Homework 2

- 1. Rectangle
 - Code Rectangle.java

```
public class Rectangle {
    double width;
    double height;
}
```

1) Menampilkan infromasi dari objek Rectangle yang direferensikan oleh variable

```
public class TestRectangle {
    public static void main(String[] args) {
        Rectangle rect0 = new Rectangle();
        rect0.width = Math.random();
        rect0.height = Math.random();
        Rectangle rect1 = new Rectangle();
        rect1.width = Math.random();
        rect1.height = Math.random();
        // (1) start...
        double area0 = rect0.width * rect0.height;
        double area1 = rect1.width * rect1.height;
        System.out.println("rect0\n" + "width: " + rect0.width );
        System.out.println("height: " + rect0.height );
        System.out.println("area: " + area0 );
        System.out.println("rect1\n" + "width: " + rect1.width );
        System.out.println("height: " + rect1.height );
        System.out.println("area: " + area1 );
```

```
PS D:\Kuliah\Semester 2\Praktikum ASD\homework\homework2> javac *.java
PS D:\Kuliah\Semester 2\Praktikum ASD\homework\homework2> java TestRectangle
rect0
width: 0.22112546329660876
height: 0.680572413601052
area: 0.15049189026442386
rect1
width: 0.08950823189302937
height: 0.227712204663995
area: 0.020382116819937828
PS D:\Kuliah\Semester 2\Praktikum ASD\homework\homework2>
```

2) Menggunakan array rects

```
public class TestRectangle {
    public static void main(String[] args) {
        // (2) start...
        Rectangle[] rects = new Rectangle[2];
        double[] area = new double[2];
        for (int i=0; i<2; i++){
            rects[i] = new Rectangle();
            rects[i].width = Math.random();
            rects[i].height = Math.random();
            area[i] = rects[i].width * rects[i].height;
            System.out.println("rect" + i);
            System.out.println("width: " + rects[i].width );
            System.out.println("height: " + rects[i].height );
            System.out.println("area: " + area[i] );
        }
        // ...(2) end
    }
}</pre>
```

```
PS D:\Kuliah\Semester 2\Praktikum ASD\homework\homework2> javac *.java
PS D:\Kuliah\Semester 2\Praktikum ASD\homework\homework2> java TestRectangle
rect0
width: 0.6002669887657877
height: 0.7755014716723815
area: 0.4655079331842172
rect1
width: 0.6922912686904813
height: 0.16051277986406143
area: 0.11112159601312703
PS D:\Kuliah\Semester 2\Praktikum ASD\homework\homework2>
```

3) Array menyimpan 10 objek Rectangle

```
public class TestRectangle {
    public static void main(String[] args) {
        // (3) start...
        Rectangle[] rects = new Rectangle[10];
        double[] area = new double[10];
        for (int i=0; i<10; i++){
            rects[i] = new Rectangle();
            rects[i].width = Math.random();
            rects[i].height = Math.random();
            area[i] = rects[i].width * rects[i].height;
            System.out.println("rect" + i);
            System.out.println("width: " + rects[i].width );
            System.out.println("height: " + rects[i].height );
            System.out.println("area: " + area[i] );
        }
        // ...(3) end
    }
}</pre>
```

```
PS D:\Kuliah\Semester 2\Praktikum ASD\homework\homework2> java TestRectangle
width: 0.8034721408809716
height: 0.022550834432870093
area: 0.018118967220430465
width: 0.18215525906531005
height: 0.903595535848988
area: 0.16459467892283006
rect2
width: 0.9757682125562351
height: 0.1771692503670924
area: 0.17287612275062586
rect3
width: 0.895675527934233
height: 0.2684172477500235
area: 0.24041476008515614
rect4
width: 0.07555785119531344
height: 0.35070158404087737
area: 0.026498258100921324
rect5
width: 0.5388553991233377
height: 0.9008003931857789
area: 0.4854011554005824
rect6
width: 0.7324877764373479
height: 0.4742679696440132
area: 0.3473954905199988
rect7
width: 0.13300727220936515
height: 0.6097865411696576
area: 0.0811060444709599
rect8
width: 0.45948374858479557
height: 0.2671637922145753
area: 0.12275742073288248
rect9
width: 0.3954653196901352
height: 0.04570468475807499
area: 0.018074617769188974
PS D:\Kuliah\Semester 2\Praktikum ASD\homework\homework2>
```

4) Mengeluarkan output informasi Rectangle terbesar dan terkecil

```
public class TestRectangle {
    public static void main(String[] args) {
        // (4) start...
        Rectangle[] rects = new Rectangle[10];
        double[] area = new double[10];
        for (int i=0; i<10; i++){
            rects[i] = new Rectangle();
            rects[i].width = Math.random();
            rects[i].height = Math.random();
            area[i] = rects[i].width * rects[i].height;
        }
}</pre>
```

```
Rectangle maxRect = new Rectangle();
Rectangle minRect = new Rectangle();
maxRect = rects[0];
minRect = rects[0];
for (int i=0; i<10; i++){
    if(area[i] > maxRect.width*maxRect.height){
        maxRect = rects[i];
    if(area[i] < minRect.width*minRect.height){</pre>
        minRect = rects[i];
System.out.println("rect" + " terbesar");
System.out.println("width: " + maxRect.width );
System.out.println("height: " + maxRect.height );
System.out.println("area: " + maxRect.width*maxRect.height );
System.out.println("rect" + " terkecil");
System.out.println("width: " + minRect.width );
System.out.println("height: " + minRect.height );
System.out.println("area: " + minRect.width*minRect.height );
```

```
PS D:\Kuliah\Semester 2\Praktikum ASD\homework\homework2> javac *.java
PS D:\Kuliah\Semester 2\Praktikum ASD\homework\homework2> java TestRectangle
rect terbesar
width: 0.8999891444034006
height: 0.8642525271840971
area: 0.7778178924888922
rect terkecil
width: 0.3993147299728299
height: 0.03340593245007273
area: 0.013339480895791388
PS D:\Kuliah\Semester 2\Praktikum ASD\homework\homework2>
```

2. Buku

Code Buku.java

```
public class Buku {
    String judul;
    String penulis;
    int harga;
}
```

• Code TectBook.java

```
public class TestBook {
    public static void main(String[] args) {
        // membuat array yang menyimpan 3 instance Buku
        Buku[] buku = new Buku[3];
        buku[0] = new Buku();
        buku[0].judul = "Introduction to Java Programming and Data
Structures";
        buku[0].penulis = "Daniel Liang";
        buku[0].harga = 355000;
        buku[1] = new Buku();
        buku[1].judul = "Advanced Java Programming";
        buku[1].penulis = "Uttam Roy";
        buku[1].harga = 236250;
        buku[2] = new Buku();
        buku[2].judul = "Practical Java Programming";
        buku[2].penulis = "Perry Xiao";
        buku[2].harga = 95000;
        // menghitung harga total termasuk pajak 10% lalu disimpan ke
array hargaTotal
        int[] hargaTotal = new int[3];
        for(int i=0; i<3; i++){
            hargaTotal[i] = buku[i].harga * 110/100;
        // menampilkan infromasi ter-update (judul, penulis, dan harga
total)
        for(int i=0; i<3; i++){
            System.out.println("Judul: " + buku[i].judul);
            System.out.println("Penulis: " + buku[i].penulis);
            System.out.println("Harga Total (pajak 10%): Rp" +
hargaTotal[i]);
            System.out.println();
```

```
PS D:\Kuliah\Semester 2\Praktikum ASD\homework\homework2> java TestBook
Judul: Introduction to Java Programming and Data Structures
Penulis: Daniel Liang
Harga Total (pajak 10%): Rp390500

Judul: Advanced Java Programming
Penulis: Uttam Roy
Harga Total (pajak 10%): Rp259875

Judul: Practical Java Programming
Penulis: Perry Xiao
Harga Total (pajak 10%): Rp104500

PS D:\Kuliah\Semester 2\Praktikum ASD\homework\homework2>
```

3. Line Length

• Code Point.java

```
public class Point {
    int x;
    int y;
}
```

• Code Line.java

```
public class Line {
    Point p0;
    Point p1;
}
```

• Code LineLength.java

```
public class LineLength {
   public static void main(String[] args) {
     Line line = new Line();
     line.p0 = new Point();
     line.p0.x = 5;
     // (task 1)
     line.p0.y = 4;
     line.p1 = new Point();
     line.p1.x = 13;
     line.p1.y = 9;

     double d;
     // (task 2)
```

```
PS D:\Kuliah\Semester 2\Praktikum ASD\homework\homework2> java LineLength the legth of the line is 9.433981132056603
PS D:\Kuliah\Semester 2\Praktikum ASD\homework\homework2>
```

Activity 3.2

Code TestMethod.java

```
public class TestMethod {
    public static int getRandomNumber() {
        return (int)((Math.random()*100)+1);
    public static double getAbsoluteValue(double value) {
        if(value < 0) return -value;</pre>
        else return value;
    public static int getFactorial(int n) {
        if(n > 1) return n*getFactorial(n-1);
        else return 1;
    public static String getWeatherForecast() {
        String[] day = {"today", "tomorrow", "the day after tomorrow"};
        int a = (int)(Math.random()*3);
        String[] weather = {"sunny", "cloudy", "rainy", "snowy"};
        int b = (int)(Math.random()*4);
        return day[a] + " will be " + weather[b];
    public static String getRandomMessage(String name) {
        String[] greet = {"Good morning ", "Good afternoon ", "Good night "};
        int c = (int)(Math.random()*3);
        return greet[c] + name;
    public static boolean isEvenNumber(int value) {
        if(value%2 == 0) return true;
        else return false;
    public static double getMinValue(double a, double b) {
        if(a < b) return a;</pre>
        else return b;
    public static boolean isSameAbsoluteValue(int i, int j) {
        if(i==j || i==-j || -i==j) return true;
        else return false;
    public static void getMessage(String name, boolean isKid) {
        if(isKid == false) System.out.println("Halo Pak " + name);
        else System.out.println("Halo Dek " + name);
```

```
public static double getSum(double a, double b, double c) {
    return a+b+c;
public static double getAverage(double a, double b, double c) {
    return (a+b+c)/3;
public static void main(String[] args) {
    System.out.println(getRandomNumber());
    System.out.println(getAbsoluteValue(-0.398));
    System.out.println(getFactorial(6));
    System.out.println(getWeatherForecast());
    System.out.println(getRandomMessage("Aji"));
    System.out.println(isEvenNumber(5));
    System.out.println(getMinValue(3, 3));
    System.out.println(isSameAbsoluteValue(-4, 4));
    getMessage("Andre", false);
    System.out.println(getSum(0.3243, -1.8212, 100));
   System.out.println(getAverage(0.3243, -1.8212, 100));
```

```
PS D:\Kuliah\Semester 2\Praktikum ASD\Activity\meet3> javac *.java
PS D:\Kuliah\Semester 2\Praktikum ASD\Activity\meet3> java TestMethod
36
0.398
720
tomorrow will be cloudy
Good afternoon Aji
false
3.0
true
Halo Pak Andre
98.5031
32.8343666666667
PS D:\Kuliah\Semester 2\Praktikum ASD\Activity\meet3>
```