LAB 1: BASIC CONCEPT OF CLASSES

Prelab Activities

Answer the following questions in the space provided. Your answers should be concise as possible.

1. What is an object?

.....
.....
.....

2. What are the differences between `private` and `public` ?

.....
.....
.....

Question 3 and 4 are based on the Program 1.1

```
class CalculateCharge
{

      int noBill;
      double price;


      public CalculateCharge (){…}
      public CalculateCharge (int no_bill, double price)
      public CalculateCharge (int m, int y){…}
      public void Paymentdata()
}
```

Program 1.1

3. What is the class name for the above program statement?

.....
.....

4. List down all data members for the above program statement.

.....
.....
.....
.....

Lab Activities : Correct the Code

Determine if there is an error in each of the following program segments. If there is an error, specify whether it is a logic error or a compilation error. Write the corrected code in the space provided for each problem.

1. The following defines class `Art`, with no argument constructor that sets the art's name to an empty String and the price to 0.00 and a `toArtString` method that returns a `String` containing the art's `name` and its `price`.

```
import java.text.*;
public class Art {

        private String name;
        private double price;
        private static DecimalFormat money = new DecimalFormat("0.00");

        public void Art(){
            name = "";
            price =0.00;

        }

        public toArtString(){
            return name + " costs " + money.format(price);
        }
}
```

2. The following define two constructors for class Art.

```
    public Art(String name, double price) {
        this.name = "This product";
        this.price = price;
    }

    public Art(String name, double price) {
        this.name = name;
        this.price = price;
    }
```

Lab Exercise

Solve the problem given.

1. Type the following program in Program 1.2. Compile and Run.

```
import javax.swing.JOptionPane;

public class exe4
{
   public static void main(String[] args)
   {
      String name = JOptionPane.showInputDialog("What is your name?");
       String age = JOptionPane.showInputDialog("What is your age?");
       int newAge = Integer.parseInt(age);
      JOptionPane.showMessageDialog(null,"Hello "+ name + " Your Age "
+ newAge );
      System.exit(0);
   }
}
```

2. Design a class named Triangle to represent triangle. The class contains:

   a. Three double data fields named side1, side2 and side3 that specify the three sides of the triangle. The default values are 1 for all the sides.
   b. Default constructor that creates a default triangle
   c. A normal constructor that creates a triangle with the specified sides
   d. The accessor and mutator methods for all the data member.
   e. A method named calcArea() that returns the area of this triangle
   f. A method named calcPerimeter() that returns the perimeter.

Write a main program that creates two Triangle objects. Assign sides 4, 5 and 6 to the first object and 1.5, 2.5 and 3.5 to the second object. Display the properties of both objects and find their areas and perimeters.

Postlab Exercise

Consider the following declaration of a Student class in Program 1.3

```
public class Student
{     private String studentName;
      private String student ID;
      private String program;// e.g. CS233
      private double test;
      private double assignment;
      private double final;
…
}
```

Program 1.3

Write the following to complete the Student class

a. A default constructor
b. The mutator and accessor methods for all data members
c. A toString method that returns a String containing all data members.
d. A processor method named calculateFinalMarks(). This method will calculate and return final marks of student based on the following formula.

   Final marks = test (30%) + assignment (20%) + final (50%)

e. Write a main method that create four objects of student and assigned each of them with values for each data members. Then display the student name, student ID and final marks for all the students objects,