

### Exercise 1: Debugging

```
import java.util.scanner;

class Rectangle {
    private int length;
    private int width;

    Rectangle() { }

    Rectangle(int a,int b)
    {
        length=a;
        width=b;
    }

    Rectangle(Int a)
    {
        length=a;
        width="60";
    }

    void setLength(int l)
    {
        length='l';
    }

    void setWidth(int w)
    {
        width=w;
    }

    int area() {
        return(length*width);
    }
}

class Main {
    public static void main(String args[]) {
        Rectangle r1 = New Rectangle ;
        Rectangle r2 = New Rectangle(30,40);
        Rectangle r3 = New Rectangle(10);

        Scanner sc=new Scanner (system.in);
        System.out.println("Enter length :");
        int myLength:sc.nextInt();
        System.out.println("Enter width :");
        int myWidth:sc.nextInt();

        r1.setLength(myLength);
        r1.setWidth(myWidth);

        System.out.println("Area : " + r1.area);
        System.out.println("Area : " + r2.area);
        System.out.println("Area : " + r3.area);

    }
}
```

Debug the errors, then compile and run the program by using the following information (input) :

Input:

Enter length :

**15**

Enter width :

**20**

Output:

Area : 300

Area : 1200

Area : 600

Answers:

```
import java.util.Scanner;

class Rectangle {
    private int length;
    private int width;

    Rectangle() { }

    Rectangle(int a,int b)
    {
        length=a;
        width=b;
    }

    Rectangle(int a)
    {
        length=a;
        width= 60;
    }

    void setLength(int l)
    {
        length= l;
    }

    void setWidth(int w)
    {
        width=w;
    }

    int area() {
        return (length*width) ;
    }
}
```

```
public class Main {  
    public static void main(String args[]) {  
        Rectangle r1 = new Rectangle();  
        Rectangle r2 = new Rectangle(30,40);  
        Rectangle r3 = new Rectangle(10);  
  
        Scanner sc = new Scanner(System.in);  
        System.out.println("Enter length :");  
        int myLength = sc.nextInt();  
        System.out.println("Enter width :");  
        int myWidth = sc.nextInt();  
  
        r1.setLength(myLength);  
        r1.setWidth(myWidth);  
  
        System.out.println("Area : " + r1.area());  
        System.out.println("Area : " + r2.area());  
        System.out.println("Area : " + r3.area());  
  
    }  
}
```

#### Exercise 2: From OOP Book

Write a complete Java program that compute the shipping charge for a box if the cost per kg is RM20.56. Each box is identified by five digit code and the weight of each box is in kg and gram. Use class JOptionPane to enter the input and display the results for 3 boxes.

#### Answers:

```
import javax.swing.JOptionPane;  
import java.lang.Math;  
  
class Shipping{  
  
    private int id;  
    private double weight, cost;  
  
    public void Shipping() { }  
  
    public void Shipping(int a, double b){  
  
        id = a;  
        weight = b;  
    }  
}
```

## OOP Exercise: Week 4

```
public void setId(int a){

    id = a;
}

public void setWeight(double b){

    weight = b;
}

public int getId(){

    return id;
}

public double getWeight(){

    return weight;
}

public double getShippingCost(){

    float c;
    double cost;
    c = Math.round(weight);
    cost = c * 20.56;
    return cost;
}

public void display(){

    System.out.println("Digit code: " + getId());
    System.out.println("Weight: " + getWeight());
    System.out.printf("The shipping cost is: RM %.2f\n" ,
    getShippingCost());
    System.out.println("Thank you and have a nice day!");
}

}

public class BoxShipping{

    public static void main(String args[]){

        Shipping box1 = new Shipping();
        Shipping box2 = new Shipping();
        Shipping box3 = new Shipping();

        int code1;
```

```
String w1 = JOptionPane.showInputDialog("Enter your first box code:");
code1 = Integer.parseInt(w1);
box1.setId(code1);

double kg1;
String w2 = JOptionPane.showInputDialog("Enter your weight(kg): ");
kg1 = Double.parseDouble(w2);
box1.setWeight(kg1);

int code2;
String w3 = JOptionPane.showInputDialog("Enter your second box code:");
code2 = Integer.parseInt(w3);
box2.setId(code2);

double kg2;
String w4 = JOptionPane.showInputDialog("Enter your weight(kg): ");
kg2 = Double.parseDouble(w4);
box2.setWeight(kg2);

int code3;
String w5 = JOptionPane.showInputDialog("Enter your third box code:");
code3 = Integer.parseInt(w5);
box3.setId(code3);

double kg3;
String w6 = JOptionPane.showInputDialog("Enter your weight(kg): ");
kg3 = Double.parseDouble(w6);
box3.setWeight(kg3);

box1.display();
box2.display();
box3.display();

}
}
```

**Exercise 3: From OOP Book**

Trace the following program code and show the output. Draw a memory diagram for the program.

*Jejak aturcara berikut dengan dan tunjukkan outputnya. Lukis kamponangan untuk aturcara tersebut.]*

```

1 public class Rnum {
2     private double num, denom;
3
4     public Rnum (double a, double b) {
5         num=a;
6         denom=b;
7     }
8
9     public double getNum() {
10         return num;
11     }
12
13     public double getDenom() {
14         return denom;
15     }
16
17     public void print() {
18         System.out.print (num + "/" + denom );
19         System.out.println (" = " + (num/denom));
20     }
21
22     public Rnum add(Rnum obj1, Rnum obj2, Rnum obj3) {
23         obj2.num = obj1.num/obj1.denom;
24         obj2.denom = obj2.num/obj2.denom;
25         return obj3;
26     }
27
28     public static void main (String[] args) {
29         Rnum num1 = new Rnum (5, 10);
30         Rnum num2 = new Rnum (3, 4);
31         Rnum num3 = new Rnum (0, 0);
32         num1.print();
33         num2.print();
34         num2.add(num1,num2,num3);
35         num2.print();
36     }
37 }

```

**Answers:**

```
public class Rnum{
    private double num, denom;

    public Rnum(double a, double b){

        num = a;
        denom = b;
    }

    public double getNum(){

        return num;
    }

    public double getDenom(){

        return denom;
    }

    public void print(){

        System.out.print(num + "/" + denom);
        System.out.println(" = " + (num/denom));
    }

    public Rnum add(Rnum obj1, Rnum obj2, Rnum obj3){

        obj2.num = obj1.num/obj1.denom;
        obj2.num = obj2.num/obj2.denom;
        return obj3;
    }

    public static void main(String args[]){

        Rnum num1 = new Rnum (5,10);
        Rnum num2 = new Rnum (3,4);
        Rnum num3 = new Rnum (0,0);
        num1.print();
        num2.print();
        num2.add(num1,num2,num3);
        num2.print();

    }
}
```

Exercise 4: From OOP Book

14. Based on the `BillTest` class in Program 2.19, write a `Bill` class that has the following member variables:

- `airtime`: an integer field that stores the value of the call air time.
- `totalSms`: an integer field that stores the total number of sms.
- `callrate`: a final double field that set the call rate to 0.25.
- `smsrate`: a final double field that set the sms rate to 0.05.
- `calculateTotal`: a function to calculate a total airtime and sms for a family.
  - A family airtime is a total airtime of the mum and sister.
  - A family total sms is a total sms of the mum and sister.
- `calculateBill`: a function that will display the total bill based on the formula:
  - $\text{airtime} * \text{call rate} + \text{total sms} * \text{sms rate}$

[Berdasarkan kelas `BillTest` di dalam Aturcara 2.19, tulis kelas `Bill` yang mempunyai ahli data yang berikut:

- `airtime`: integer yang akan menyimpan nilai waktu panggilan.
- `totalSms`: integer yang akan menyimpan jumlah bilangan sms.
- `callrate`: pemalar berjenis double yang akan set kadar panggilan ke 0.25.

- `smsrate`: pemalar berjenis double yang akan set kadar sms ke 0.05.
- `calculateTotal`: fungsi untuk mengira jumlah masa panggilan dan sms untuk sesebuah keluarga.
  - Jumlah masa panggilan keluarga ialah jumlah kadar masa panggilan emak dan kakak.
  - Jumlah sms keluarga ialah jumlah sms emak dan kakak.
- `calculateBill`: fungsi untuk mencetak jumlah bil berdasarkan formula berikut:
  - $\text{masa panggilan} * \text{kadar panggilan} + \text{jumlah sms} * \text{kadar sms}$ .

```

1 //Program 2.19
2 public class BillTest
3 {
4     public static void main(String[] arg)
5     {
6         Bill mum=new Bill(130,100);
7         Bill sister=new Bill(200,50);
8         Bill family=new Bill(0,0);
9         family=family.calculateTotal(mum,sister);
10        System.out.println("Total bill: ");
11        family.calculateBill();
12    }
13 }
    
```

**Answers:**

```
class Bill{

    private int airtime, totalSms;
    private final double callrate = 0.25;
    private final double smsrate = 0.05;

    public Bill(int a, int b){

        airtime = a;
        totalSms = b;
    }

    public Bill calculateTotal(Bill obj1, Bill obj2, Bill obj3){

        airtime = obj1.airtime + obj2.airtime;
        totalSms = obj1.totalSms + obj2.totalSms;
        return obj3;
    }

    public double calculateBill(){

        double bill;
        bill = (airtime * callrate) + (totalSms * smsrate);
        return bill;
    }

}

public class BillTest{

    public static void main(String[] args){

        Bill mum = new Bill(130,100);
        Bill sister = new Bill(200,50);
        Bill family = new Bill(0,0);
        family.calculateTotal(mum,sister,family);
        System.out.println("Total bill: " + family.calculateBill());
    }

}
```

Reflection. You can write by your own words for each exercise:

- What kind of concept that you understand/not understand?
- What is the learning goals that you can achieve?
- What is the challenges?
- Other things that possible that you can give a reflection from this task
- 

|            |                                                                                                                                      |
|------------|--------------------------------------------------------------------------------------------------------------------------------------|
| Exercise 1 | Learn how to use scanner more efficiently although not so pro in insert the input for Scanner (example: <code>sc.Nextline()</code> ) |
| Exercise 2 | Understand how to use JOptionPane more efficiently.<br>Not really understand how to use <code>math.lang</code>                       |
| Exercise 3 | Did not understand how to put object as the parameter in <code>Rnum add(obj1, obj2)</code>                                           |
| Exercise 4 | Did not understand how to put object as the parameter and how to make method for function that use objects as parameter              |