PROGRAMS BASED ON CLASSES AND OBJECTS

Java Programming Lab Day 4

Date: 01/08/2020

19BCE0758

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1. Design a class named Rectangle to represent a rectangle. The class contains: Two double data fields named width and height that specify the width and height of the rectangle. The default values are 1 for both width and height.
   (i)A default constructor that creates a default rectangle.
   (ii)A constructor that creates a rectangle with the specified width and height.
   (iii)A method named getArea() that returns the area of this rectangle.
   (iv)A method named getPerimeter() that returns the perimeter. Implement the class. Write a test program that creates two Rectangle objects— one with width 5 and height 50 and the other with width 2.5 and height 45.7. Display the width, height, area, and perimeter of each rectangle in this order.

   Code:

```
//19BCE0758
//R Narayan
import java.util.Scanner;

public class Rectangle {

    private double width;
    private double height;

    public Rectangle() {
        // Default height = 10 , width = 5
        this.width = 5;
        this.height = 50;
    }

    public Rectangle(double w, double h) {
        this.width = w;
        this.height = h;
    }

    public double getArea() {
        return width * height;
    }

    public double getPerimeter() {
```

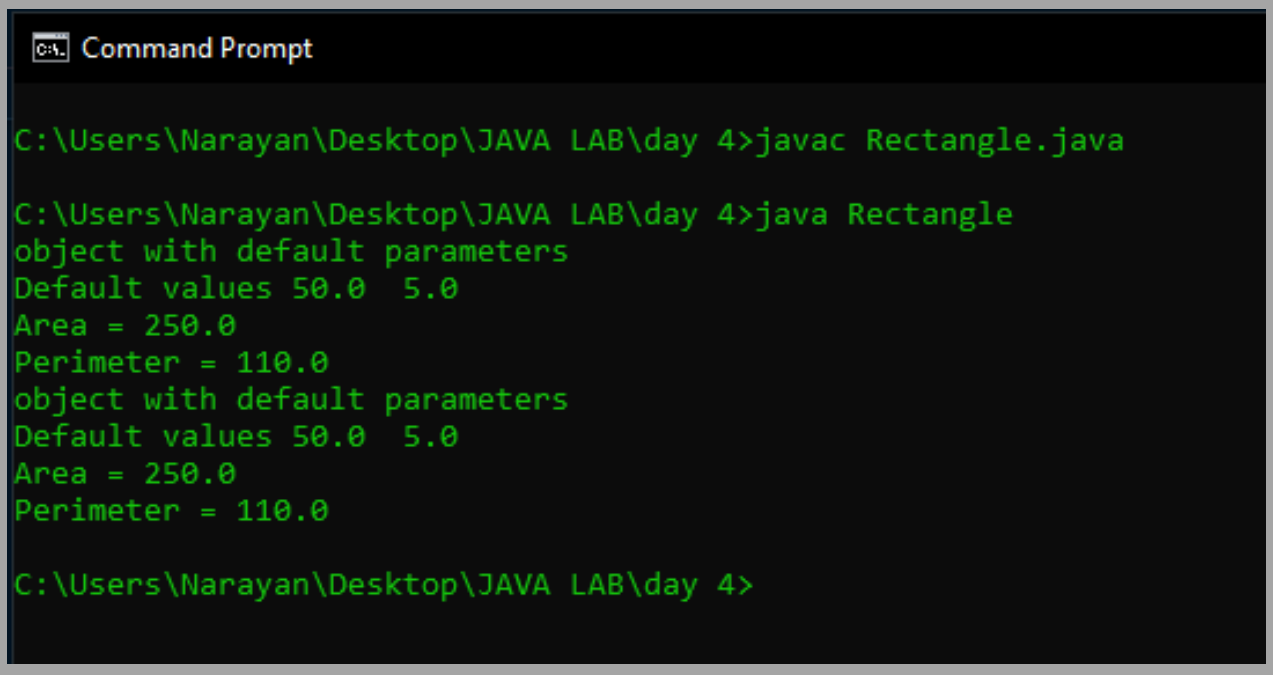
```
        return 2 * width + 2 * height;
    }

    public static void main(String[] args) {
        Scanner console = new Scanner(System.in);
        Rectangle rectangle = new Rectangle();
        System.out.println("object with default parameters ");
        System.out.println("Default values " + rectangle.height + "  " + recta
ngle.width);
        System.out.println("Area = " + rectangle.getArea());
        System.out.println("Perimeter = " + rectangle.getPerimeter());
        Rectangle rectangle2 = new Rectangle(2.5, 45.7);
        System.out.println("object with manually passed  parameters ");
        System.out.println("Default values " + rectangle2.height + "  " + rect
angle2.width);
        System.out.println("Area = " + rectangle2.getArea());
        System.out.println("Perimeter = " + rectangle2.getPerimeter());

    }

}
```

Output:



2. Write a Java program to create a class called Student having data members Regno, Name, Course being studied and current CGPA. Include constructor to initialize objects. Create array of objects with at least 10 students and find 9- pointers.
   Code:

```java
//19BCE0758
//R Narayan
import java.util.Scanner;

public class Cgpa {
    private String reg;
    private String name;
    private String Course;
    private float cgp;

    public Cgpa( String r,String n, String c, float cg) {
        this.reg = r;
        this.name = n;
        this.Course = c;
        this.cgp = cg;
    }

    public boolean isNine() {
        if (this.cgp >= 9)
            return true;
        else
            return false;
    }

    public void nameP() {
        System.out.println(this.name);
    }

    public static void main(String[] args) {
        Scanner s = new Scanner(System.in);
        Cgpa[] students = new Cgpa[10];
        System.out.println("Enter the number of students ");
        int n = s.nextInt();
        for (int i = 0; i < n; i++) {
            s.nextLine();
            System.out.println("Enter the Reg No");
            String r = s.nextLine();
            System.out.println("Enter the Name");
            String na = s.nextLine();
            System.out.println("Enter the Course");
            String c = s.nextLine();
            System.out.println("Enter the CGPA");
            float cg = s.nextFloat();
```

```
            students[i] = new Cgpa(r, na, c, cg);
        }
        System.out.println("List of Nine Pointers");
        for (int i = 0; i < n; i++) {
            if (students[i].isNine()) {
                students[i].nameP();
            }
        }

    }
}
```

Output:

```
Command Prompt
C:\Users\Narayan\Desktop\JAVA LAB\day 4>javac Cgpa.java

C:\Users\Narayan\Desktop\JAVA LAB\day 4>java Cgpa
Enter the number of students
3
Enter the Reg No
19BCE0001
Enter the Name
Abc
Enter the Course
Computer Science
Enter the CGPA
10
Enter the Reg No
19BMI0001
Enter the Name
def
Enter the Course
mechanical
Enter the CGPA
9
Enter the Reg No
19BEC0001
Enter the Name
ghi
Enter the Course
electrical
Enter the CGPA
8
List of Nine Pointers
Abc
```

3. Write a Java program that displays that displays the time in different formats in the form of HH,MM,SS using constructor Overloading.

Code:

```java
//19BCE0758
//R Narayan
import java.util.Scanner;
public class Time {
    public void disp(String hh) {
        System.out.println(hh);
    }

    public void disp(String hh, String mm) {
        System.out.println(hh + ":" + mm);
    }

    public void disp(String hh, String mm, String ss) {
        System.out.println(hh);
    }

    public static void main(String[] args) {
        Scanner s = new Scanner(System.in);
        Time t = new Time();
        System.out.println("Function 1");
        t.disp("10");
        System.out.println("Function 2");
        t.disp("10", "30");
        System.out.println("Function 3");
        t.disp("10", "30", "55");
    }
}
```

Output: