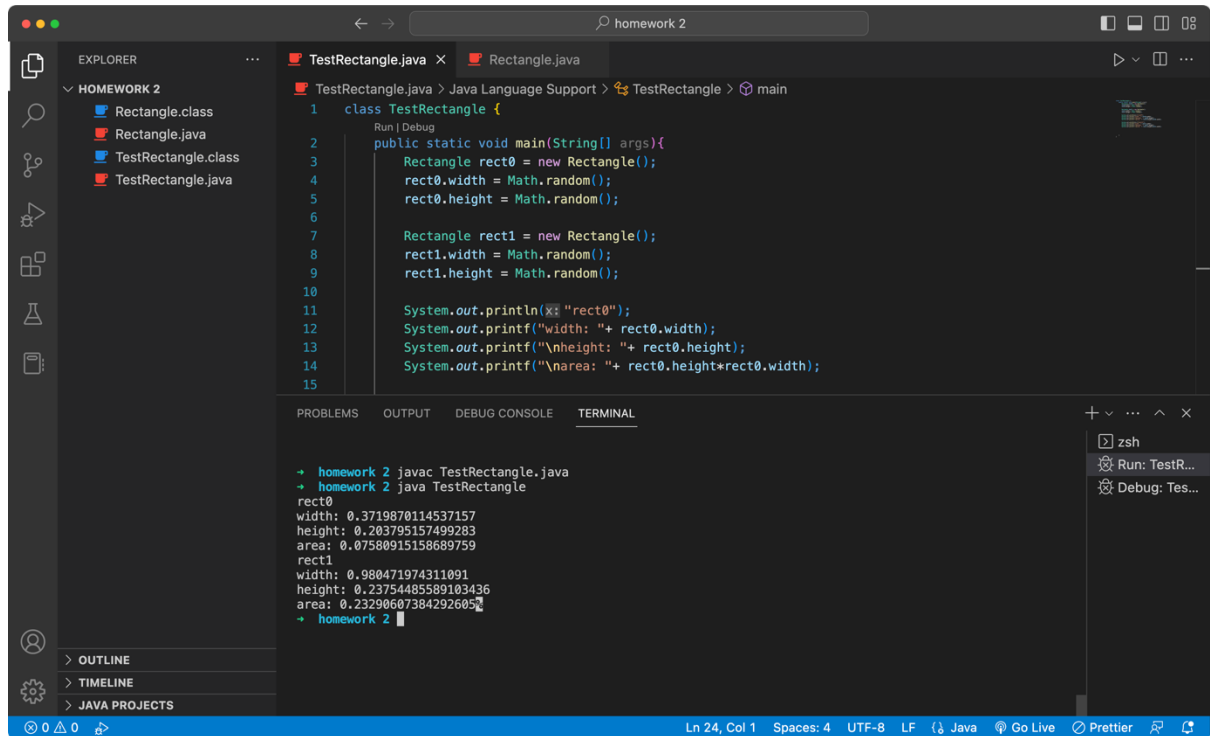


Name : Radhyanas Oetomo  
NIM : 22/492226/PA/21092

## Algorithm and Data Structure Lab Homework 2

1.1

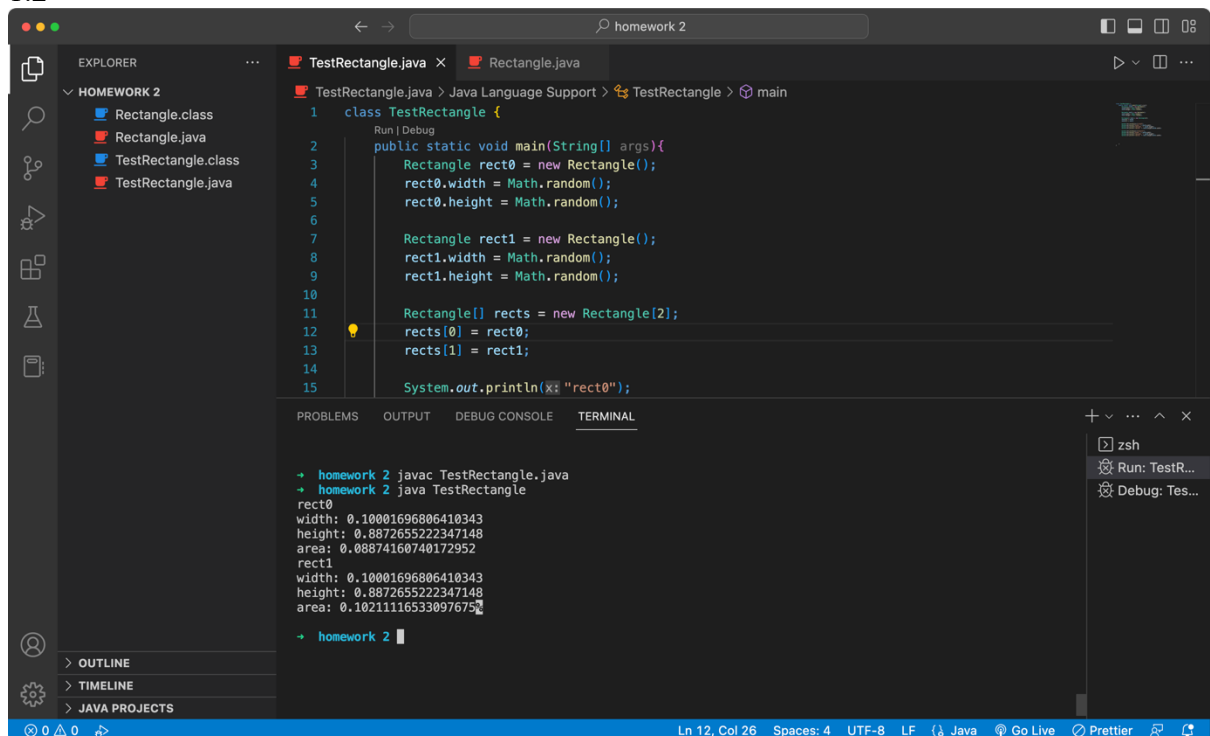


```
TestRectangle.java > Java Language Support > TestRectangle > main
1 class TestRectangle {
2     public static void main(String[] args){
3         Rectangle rect0 = new Rectangle();
4         rect0.width = Math.random();
5         rect0.height = Math.random();
6
7         Rectangle rect1 = new Rectangle();
8         rect1.width = Math.random();
9         rect1.height = Math.random();
10
11         System.out.println("rect0");
12         System.out.printf("width: "+ rect0.width);
13         System.out.printf("\nheight: "+ rect0.height);
14         System.out.printf("\narea: "+ rect0.height*rect0.width);
15     }
16 }
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

```
+ homework 2 javac TestRectangle.java
+ homework 2 java TestRectangle
rect0
width: 0.3719870114537157
height: 0.203795157499283
area: 0.07580915158689759
rect1
width: 0.980471974311091
height: 0.23754485589103436
area: 0.23290607384292605
```

1.2



```
TestRectangle.java > Java Language Support > TestRectangle > main
1 class TestRectangle {
2     public static void main(String[] args){
3         Rectangle rect0 = new Rectangle();
4         rect0.width = Math.random();
5         rect0.height = Math.random();
6
7         Rectangle rect1 = new Rectangle();
8         rect1.width = Math.random();
9         rect1.height = Math.random();
10
11         Rectangle[] rects = new Rectangle[2];
12         rects[0] = rect0;
13         rects[1] = rect1;
14
15         System.out.println("rect0");
16     }
17 }
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

```
+ homework 2 javac TestRectangle.java
+ homework 2 java TestRectangle
rect0
width: 0.10001696806410343
height: 0.8872655222347148
area: 0.08874160740172952
rect1
width: 0.10001696806410343
height: 0.8872655222347148
area: 0.10211116533097675
```

1.3

```

1  class TestRectangle {
2
3      public static void main(String[] args) {
4          Rectangle rect0 = new Rectangle();
5          Rectangle rect1 = new Rectangle();
6          Rectangle rect2 = new Rectangle();
7          Rectangle rect3 = new Rectangle();
8          Rectangle rect4 = new Rectangle();
9          Rectangle rect5 = new Rectangle();
10         Rectangle rect6 = new Rectangle();
11         Rectangle rect7 = new Rectangle();
12         Rectangle rect8 = new Rectangle();
13         Rectangle rect9 = new Rectangle();
14
15
16         Rectangle[] rects = new Rectangle[10];
17         rects[0] = rect0;
18         rects[1] = rect1;
19         rects[2] = rect2;
20         rects[3] = rect3;
21         rects[4] = rect4;
22         rects[5] = rect5;
23         rects[6] = rect6;
24         rects[7] = rect7;
25         rects[8] = rect8;
26         rects[9] = rect9;
27
28         for (int i = 0; i <= 9; i++) {
29             rects[i].width = Math.random();
30             rects[i].height = Math.random();
31
32             System.out.printf("\nrects"+i);
33             System.out.printf("\nwidth: "+ rects[i].width);
34             System.out.printf("\nheight: "+ rects[i].height);
35             System.out.printf("\narea: "+ rects[i].height*rects[i].width);
36         }
37
38         // System.out.println("rect0");
39         // System.out.printf("\nwidth: "+ rects[0].width);
40         // System.out.printf("\nheight: "+ rects[0].height);
41         // System.out.printf("\narea: "+ rects[0].height*rects[0].width);
42
43         // System.out.println("rect1");
44         // System.out.printf("\nwidth: "+ rects[1].width);
45         // System.out.printf("\nheight: "+ rects[1].height);
46         // System.out.printf("\narea: "+ rects[1].height*rects[1].width);
47
48
49
50

```

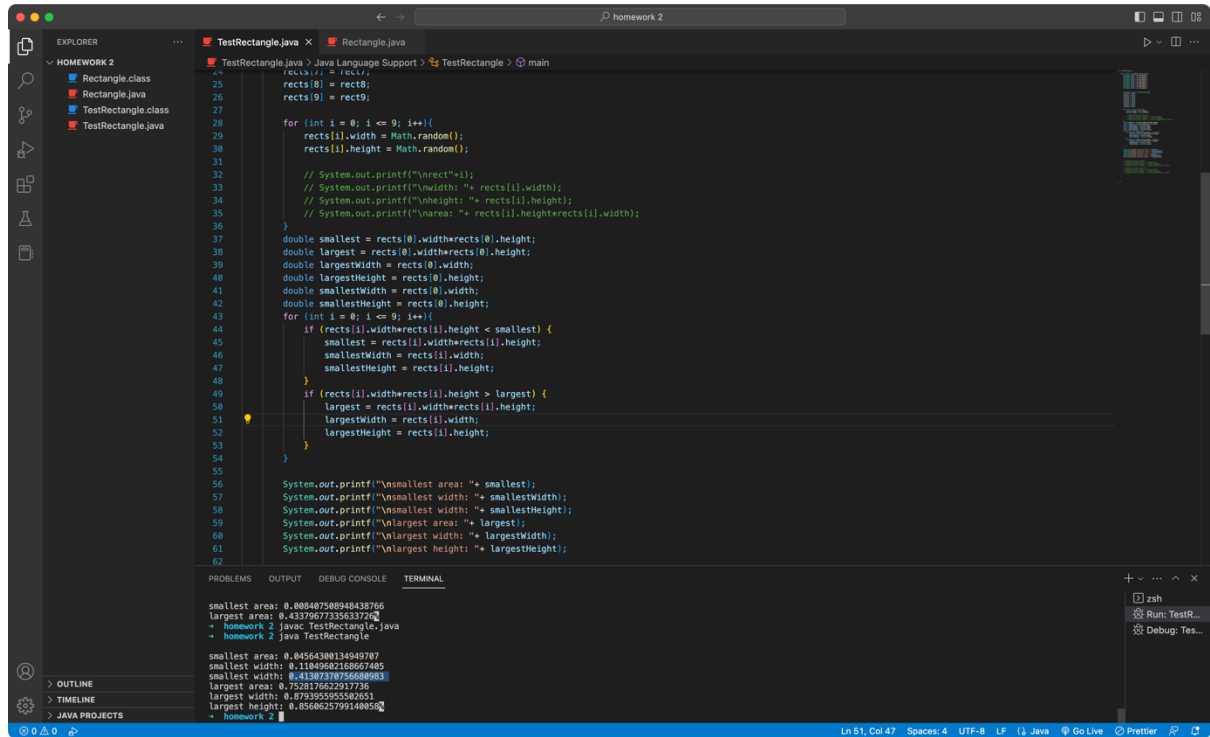
```

rects0
width: 0.7525165123242331
height: 0.9149202571004966
area: 0.6884926009280564
rects1
width: 0.8422018148930199
height: 0.14385556579740022
area: 0.12115541859703272
rects2
width: 0.906562922673842
height: 0.7082458561020032
area: 0.6420694332794693
rects3
width: 0.10502475101496977
height: 0.3000533369273387
area: 0.03151302700200450
rects4
width: 0.9341820012503412
height: 0.3401820224862653
area: 0.31779194977016967
rects5
width: 0.9407282678145293
height: 0.829963137194617
area: 0.7807697844030046
rects6
width: 0.06107063120072169
height: 0.1664651162775691
area: 0.010166129725304398
rects7
width: 0.14705628196199805
height: 0.2857488464811154
area: 0.0420211629384426
rects8
width: 0.5595319461647948
height: 0.4275750279425181
area: 0.2392418875161437
rects9
width: 0.5255217322525656
height: 0.2855332349756937
area: 0.15005392026010542

```

→ homework 2 []

1.4



```
TestRectangle.java X Rectangle.java
TestRectangle.java > Java Language Support > TestRectangle > main
24 rects[i] = rect;
25 rects[0] = rect0;
26 rects[9] = rect9;
27
28 for (int i = 0; i <= 9; i++){
29     rects[i].width = Math.random();
30     rects[i].height = Math.random();
31
32     // System.out.printf("\nrect%i:", i);
33     // System.out.printf("\nwidth: %s", rects[i].width);
34     // System.out.printf("\nheight: %s", rects[i].height);
35     // System.out.printf("\narea: %s", rects[i].height*rects[i].width);
36 }
37 double smallest = rects[0].width*rects[0].height;
38 double largest = rects[0].width*rects[0].height;
39 double largestWidth = rects[0].width;
40 double largestHeight = rects[0].height;
41 double smallestWidth = rects[0].width;
42 double smallestHeight = rects[0].height;
43 for (int i = 0; i <= 9; i++){
44     if (rects[i].width*rects[i].height < smallest) {
45         smallest = rects[i].width*rects[i].height;
46         smallestWidth = rects[i].width;
47         smallestHeight = rects[i].height;
48     }
49     if (rects[i].width*rects[i].height > largest) {
50         largest = rects[i].width*rects[i].height;
51         largestWidth = rects[i].width;
52         largestHeight = rects[i].height;
53     }
54 }
55
56 System.out.printf("\nsmallest area: %s", smallest);
57 System.out.printf("\nsmallest width: %s", smallestWidth);
58 System.out.printf("\nsmallest height: %s", smallestHeight);
59 System.out.printf("\nlargest area: %s", largest);
60 System.out.printf("\nlargest width: %s", largestWidth);
61 System.out.printf("\nlargest height: %s", largestHeight);
62
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

smallest area: 0.008407508948438766  
largest area: 0.43379677335633726  
- homework 2 javac TestRectangle.java  
- homework 2 java TestRectangle

smallest area: 0.04564300134949707  
smallest width: 0.11049602168667485  
smallest height: 0.41387370756589483  
largest area: 0.7250176022017736  
largest width: 0.8783955953582651  
largest height: 0.8368625799148850  
- homework 2

Ln 51, Col 47 Spaces: 4 UTF-8 LF (Java) Go Live Prettier

2

The image displays two screenshots of an IDE (IntelliJ IDEA) showing the development of a Java program. The top screenshot shows the 'Book.java' file with a simple class definition. The bottom screenshot shows the 'TestBook.java' file with a main method that creates an array of Book objects and prints their details.

**Top Screenshot: Book.java**

```
1 public class Book {
2     String title;
3     String author;
4     int price;
5 }
6
```

**Bottom Screenshot: TestBook.java**

```
1 class TestBook {
2     public static void main(String[] args) {
3         Book book1 = new Book();
4         Book book2 = new Book();
5         Book book3 = new Book();
6         Book[] books = new Book[3];
7         books[0] = book1;
8         book1.title = "Introduction to Java Programming and Data Structure";
9         book1.author = "Daniel Liang";
10        books[0].price = 355000;
11        books[1] = book2;
12        book2.title = "Advanced Java Programming";
13        book2.author = "Uttam Roy";
14        books[1].price = 236250;
15        books[2] = book3;
16        book3.title = "Practical Java Programming";
17        book3.author = "Perry Xiao";
18        books[2].price = 95000;
19
20        for (int i = 0; i <= 2; i++) {
21            Double tax = books[i].price * 0.1;
22
23            System.out.printf(format: "\nBook%d data", i+1);
24            System.out.printf("\nTitle: %s books[i].title);
25            System.out.printf("\nAuthor: %s books[i].author);
26            System.out.printf(format: "\nPrice: %d", books[i].price+tax);
27        }
28    }
29 }
30
31
```

**Terminal Output:**

```
35500.0
Book1 data
Title: Introduction to Java Programming and Data Structure
Author: Daniel Liang
Price: 390500
23625.0
Book2 data
Title: Advanced Java Programming
Author: Uttam Roy
Price: 259875
9500.0
Book3 data
Title: Practical Java Programming
Author: Perry Xiao
Price: 104500
```