

Solution of Handout-5

Topic: Rectangle class

Example:

/ creates a rectangle object, calls its translate method and then print it. */*

```
import java.awt.Rectangle;

public class Example
{
    public static void main(String[] args)
    {
        Rectangle myRectangle=new Rectangle(5, 5, 10, 10);
        System.out.println("Before Translation: "+myRectangle);
        myRectangle.translate(15,25);
        System.out.println("After Translation: "+myRectangle);
    }
}
```



```
MS-DOS Batch File: D:\PROGRAMS\Creator\AGE2001.exe
First Rectangle : java.awt.Rectangle[x=5,y=5,width=10,height=20]
Second Rectangle : java.awt.Rectangle[x=10,y=10,width=15,height=30]
Intersection : java.awt.Rectangle[x=10,y=10,width=5,height=15]
Press any key to continue...
```

Solution of Problem#1:

The Rectangle class has another method called intersection that returns the intersection of two rectangles. It is called as follows:

```
firstRectangle.intersection(secondRectangle);
```

Write a program that creates two rectangle objects, prints them and also prints their intersections.

```
import java.awt.Rectangle;
public class Problem1
{
    public static void main(String[] args)
    {
        Rectangle firstRectangle=new Rectangle(5, 5, 10, 20); /*Creates
frstRectangle*/
```

```
Rectangle secondRectangle=new Rectangle(10,10,15,30); /*Creates
secondRectangle*/
```

```
System.out.println("First Rectangle: "+firstRectangle);
System.out.println("Second Rectangle: "+secondRectangle);
```

```
/*following statement finds intersection of these two rectangles */
Rectangle intersectionRectangle =
firstRectangle.intersection(secondRectangle);
```

```
System.out.println("Intersection Rectangle :
"+intersectionRectangle);
}
}
```

Solution of Problem#2:

*/*Write a program that constructs a Rectangle object, prints it, and then translates and prints it three more times , so that , if the rectangles were drawn, they would form one large rectangle.*/*

/ Displays a rectangle and then translates it 3 times */*

```
import java.awt.Rectangle;
```

```
public class Problem2
{
public static void main(String[] args)
{
Rectangle r1 = new Rectangle(0, 0, 5, 7);
System.out.println(r1);
r1.translate(5, 0);
System.out.println(r1);
r1.translate(0, 7);
System.out.println(r1);
r1.translate(-5, 0);
System.out.println(r1);
}
}
```

Topic: String class:

```
/******
```

Problem 1

Write a program "Problem1.java" , similar to solved example (iii) with firstName = "Ali" and lastName = "Mohamed" .

- Find the length of your first and last name, print it
- Concatenate first and last name store this in a String variable name and print it.
- Find the length of name and print it.
- Using substring() method find the first three letters of your first name and print them.
- Using substring() method find the last three letters of your last name and print them.
- Using toLowerCase() method convert name to lower letters and print them.

```
*****/
```

```
public class Problem1
{
    public static void main(String[] args)
    {
        String firstName="Ali";
        String lastName="Mohamed";

        int lengthoffirstName = firstName.length(); //Length of firstName
        int lengthoflastName = lastName.length(); //Length of lastName
        System.out.println("Length of first name is =" +lengthoffirstName);
        System.out.println("Length of last name is =" +lengthoflastName);

        String name = firstName + " " +lastName; //String Concatenation
        System.out.println("Name is :" +name);

        int lengthofname = name.length(); //String length
        System.out.println("Length of Name is : " +lengthofname);

        String first3Letter = firstName.substring(0,3); //Substring
        System.out.println("First three letters of firstName are = " +first3Letter);

        String last3Letter = lastName.substring(lengthoflastName-3); //Substring
        System.out.println("last three letters of lastName are =" +last3Letter);

        String nameCaps = name.toLowerCase(); //LowerCase
        System.out.println("Name in lower case is = " +nameCaps);
    }
}
```

```
/******
```

Problem 2:

Write a program "Problem2.java" similar to solved example (i) which assigns three names(first, middle and the last) and the age in respective variables and find the password for that name. The password should be as shown in the following example :

```
firstName = "Ali";  
middleName= "Hassan"  
lastName= "Mohamed"  
age=19;
```

Password is = ind19

```
*****/
```

```
public class Problem2  
{  
    public static void main(String[] args)  
    {  
        String firstName = "Ali";  
        String middleName = "Hassan";  
        String lastName = "Mohamed";  
        int age = 19;  
  
        //extract initials  
        String initials =  
            firstName.substring(2)+  
            middleName.substring(5)+  
            lastName.substring(6);  
  
        //append age  
        String password = initials.toLowerCase()+age;  
  
        System.out.println("Your Password =" +password);  
    }  
}
```

Topic: loops

Problem#1:

Cut and paste program given in solved example (ii) and compile and execute and understand it. Now modify it to calculate grandTotal price as shown in below:
(Format of your output must be exactly same as shown below)

Solution:

```
import java.io.*;  
public class Problem1 // class  
{  
    public static void main(String args[]) // main method
```

```

{
    InputStreamReader reader = new InputStreamReader(System.in);
    BufferedReader stdin = new BufferedReader(reader);

    double iPrice, iQuantity;
    double total=0;
    double grandTotal=0;
    String iName;
    char choice='Y';

    while(choice != 'N')
    {
        try // for handling all possible exceptions
        { //begin of try
            System.out.print("\nItem Name: ");
            iName=stdin.readLine();

            System.out.print("Item Price SR : ");
            iPrice=Double.parseDouble(stdin.readLine());
            System.out.print("Item Quantity: ");
            iQuantity=Double.parseDouble(stdin.readLine());

            if(iPrice >0 && iQuantity >0) // input validation
            {
                Purchase p1= new Purchase(iName,iPrice,iQuantity); // object creation
                total=p1.computeTotalPrice(); // method call
                System.out.println("\nTotal Price = SR :"+total);
                grandTotal += total;

                System.out.println("-----");
                System.out.print("\n Do you want to continue ? (Y/N): ");

                InputStreamReader r = new InputStreamReader(System.in);
                choice = (char) r.read(); // reading single character
            }
            else
            {
                System.out.println("\n Invalid Input, Please reinput correct entry :");
            }

        } //end of try
        catch(IOException e)
        {
            System.out.println("Input error !");
        }
        catch(NumberFormatException e)
        {
            System.out.println("Invalaid number format !");
        }
        catch(ArithmeticException e)

```

```

        {
            System.out.println("Arithmetic error !");
        }

    } // end of while
    System.out.println("\nPlease pay grandTotal Price = SR: "+grandTotal);

} // end of main method
} // end of Purchasetest class

class Purchase // Purchase class
{
    private String itemName; // instance variable
    private double itemPrice; // instance variable
    private double itemQuantity; //instance variable

    public Purchase(String itemN, double itemP, double itemQ) // constructor
    {
        itemName=itemN;
        itemPrice=itemP;
        itemQuantity=itemQ;
    } // end of constructor

    public double computeTotalPrice() // method
    {
        return (itemPrice*itemQuantity);
    }

} // end of Purchase class

```

Problem#2:

Write a program to generate Square, Cube, and Square Root of positive numbers from 1 to any limit entered by user.

Your output must be in the following format:

Solution:

```

import java.io.*;

public class Problem2 // class
{
    public static void main(String args[])throws IOException // main method
    {
        float num, square, cube; // variable declarations
        int limit,i;
    }
}

```

```

float sq_root; // variable declaration

System.out.print("Please Input value of limit : ");

InputStreamReader reader = new InputStreamReader(System.in);
BufferedReader stdin = new BufferedReader (reader);

String limi_t = stdin.readLine();
limit = Integer.parseInt(limi_t);

System.out.println("\n   Number   Square   Cube   Sq_root  \n");

for (num=1; num<=limit; ++num)
{

square = num*num;
cube=(float)Math.pow(num,3);
sq_root=(float)Math.sqrt(num);

System.out.println( "      "+num +"      "+square +"      "+cube +"      "+sq_root);

} // end of for loop

} // end of main method

} // end of class

```