



This session will help audiences understand the following topics,

- What is Java?
- Advantages of Java.
- How Java programs are developed?
- How to execute java program?





- Java is an *object oriented* programming language.
- Java is *platform independent*.
 - Programs written in windows operating system can run in MacOS, Linux or any other OS.
- Java platform can be used for application development on *desktops* , *servers* and *embedded* environments.





- Java is **object oriented**. This makes java application easy to develop and maintain.
- Java is **portable** and **platform independent** - The feature write-once-run-anywhere makes the java language portable.
- Java is **Secure**, It does not use memory pointers explicitly. Security manager determines the accessibility options of a class like reading and writing a file to the local disk.
- Java is **robust**, provides support for error checking at compile time and dynamic checking at runtime.
- Java supports **multithreading** to enhance performance.
- Java supports **automatic memory management** – Refers to memory allocation and reclaiming of Java objects.





Java SE - Java Platform, Standard Edition or Java SE is a widely used platform for programming in the Java language. This is used for developing standalone java applications.

Examples: `java.net.*`, `java.io.*` etc .



Java EE - Java Platform Enterprise Edition platform is widely used for server side programming. The applications developed using JEE stack can be deployed in application servers.

Examples: Servlet, JSF, EJB, JPA.



Java ME - Java Platform, Micro Edition is a platform designed for embedded systems such as mobile devices , PDA etc.

Examples: Connected Limited Device Configuration (CLDC), Mobile Information Device Profile (MIDP), Information Module Profile (IMP).

What is Java SDK & JRE? [Click to Continue](#)



SDK expanded as **S**oftware **D**evelopment **K**it is a package used for developing and executing java applications. The platform has a compiler and interpreter integrated into it.

Developers use JDK to build and run java applications.



JRE expanded as **J**ava **r**untime **e**nvironment is a package used for executing java applications. It converts the java byte code to the necessary OS native code.

JRE is available for different operating system such as Unix, Linux and Windows etc.

JRE is used if you want to **execute** java applications alone and not develop or compile it.



Write the program save it as with an extension **.java**.

The java file will be converted to byte code (**.class file**).

Use the Java compiler "**Javac**" to compile the program.

The class file is run using the java interpreter.

Run the program using "**java**" command.

A peep into Java Package [Click to Continue](#)



Application interface which developer uses to develop java programs. Example string API and many more.

Java Components

Java API

Java Class File

Java Virtual Machine (JVM)

Java class files which developer develops to build application code.
Example: Calculator.java.
An application can have one or more class files.

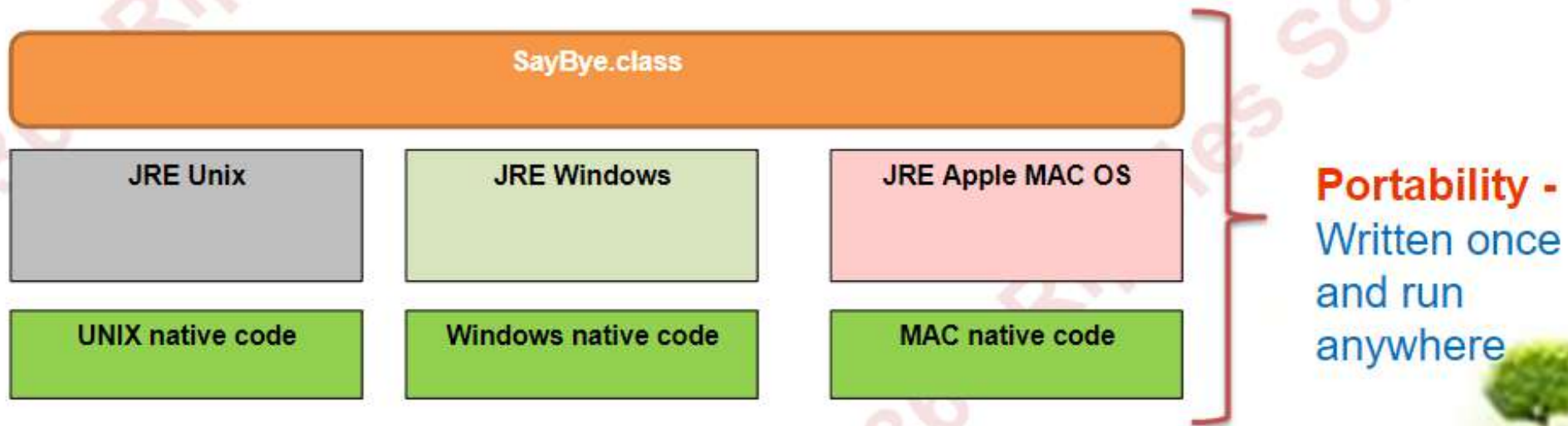
Loads class files from the file system and executes the class files using the execution engine.



How java is portable? Click to Continue



- Assume a developer Ram develops a “sayBye.java” in windows OS.
- Now assume Ram gives the sayBye.java class to Shyam who has a Unix OS.
- Shyam will install UNIX JRE in his machine which will convert the **saybye.class** to UNIX native code and execute it.
- So JRE ensures any java program developed on any OS can be run on any OS. That's how Java is portable





Demo.java:

```
public class Demo {  
  
    public static void main(String[] args) {  
        System.out.println("Say Bye");  
    }  
}
```

NOTE: The name of the file and class name should be same.

How to compile the program? : In command prompt type the following command.

`javac Demo.java`

where `javac` is the binary used for compiling java programs.

How to run the program: From the same folder run the program as follows,

`java Demo`

Where `java` is the binary used for running the program.

Output: In the console you can see the message printed Say Bye.



Introspecting the code [Click to Continue](#)



- The main method is the entry point for running java programs/applications.
- If the java program/application does not have a main method an error will be thrown.
- Once the Demo.class is executed, the interpreter searches the main method and executes it.

Syntax:

```
public static void main(String [] args)
{
    // The program implementation
    //goes here
}
```

You will learn more about the key words static and public in the subsequent chapters.



Let us analyze the below statement,

```
System.out.println("Say Bye");
```

This is a java API used for printing messages on the console. This prints messages with a line break.

The other variant of this method is

```
System.out.print("Say Bye"); //This prints messages without a line break.
```

Illustration:

```
System.out.print("1");  
System.out.print("2");  
System.out.print("3");
```

This displays the message "123" in the console without line break.

```
System.out.println("4");  
System.out.println("5");  
System.out.println("6");
```

This displays the message as below

4
5
6

with line break

