

# Training On Java

## Lecture – 1 Introduction To Java

# Java Introduction

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Vendor	Sun Micro System(which has since merged into Oracle Corporation)
Project name	Green Project
Type	Open source & free software
Initial Name	OAK language
Present Name	Java
Extensions	.java & .class & .jar
Initial version	Jdk 1.0 (java development kit)
Operating System	Multi Operating System
Implementation Lang	c, cpp.....
Symbol	Coffee cup with saucer
Objective	To develop web applications
Slogan/Motto	WORA(write once run anywhere)

# Importance Of Core Java

According to the SUN 3 billion devices run on the java language only.

- 1) Java is used to develop Desktop Applications such as MediaPlayer, Antivirus etc.
- 2) Java is used to develop Web Applications such as irctc.co.in etc.
- 3) Java is used to develop Enterprise Application such as Banking applications like Finacle.
- 4) Java is used to develop Mobile Applications.
- 5) Java is used to develop Embedded System.
- 6) Java is used to develop SmartCards.
- 7) Java is used to develop Robotics.
- 8) Java is used to develop Games .....etc.

# Java Features

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1. Simple
2. Object Oriented
3. Platform Independent
4. Architectural Neutral
5. Portable
6. Robust
7. Secure
8. Dynamic
9. Distributed
10. Multithreaded
11. Interpretive
12. High Performance

# Java Features In Details

## 1. Simple:-

Java is a simple programming language because:

- ❖ Java technology has eliminated all the difficult and confusion oriented concepts like pointers, multiple inheritance in the java language.
- ❖ The c, cpp syntaxes easy to understand and easy to write. Java maintains C and CPP syntax mainly hence java is simple language.
- ❖ Java tech takes less time to compile and execute the program.

## 2. Object Oriented:-

Java is object oriented technology because to represent total data in the form of object. By using object reference we are calling all the methods, variables which is present in that class.

# Java Features In Details (cont..)

## 3. Platform Independent:-

- ❖ Compile the Java program on one OS (operating system) that compiled file can execute in any OS (operating system) is called Platform Independent Nature.
- ❖ The java is platform independent language. The java applications allow its applications compilation one operating system that compiled (.class) files can be executed in any operating system.

## 4. Architectural Neutral:-

Java tech applications compiled in one Architecture (hardware----RAM, Hard Disk) and that compiled program runs on any hardware architecture (hardware) is called Architectural Neutral.

## 5. Portable:-

In Java tech the applications are compiled and executed in any OS(operating system) and any Architecture (hardware) hence we can say java is a portable language.

# Java Features In Details (cont..)

## 6. Robust:-

Any technology if it is good at two main areas it is said to be ROBUST

1. Exception Handling
2. Memory Allocation

JAVA is Robust because

- ❖ JAVA is having very good predefined Exception Handling mechanism whenever we are getting exception we are having meaning full information.
- ❖ JAVA is having very good memory management system that is Dynamic Memory (at runtime the memory is allocated) Allocation which allocates and deallocates memory for objects at runtime.

## 7. Secure:-

- ❖ To provide implicit security Java provide one component inside JVM called Security Manager.
- ❖ To provide explicit security for the Java applications we are having very good predefined library in the form of `java.Security.package`.

# Java Features In Details (cont..)

## 8. Dynamic:-

Java is dynamic technology it follows dynamic memory allocation (at runtime the memory is allocated) and dynamic loading to perform the operations.

## 9. Distributed:-

By using JAVA technology we are preparing standalone applications and Distributed applications.

- ❖ Standalone applications are java applications it doesn't need client server architecture.
- ❖ Web applications are java applications it need client server architecture.
- ❖ Distributed applications are the applications the project code is distributed in multiple number of jvm's.

## 10. Multithreaded:-

- ❖ Thread is a light weight process and a small task in large program.
- ❖ If any tech allows executing single thread at a time such type of technologies is called single threaded technology.
- ❖ If any technology allows creating and executing more than one thread called as multithreaded technology called JAVA.



# Java Features In Details (cont..)



## **11. Interpretive:-**

JAVA tech is both Interpretive and Compleitive by using Interpreter we are converting source code into byte code and the interpreter is a part of JVM.

## **12. High Performance:-**

If any technology having features like Robust, Security, Platform Independent, Dynamic and so on then that technology is high performance.

# Install Software And Set The Path

- 1) Download the software.
- 2) Install the software in your machine.
- 3) Set the environmental variable.

Download the software from internet based on your operating system. The software is different from 32-bit operating and 64-bit operating system.

To download the software open the following web site.

<http://www.oracle.com/technetwork/java/javase/downloads/jdk7-downloads-1880260.html>

for 32-bit operating system please click on Windows x86 :- 32- bit operating system

for 64-bit operating system please click on Windows x64 :- 64-bit operating system

After installing the software the java folder is available in the following location

Local Disk c: ----→program Files-----→java--→jdk(java development kit), jre(java runtime environment)

To check whether the java is installed in your system or not go to the command prompt. To open the command prompt Start -----→run----→open: cmd---→ok Command prompt is opened.

# Install Software And Set The Path (cont..)

In the command prompt type :- javac

'javac' is not recognized is an internal or external command, operable program or batch file

Whenever we are getting above information at that moment the java is installed but the java is not working properly.

Whenever we are typing javac command on the command prompt

- 1) Operating system will pickup javac command search it in the internal operating system calls. The javac not available in the internal command list .
- 2) Then operating system goes to environmental variables and check is there any path is sets or not. up to now we are not setting any path. So operating system don't know anything about javac command Because of this reason we are getting error message.

## **To set the environmental variable:-**

My Computer (right click on that) ---->properties----->Advanced--->Environment Variables-----> User variables→new-  
-→variable name : Path

Paste the copied path then click on OK.

Now the java is working good in your system. open the command prompt to check once C:>javac-----now list of commands will be displayed .

# Write First Java Program

Steps to write first java program:-

Step-1:- Select Editor.

Step-2:- Write the application.

Step-3:- save the application.

Step-4:- Compilation Process.

Step-5:- Execution process.

## **Step1:- Select Editor**

Editor is a tool or software it will provide very good environment to develop java application. Ex :

Notepad, Notepad++,edit Plus.....etc

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# Write First Java Program (cont..)

## Step 2:- Write a program.

- ❖ Write the java program based on the java API(Application Programming Interface) rule and regulations .
- ❖ Java is a case Sensitive Language so while writing the program you must take care about the case (Alphabet symbols).

```
import java.lang.System;  
import java.lang.String;  
class Test //class declaration  
{  
    //class starts  
    public static void main(String[] args) //program starting point  
    {  
        //main starts  
        System.out.println("Hello World"); //printing statement  
    } //main ends  
} //class ends
```

# Write First Java Program (cont..)

## Step3:- Save the application.

- ❖ After writing the application must save the application by using (.java) extension.
- ❖ While saving the application must follow two rules :-
  1. If the source file contains public class then public class and the name and source file must be same publicClassName.java). Otherwise compiler generate error message.
  2. If the source file does not contain public class then save the source file with any name(anyName.java).

## Step-4:- Compilation process.

Compile the java application by using **javac** command.

### Syntax:-

```
javac Test.java
```

## Step-5:- Execution process.

Run /execute the java application by using **java** command.

### Syntax:-

```
java class-name
```

```
java Test
```

● Hello World

# Dynamic Input In Java

## Java.util.Scanner(Dynamic Input):-

1. **Scanner** class present in **java.util** package and it is introduced in 1.5 version.
2. **Scanner** class is used to take dynamic input from the keyboard.

Scanner s = new Scanner(System.in);

To get int value ----> s.nextInt()

To get float value ---> s.nextFloat()

To get byte value ---> s.nextbyte()

To get String value ---> s.next()

To get single line ---> s.nextLine()

To close the input stream ---> s.close()

# Example Application - 1

//Develop a program in java to take different types of input and display values

```
import java.util.*;

class Test {

public static void main(String[] args) {

Scanner s=new Scanner(System.in); //used to take dynamic input from keyboard

System.out.println("enter emp hobbies");

String ehobbies = s.nextLine();

System.out.println("enter emp no");

int eno=s.nextInt();

System.out.println("enter emp name");

String ename=s.next();

System.out.println("enter emp salary");

float esal=s.nextFloat();
```



## Example Application – 1 (cont..)

```
System.out.println("*****emp details*****");  
System.out.println("emp no----->" + eno);  
System.out.println("emp name----->" + ename);  
System.out.println("emp sal----->" + esal);  
s.close(); //used to close the stream  
}  
}  
enter emp no 1001  
enter emp name Ravi  
enter emp salary 12000.0  
emp no----->1001  
emp name----->Ravi  
emp salary----->12000.0
```

## Example Application – 2

//WAP to find volume and surface area of cuboid

```
import java.util.Scanner;
```

```
class Cuboid
```

```
{
```

```
public static void main(String [] args)
```

```
{
```

```
int l,b,h;
```

```
Scanner sc=new Scanner(System.in);
```

```
System.out.print("Enter length of cuboid : ");
```

```
l=sc.nextInt();
```

```
System.out.print("Enter breadth of cuboid : ");
```

```
b=sc.nextInt();
```

```
System.out.print("Enter height of cuboid : ");
```

```
h=sc.nextInt();
```

## Example Application – 2 (cont..)

```
int v=l*b*h;  
int sa=2*(l*b+b*h+h*l);  
System.out.println("Volume of cuboid : "+v);  
System.out.println("Surface Area of cuboid : "+sa);  
}  
}
```

### Output:-

Enter length of cuboid: 10

Enter breadth of cuboid : 5

Enter height of cuboid : 4

Volume of cuboid : 200

Surface Area of cuboid : 220