

# JAVA ASSIGNMENT-1

ROLL NO: 19B01AOSE7

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- 1) write about the role of JVM , Java API in developing the platform independent Java Program with an example.

Ans: JVM (Java virtual Machine):

when a compiler compiles a Java program it converts it into Byte code. Jvm reads the code and verifies the code links it with the library. (interpreter).

Java API (Application programming Interface):

API is a list of all classes , packages , method's , constructors and interface's . These provide good functionality for the programmer.

These classes in API can be browsed by using keyword "import".

Ex: import java.util.\*;

How is Java Program platform independent.

Generally, in other languages the code is converted into its respective machine language producing a .exe file. When this file is executed / complied in other OS it can't be executed. Whereas in Java it is converted to Bytecode (.class). This Bytecode can be executed in other systems using JVM i.e. The JVM converts the bytecode into its native machine language (native code) and this can be executed. By this a code created on Mac OS can be run in both Windows OS and UNIX. API is used for the classes, packages etc.

Q. write a program to explain the concept of classes and nested classes.

A class is a user defined function which has a set of methods and object's with similar properties.

Nested classes: A class written within another class is known as nested class.

```
class OuterClass {
```

```
{
```

```
    ...  
    class NestedClass {
```

```
{
```

```
    ...  
}
```

```
}
```

→ These increase maintainance and have better readability of a program. we can fit all classes of same type at a place.

Eg:

class Outerclass // declaring class

{

int a = 70; // outer class variables

String b = "Outer class";

class Nestedclass // declaring nested class

{

int p = 80; // inner class variables

String n = "Nested class";

System.out.println("a+p=" + (a+q));

System.out.println("This is done in "+ n)

}

int c = a+q;

~~Print~~ System.out.println("This process is done in "+ b);

System.out.println("c=" + c);

```

3) import java.util.Scanner;
class Main // 1
{
    public static void main(String args[])
    {
        RailwayTicket N = new RailwayTicket();
        N.accept();
        N.update();
        N.display();
    }
}

class RailwayTicket // 2
{
    String name, coach;
    int amt, totalamt;
    long mobno;

    public void accept()
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter your name:");
        name = sc.nextLine();
        System.out.println("Enter coach (First/second
                           /Third/sleeper)");
        coach = sc.nextLine();
    }
}

```

```
System.out.println("Enter Mobile number:");
mobno = sc.nextInt();
System.out.println("Enter amount:");
amt = sc.nextInt();
}

public void update()
{
    if (coach == "First")
        total amt = amt + 700;
    else if (coach == "Second")
        total amt = amt + 500;
    else if (coach == "Third")
        total amt = amt + 250;
    else if (coach == "Sleeper")
        total amt = amt;
}

public void display()
{
    System.out.println("Railway Ticket");
    System.out.println("Name: " + name);
    System.out.println("coach: " + coach);
    System.out.println("Amount: " + total amt);
}
```

```
4) import java.util.*;  
class Main  
{  
    public static void main(String args[])  
    {  
        volumes obj = new volumes();  
        double a = obj.volume(3);  
        System.out.println("volume of sphere :" + a);  
        double b = obj.volume(3, 4);  
        System.out.println("volume of cylinder :" + b);  
        double c = obj.volume(5, 6, 7);  
        System.out.println("volume of cuboid :" + c);  
    }  
}  
class volumes  
{  
    double volume(double r)  
    {  
        double v = 4/3 * 3.14159 * r * r * r;  
        return v;  
    }  
    double volume(double h, double r)  
    {  
        double v = 3.14159 * r * r * h;  
        return v;  
    }  
}
```

double volume (double l, double b, double h)

{

double v = l\*b\*h;

return v;

}

}

— \* — \* —