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JAVA PROGRAMMING 19BQ1A05P3

Assignment-1 2nd-CSE-D

1. write about the role of Two JVM and Java API in developing the Platform independent java Program with suitable example?

Ans: The meaning of platform independent is that the Java compiled code can run on all operating systems. while the role of JVM in independent Platform is that it acts as a virtual Processor, which Processes the Byte code to machine code to instructions for various platforms. i.e Programs written in Java are compiled into the Java Byte code, which is then independerted by a serial Java Interpreter by a special Java for specific Platform.

Here Java is Platform independent but Java is the Platform dependent for example, If we are running Mac, osx we will have a different JVM than if we are running windows or some other operating system this can be verified while downloading the JDK which gives a list of os targeted files Hence, we conclude that the Programing language, we write in any JDK is same, while the JDK file we use is Platform dependent. Therefore, JVM is Platform dependent & Java is Platform independent.

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Java API (Application Programing interface) is a list of all classes that are the Part of Java development kit. it includes all Java Packages, classes and interfaces along with their metrods, fields and constructors. These Pre-written classes Provide a tremendous amount of functionality to a Programer.

for example Processing reference is an API in the classes and functions we used to write. Processing code similarly, the Java API is the list of classes and fonctions we use to write. Java code. The Point is that an. API is a. collection of things we can do when writing code.

2. Explain the concept of classes and Nested classes in Java with an example?

Ans:
2. class - A class is a user defined blue Point e, Prototype. from which objects are created It. represents the set of Properties or methods that are common. to all objects of one type.
The components of a class are:
→modifiers: A class can be Public or has default access.
→class name: The name should begin with a initial letter (capitalized by convention)

→ Also a class can contain sub class. super class or an Interface also.

General structure of a class:

```
Public class class name{
        instance/class variable declaration
        Default constructor (optional);
        Parameterised constructors (if any;)
        methods;
        and any. other components.
        }.
```

```
Public class. static Nestedclass Demo {.
      Public static void main(string a[]){
          outerclass: static. Nested. class nestedobject
          nested object new outerclass. staticNested
                                              class ();
          nested object display ()

          }

      }
```

output

```
outer-x: 10;
outer-Private: 30.
```

// Program for Innerclass

//we can access non. static members of. outer class also class outerclass{.

```
        static int outer_x = 10;
        int outer_y = 20;
        Private int outer_Private = 30;
        class Innerclass {
            void display(){
                system.out.Print ln ("outer-x="+outer_x);
                system.out.Paint ln ("outer-y="+outer_x);
                system.out.Paint ln ("outer_Private="+outer_Private
            }
        }
    }
Public class Inner class Demo{
        Public static void main(string a[]){
          outerclass outerobject =new outerclass();
          outerclass.Innerclass inner object =
                  outer object.newInnerclass();

Public class static Nestedclass Demo{
       Public static void main(string a[]){
            outerclass.static Nestedclass nested object;
            nestedobject new outerclass static Nestedclass
            nested object display();
       }
}
```

outPut:

```
outer_x=10;
outer-Private =30
```

//Program for Innerclass.

//we can access non static members of outer class also

```
class outerclass.{
    static   int  outer_x=10;
    int  outer-y = 20;
    Private  int  outer_Pvivate =30;
    class Innerclass{
        void display.(){.
            system.out.Println("outer-x="+outer-x);
            system.out.Println("outer-y="+outer-y);
            system.out.Println("outer-Private="+outer
                                          -Private)
        }.
    }
}.
Public class  Inner class Demo{.
    Public static void main (string a[]){.
        outer class. outer object =new outer class();
        outerclass.Innerclass  inner object =
        outerobject.newInnerclass();
  inner object display()
  }
}
```

<u>output</u>

```
outer_x=10
outer-y=20
outer-Private=30.
```

3 Design a class Railway Ticket with the following description instance variables/data numbers.

String name: to store name of customer

String coach: to store type of coach

long mobno: to store customer mobile number

int amt: to store basic amount of tickets

int totalamt: to store the amount to be. Paid after uploading the original amount.

methods:-

void accepts()
void updates()
void display()

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Types of coaches	Amount
First - Ac	700
second - Ac	500
Third - Ac	250
sleeper	None.

write The main() method to create an object of class and call the above methods.

```
class RailwayTicket{
    Private string name:
    Private string coach:
    Private long mobno:
    Private int amt:
    Private int totamt:
    public void accept(string name, string coach, long
                                mobno, int amt)
    {
        this name = name;
        this.coach = coach;
        this.mobno = mobno:
        this.amt = amt;
    }.
    Public void update (){
        if (coach.compareTo("first_ac") == 0)
        this.total amt = amt + 700;
```

```
else if (coach.comPareTo ("Second-ac")==0)
this.total amt =amt+500;
else if (coach.comPareTo ("third-ac")==0)
this total amt = amt +250;
else if (coach.comPareTo("sleeper")==0)
this total amt = amt+0;
else
this total amt=0;
}
Public void display(){
    if (totalamt==0)
    system.out.Println("Invalid coach Type" "Tryagain");
     else {
     system.out.Println("Name."+ name + "\n coach type"
                          + coach+" total amount Rs"
                           + total amt + "/-\n" +
                          "mobile:+91" +mobno+"\n
                               THANKyou... safe JOURNEY");
Public class Assignment{
    Public static void main(String args[]){
    system.out.Println("\t\t\t\t INDIANRAILWAYS\t\t\t\t");
    system.out.Println("\t\t\t SOUTH CENTRAL RAILways");
    system.out.Println("\t\t\t GUNTUR RAILway STATION");
    Scanner sc= new Scanner(system.in);
    system. out. Println("enter Passenger Name: ");
    string name= sc.nextLine();
     system. out. Println ("\n 1.First-Ac\n 2. second-Ac\n
                              3.Third-Ac\n 4.sleeper\n
                                          enter coach");

 system. out. Println("numeric characters not allowed");
 String  coach=sc.next line();
  system. out. Print ("enter mobile number+91 ");
   long mobno= sc.next long ();
   system. out. Println ("Base amount: 150/- ");
   final int  amt = 150;
   Railway Ticket ticket= new RailwayTicket();
   ticket. accept (name, coach, mobno, amt);
    ticket. update();
    ticket. display ();
    system. out. Println (" #stay Home... STAY SAFE ");
   }
 }
```

4. Design a class to overload a function volume ( ) as follows

(i) double volume (double r) - with 'r' radius as an argument, return the volume of sphere using the formula.

$$V = \frac{4}{3} \times \frac{22}{7} \times r^3$$

(ii) double volume (double h, double r) - with height 'h' and radius 'r' as the arguments returns the volume of cylinder. using the formula

$$V = \frac{22}{7} \times r^2 \times h$$

(iii). double volume (double l, double b, double h). with length l breadth b, height h as the arguments, returns the volume of a cuboid using the formula

$$V = l \times b \times h.$$

```
class volume {
        Public double volume (double r) {
            double v = (4/3) * (22/7) * (r*r*r);
            return v;
        }
      Public double volume (double h, double r) {.
            double v= (22/7) * (r* r) *h;
            return v;
      }.
```

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```
    Public double volume (double l, double b, double h){
        double v = l*b*h;
        return v;
    }
  }
Public class Assignment{
  Public static void main(string. args [ ]){
      volume vol. new volume();
      Scanner sc =new scanner (system.In);
      system.out.Println("1. volume of sphere\n
                          2. volume of cylinder \n
                          3. volume of cuboid\n
                                   Enter choice: ");

      int ch = sc. next Int();
      switch (ch){
          case 1;
                system.out.Println("vol. of sphere\nradius;"
                double r = sc. next Double();
                double v1 = vol. volume (r);
      system n. Point ln.("result: "+v1);
      case 2:
```

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```
        system.out.Println("volume of cylinder");
        system.out.Println("enter height & radius");
        double h =  sc.next Double();
        double r1 =  sc.next Double();
        double v2 = vol.volume(h,r1);

        System.out Println("result:"+v2);
        break;
    case 3:
        system.out.Print ln("volume of cuboid");
        system.out.Print ln("Enter l,b,h");
        double l= sc.next Double();
        double b= sc. next Double();
        double h1= sc.next Double();
        double v3= vol.volume(l,b,h1);
        system.out.Print ln("result:"+v3);
        break;
    default
        system.out.Println("choice out of Range");
        }
    }
}.
```

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