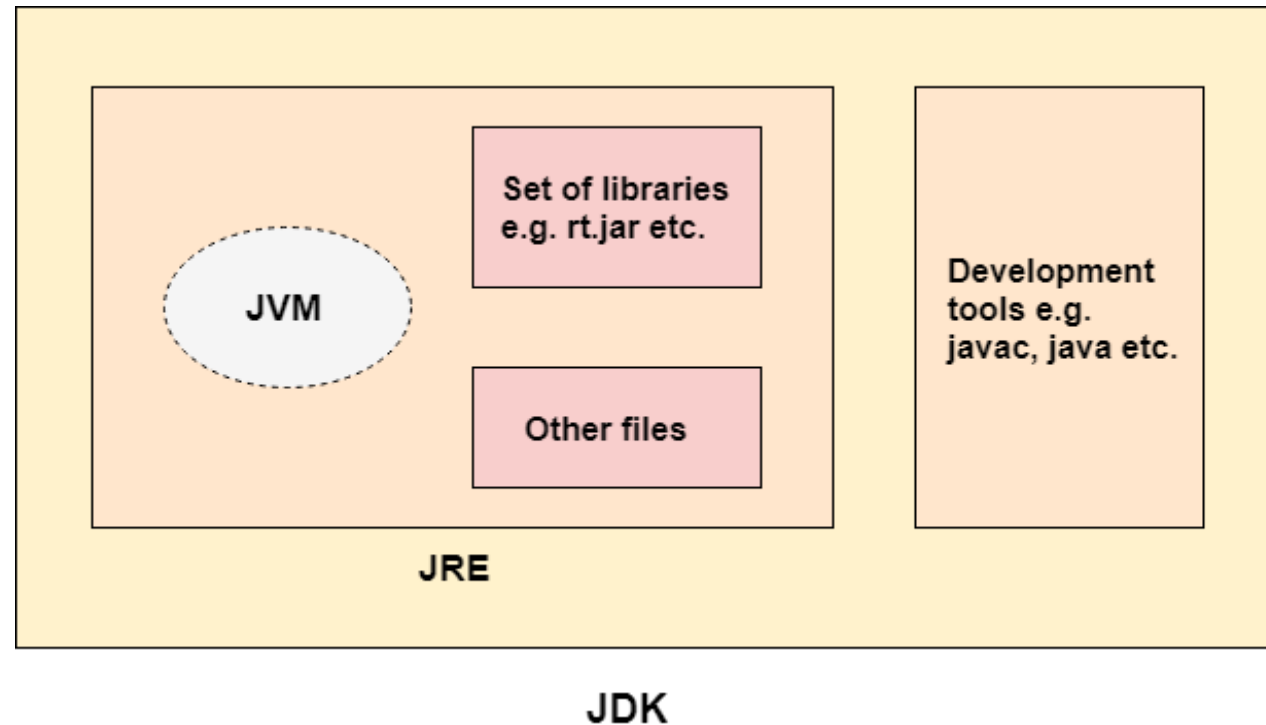
Note: Java is platform independent language but it is JVM dependent language.

- We cannot execute the class file or byte code in which the system does not contain JVM.



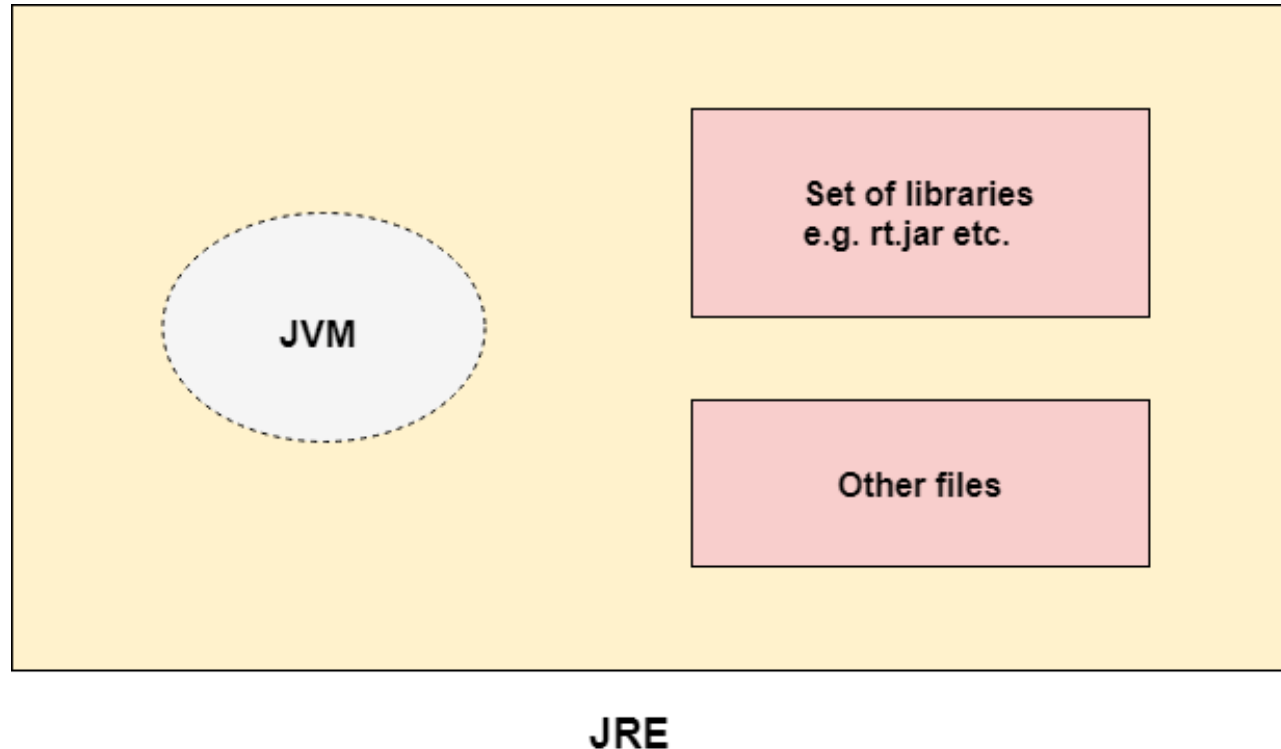
WHAT IS JDK?

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



JAVA RUNTIME ENVIRONMENT(JRE)

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



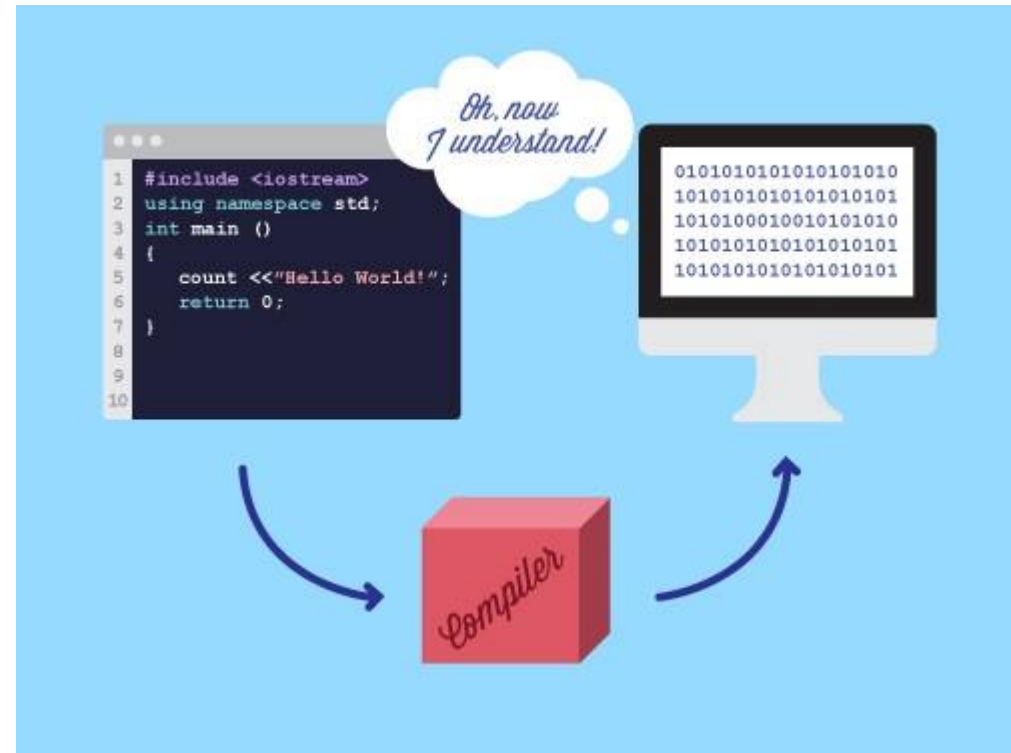
JAVA VIRTUAL MACHINE(JVM)

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

COMPILER

A compiler is a computer program that transforms code written in a high-level programming language into the machine code.

It is a program which translates the human-readable code to a language a computer processor understands (binary 1 and 0 bits).



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 high-level program into machine language.

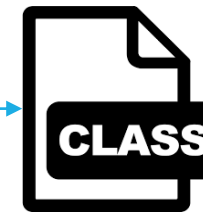
Writing code



Java source
code

compile

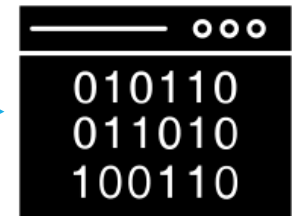
Compiling code



Byte code

interpret

Machine code



Output

COMPILER VS. INTERPRETER

Interpreter	Compiler
It translates the code instructions by instructions	It translates the entire program at once
Its execution is slow	Its execution is fast
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 Pearl use an interpreter	Java, C/C++, Scala use a compiler



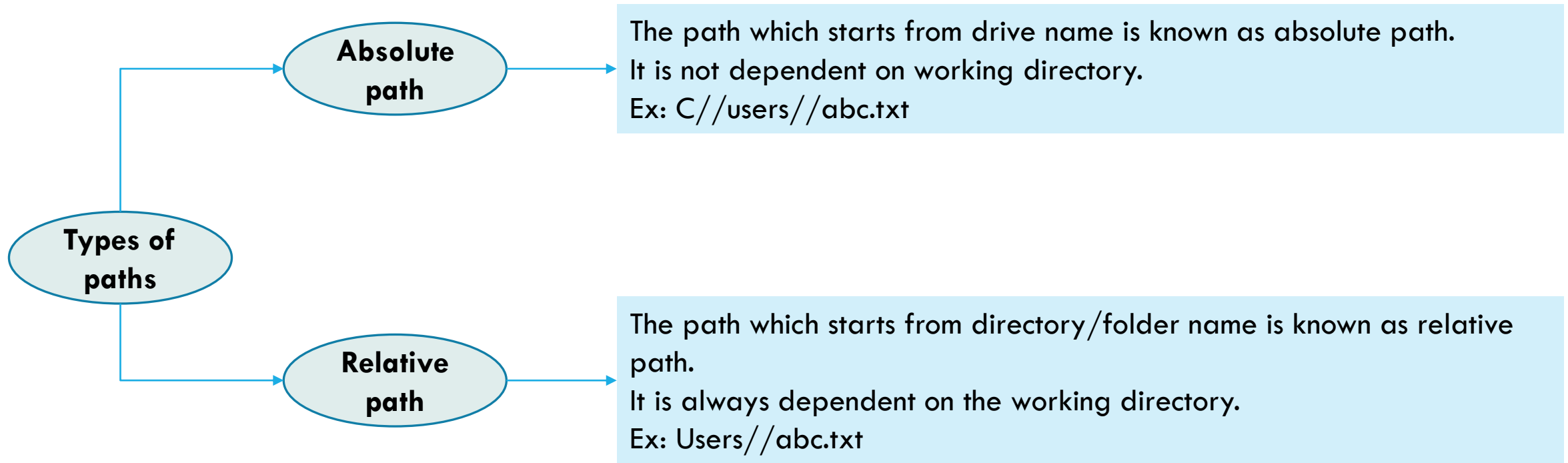
COMMAND LINE PROMPT

It is command line user interface

- **File Structure:** In windows hard disk can be divided into multiple portions and each portion is known as drive.
 - Each drive has a name. Ex : C:, D:, E:
- User home Directory: The folder that is created in user name inside the users folder is known as user home directory.
- Whenever we open the command prompt by default we are inside the user home directory.
- Working Directory: The folder which is currently in use is known as working directory or Current Working directory.

CONTINUE..

Path :A path is used to travel from one directory into another directory



BASIC COMMANDS

1. cd— Change Directory: used to change Directory.
2. md or mkdir— Used to create directory/folder.
3. dir— used to list of all the files and directories present in the working directory.
4. cls—clears the screen.
5. javac— Used to compile a java source file. We should pass source name as input to this as mentioned below:

javac filename.java

6. java—Used to execute java class file. We should pass class filename as an input to this as mentioned below:

java filename

7. ../..../-- Used to move backward multiple folder.

STRUCTURE OF A JAVA PROGRAM

Java instructions always written in a class.

```
class Class_Name
{
    public static void main(String[] args)
    {
        //statements
    }
}
```

Filename: Class_Name.java

Note: Every class in java must have a name it is known as class name.

Every class has a block, it is known as class-block.

MEMBERS OF A CLASS

In class block we can create

- Variables
- Methods
- Initializers

These are called as members of class.

- **Variables:** Variable is the container which is used to store data.
- **Methods:** It is a block of instructions which is used to perform task.
- **Initializers:** Used to execute the start up instructions.

Note: A class in java can be executed only if main method is created as follows:

Syntax to create main method

```
public static void main(String[] args)
{
    //Statements;
}
```

Note: We can create a class without main method. It is compile time successful and class file is generated but we can't execute that class.

EXAMPLE PROGRAM:

```
class Program1
{
    public static void main(String[] args)
    {
        System.out.println("Hello world");
    }
}
```

Compilation : Javac Program1.java

Execution : Java Program1

DIFFERENCE BETWEEN PRINT() AND PRINTLN() STATEMENTS

print()	println()
A method in java that is used to display a piece of text on the console which allows the cursor to remain in the same position.	A method in java that is used to display a piece of text on the console which allows the cursor to go to the next line
The cursor remains on the same line after printing the text	The cursor moves to the next line after printing the text.
print() only works with arguments; Otherwise it will cause a syntax error	println() can work without arguments
Ex: <code>System.out.print("hi");</code> <code>System.out.print();</code> // CTE	Ex: <code>System.out.println("hi");</code> // hi _ <code>System.out.println();</code> _

ACTIVITY:

1. Write a java program to print “hello world”.
2. Write a java program without a main method.
3. Write a java program to print your name.
4. Write a java program to print hello and good morning with a println statement.
5. Write a java program to print hello and good morning with a print statement(Use print() and also println() and check the output).
6. Write a java program to print your name, aggregate, year of pass out in different lines.