Institute of Engineering & Management
Department of Computer Science & Engineering
Object Oriented Programming (IT) Lab for 3rd year 5th semester 2018
Code: CS594D

Date: 24/07/18

WEEK-3

Assignment-1

Problem Statement: Create a class called boardparam that contans 2 instance variables length and width of the integer type and a void method for calculating surface area of the board, using parameterised method to create the object.

Source code:

```
import java.util.Scanner;

class Main1
{
 public static void main(String[] args)
 {
       Scanner sc = new Scanner(System.in);
       System.out.print("Enter the length: ");
       int len=sc.nextInt();
       System.out.print("Enter the length: ");
       int wid=sc.nextInt();
       BoardParam bp = new BoardParam();
       bp.getValue(len, wid);
       System.out.println("\nThe area of the board: "+bp.area());
       sc.close();
 }
}

class BoardParam
{
 int length, width;
 void getValue(int n1, int n2)
 {
       length = n1;
       width = n2;
 }
 int area()
 {
       return length*width;
 }
}
```

Screen-Shot:

```
rana@rana:~/Desktop/Java/3/BoardParam$ javac problem1.java
rana@rana:~/Desktop/Java/3/BoardParam$ java Main1
Enter the length: 5
Enter the Width: 6

The area of the board: 30
rana@rana:~/Desktop/Java/3/BoardParam$
```

Assignment-2

Problem Statement: Create a class named shape. make circle, triangle, and rectangle as object of the shape class and calculate their area by concept of method overloading.

Source code:

```
import java.util.Scanner;
import java.lang.Math;

class Main2
{
 public static void main(String[] args)
 {
       Scanner sc = new Scanner(System.in);
       System.out.print("Enter the shape: ");
       String len=sc.next();
       Shape sh = new Shape();
       switch(len)
       {
             case "circle":System.out.print("Enter the radius: ");
                         double radius = sc.nextDouble();
                         sh.area(radius);
                         break;
             case "rectangle":System.out.print("Enter the length: ");
                         double length = sc.nextDouble();
                         System.out.print("Enter the breadth: ");
                         double breadth = sc.nextDouble();
                         sh.area(length, breadth);
                         break;
             case "triangle":System.out.print("Enter the 1st
                                                   side length:");
                         double tri1 = sc.nextDouble();
                         System.out.print("Enter the 2nd side length:");
                         double tri2 = sc.nextDouble();
                         System.out.print("Enter the 3rd side length:");
                         double tri3 = sc.nextDouble();
                         sh.area(tri1, tri2, tri3);
                         break;
             default: System.out.println("No such Shape!!");
       }
       System.out.println("The area is "+sh.area);
       sc.close();
 }
}

class Shape
{
 double area;
 void area(double n1) { area = Math.PI*n1*n1; }
 void area(double n1, double n2) { area = n1*n2; }
 void area(double n1, double n2, double n3)
 {
       double s = (n1+n2+n3)/2;
       area = Math.sqrt(s*(s-n1)*(s-n2)*(s-n3));
 }
}
```

Screen-Shot:

```
rana@rana:~/Desktop/Java/3/Shape$ javac problem2.java
rana@rana:~/Desktop/Java/3/Shape$ java Main2
Enter the shape: circle
Enter the radius: 3
The area is 28.274333882308138
rana@rana:~/Desktop/Java/3/Shape$ java Main2
Enter the shape: rectangle
Enter the length: 3
Enter the breadth: 2
The area is 6.0
rana@rana:~/Desktop/Java/3/Shape$ java Main2
Enter the shape: triangle
Enter the 1st side length: 2
Enter the 2nd side length: 3
Enter the 3rd side length: 4
The area is 2.9047375096555625
rana@rana:~/Desktop/Java/3/Shape$
```

Assignment-3

Problem Statement: Write a java program to calculate the addition of two matrix class contains an integer 2D array with dimension n x m.

Source code:

```
import java.util.Scanner;

class Main3
{
 public static void main(String[] args)
 {
       Scanner sc = new Scanner(System.in);
       System.out.print("For 1st Matrix,\n Enter the no. of row: ");
       int r=sc.nextInt();
       System.out.print(" Enter the no. of col: ");
       int c=sc.nextInt();
       Matrix mtx1 = new Matrix(r,c);
       mtx1.getValue();
       System.out.print("For 2nd Matrix,\n Enter the no. of row: ");
       r=sc.nextInt();
       System.out.print(" Enter the no. of col: ");
       c=sc.nextInt();
       Matrix mtx2 = new Matrix(r,c);
       mtx2.getValue();
       System.out.println("\nThe result is:");
       mtx1.add(mtx2);
       mtx1.display();
       sc.close();
 }
}
```

```
class Matrix
{
 int row, col;
 int mtx[][];
 Matrix(int m, int n)
 {
       row = m;
       col = n;
       mtx = new int[row][col];
 }
 void getValue()
 {
       Scanner sc = new Scanner(System.in);
       for(int i=0;i<row;i++)
       {
             for(int j=0;j<col;j++)
             {
                   mtx[i][j] = sc.nextInt();
             }
       }
 }
 void add(Matrix mtx2)
 {
       if(row!=mtx2.row || col!=mtx2.col)
       {
             System.out.println("Not possible!!");
       }
       else
       {
             for(int i=0;i<row;i++)
             {
                   for(int j=0;j<col;j++)
                   {
                         mtx[i][j] += mtx2.mtx[i][j];
                   }
             }
             System.out.println("Done!");
       }
 }
 void display()
 {
       for(int i=0;i<row;i++)
       {
             for(int j=0;j<col;j++)
             {
                   System.out.print("  "+mtx[i][j]);
             }
             System.out.println();
       }
 }
}
```

Screen-Shot:

```
rana@rana:~/Desktop/Java/3/Matrix$ javac problem3.java
rana@rana:~/Desktop/Java/3/Matrix$ java Main3
For 1st Matrix,
 Enter the no. of row: 3
 Enter the no. of col: 2
1 2
3 4
5 6
For 2nd Matrix,
 Enter the no. of row: 3
 Enter the no. of col: 2
6 5
4 3
2 1

The result is:
Done!
  7  7
  7  7
  7  7
rana@rana:~/Desktop/Java/3/Matrix$
```