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## Assignment No 3

**Q1)**

```java
import java.util.Scanner;

public class assg31 {
    static double radius;
    static final double PI = 3.14159;

    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.print("Enter the radius of the sphere: ");
        radius = scanner.nextDouble();

        double area = calculateArea();
        double volume = calculateVolume();

        System.out.println("Area of the sphere: " + area);
        System.out.println("Volume of the sphere: " + volume);
        scanner.close();
    }
```

```java
public static double calculateArea() {

    double area = 4 * PI * radius * radius;

    return area;

}


public static double calculateVolume() {

    double volume = (4.0 / 3.0) * PI * radius * radius * radius;

    return volume;

}
}
```

```
PS C:\Java\Assignments> cd "c:\Java\Assignments\" ; if ($?) { javac assg31.java } ; if ($?) { java assg31 }
Enter the radius of the sphere: 5
Area of the sphere: 314.159
Volume of the sphere: 523.5983333333332
PS C:\Java\Assignments>
```
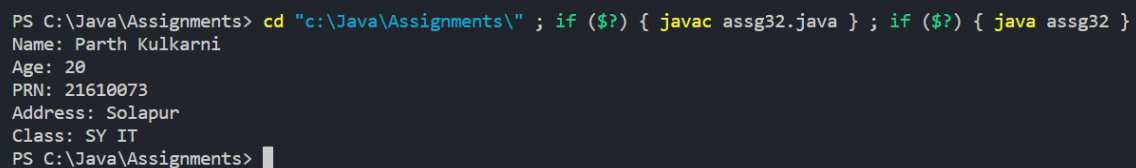
## Q2)

```java
public class assg32 {

    static String name = "Parth Kulkarni";

    static int age = 20;

    static int prn = 21610073;

    static String address = "Solapur";

    static String studentClass = "SY IT";


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

```java
    {
        System.out.println("Name: " + name);

        System.out.println("Age: " + age);

        System.out.println("PRN: " + prn);

        System.out.println("Address: " + address);

        System.out.println("Class: " + studentClass);
    }
}
```

```
PS C:\Java\Assignments> cd "c:\Java\Assignments\" ; if ($?) { javac assg32.java } ; if ($?) { java assg32 }
Name: Parth Kulkarni
Age: 20
PRN: 21610073
Address: Solapur
Class: SY IT
PS C:\Java\Assignments>
```

**Q3)**

```java
public class assg33 {

    private static String staticString = "I am a static string in the
OuterClass.";

    private String nonStaticString = "I am a non-static string in the
OuterClass.";


    // Static inner class
    public static class StaticInnerClass {
```

```java
        public void printStaticString() {
            System.out.println("Printing static string from static inner
class: " + staticString);
        }
    }


    // Non-static inner class
    public class NonStaticInnerClass {
        public void printNonStaticString() {
            System.out.println("Printing non-static string from non-static
inner class: " + nonStaticString);
        }
    }


    public static void main(String[] args) {
        // Accessing static members using static inner class
        assg33.StaticInnerClass staticInnerObj = new
assg33.StaticInnerClass();
        staticInnerObj.printStaticString();


        // Accessing non-static members using non-static inner class
        assg33 outerObj = new assg33();
        assg33.NonStaticInnerClass nonStaticInnerObj = outerObj.new
NonStaticInnerClass();
        nonStaticInnerObj.printNonStaticString();
```

```
    }
}
```

PS C:\Java\Assignments> cd "c:\Java\Assignments\" ; if ($?) { javac assg33.java } ; if ($?) { java assg33 }
Printing static string from static inner class: I am a static string in the OuterClass.
Printing non-static string from non-static inner class: I am a non-static string in the OuterClass.
PS C:\Java\Assignments>

## Q4)

```java
public class assg34 {

    public static void main(String[] args) {

        final int speedLimit = 100; // the speed limit is 100 km/h

        int currentSpeed = 110; // assume the current speed is 110 km/h

        if (currentSpeed > speedLimit) {

            System.out.println("You are exceeding the speed limit of " + speedLimit + " km/h.");

            System.out.println("Please slow down and drive safely!");

        } else {

            System.out.println("You are within the speed limit.");

            System.out.println("Drive safely!");

        }
```

```
    }
}
```

PS C:\Java\Assignments> cd "c:\Java\Assignments\" ; if ($?) { javac assg34.java } ; if ($?) { java assg34 }
You are exceeding the speed limit of 100 km/h.
Please slow down and drive safely!
PS C:\Java\Assignments> ▌

## Q5)

```
abstract class Bank {

    abstract int getBalance();

}


class BankA extends Bank {

    private int balance = 100;

    @Override
    int getBalance() {

        return balance;

    }

}


class BankB extends Bank {

    private int balance = 150;
```

```java
    @Override
    int getBalance() {
        return balance;
    }
}


class BankC extends Bank {
    private int balance = 200;


    @Override
    int getBalance() {
        return balance;
    }
}


public class assg35 {
    public static void main(String[] args) {
        BankA bankA = new BankA();
        BankB bankB = new BankB();
        BankC bankC = new BankC();

        System.out.println("Balance in Bank A: $" + bankA.getBalance());
        System.out.println("Balance in Bank B: $" + bankB.getBalance());
```

```
        System.out.println("Balance in Bank C: $" + bankC.getBalance());

   }

}
```

```
PS C:\Java\Assignments> cd "c:\Java\Assignments\" ; if ($?) { javac assg35.java } ; if ($?) { java assg35 }
Balance in Bank A: $100
Balance in Bank B: $150
Balance in Bank C: $200
PS C:\Java\Assignments>
```

## Q6)

```java
abstract class AbstractClass {

   AbstractClass() {

      System.out.println("This is constructor of abstract class");

   }


   abstract void a_method();


   void normal_method() {

      System.out.println("This is a normal method of abstract class");

   }
}


class SubClass extends AbstractClass {
```

```java
    @Override

    void a_method() {

        System.out.println("This is abstract method");

    }

}


public class assg36 {

    public static void main(String[] args) {

        SubClass obj = new SubClass();

        obj.a_method();

        obj.normal_method();

    }

}
```

```
PS C:\Java\Assignments> cd "c:\Java\Assignments\" ; if ($?) { javac assg36.java } ; if ($?) { java assg36 }
This is constructor of abstract class
This is abstract method
This is a normal method of abstract class
PS C:\Java\Assignments>
```

**Q7)**

```java
abstract class Shape {

    abstract void RectangleArea(double length, double breadth);

    abstract void SquareArea(double side);

    abstract void CircleArea(double radius);
```

```java
    }

class Area extends Shape {

    @Override

    void RectangleArea(double length, double breadth) {

        double area = length * breadth;

        System.out.println("Area of rectangle with length " + length + " and breadth " + breadth + " is " + area);

    }


    @Override

    void SquareArea(double side) {

        double area = side * side;

        System.out.println("Area of square with side " + side + " is " + area);

    }


    @Override

    void CircleArea(double radius) {

        double area = Math.PI * radius * radius;

        System.out.println("Area of circle with radius " + radius + " is " + area);

    }
}
```

```java
public class assg37 {

    public static void main(String[] args) {

        Area obj = new Area();

        obj.RectangleArea(4, 5);

        obj.SquareArea(3);

        obj.CircleArea(2);

    }

}
```

.

```
PS C:\Java\Assignments> cd "c:\Java\Assignments\" ; if ($?) { javac assg37.java } ; if ($?) { java assg37 }
Area of rectangle with length 4.0 and breadth 5.0 is 20.0
Area of square with side 3.0 is 9.0
Area of circle with radius 2.0 is 12.566370614359172
PS C:\Java\Assignments>
```

**Q8)**

```java
import useful.useme;

import java.util.*;

class eight {

    public static void main(String[] args) {

        Scanner sc=new Scanner(System.in);

        useme obj =new useme();

        System.out.println("Enter the length and height of the shape :");

        int l,h;
```

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

            h=sc.nextInt();

            int area=obj.area(l, h);

            System.out.println("Enter the Total marks :");

            int a=sc.nextInt();

            System.out.println("Enter the marks obetained :");

            int b=sc.nextInt();

            double per=obj.percentage(b,a);

            System.out.println("the Area is :"+area);

            System.out.println("the Percentage is :"+per);

            sc.close();

        }

}

package useful;

public class useme{

    public int area(int l,int b){

        return l*b;

    }

    public double percentage(int marksObetained,int totalMarks){

        return (marksObetained*100)/totalMarks;

    }

    public static void main(String[] args) {


    }
```

```
}
```

```
PS D:\programing\java> cd "d:\programing\java\" ; if ($?) { javac eight.java } ; if ($?) { java eight }
Enter the length and height of the shape :
20 30
Enter the Total marks :
100
Enter the marks obetained :
80
the Area is :600
the Percentage is :80.0
PS D:\programing\java>
```