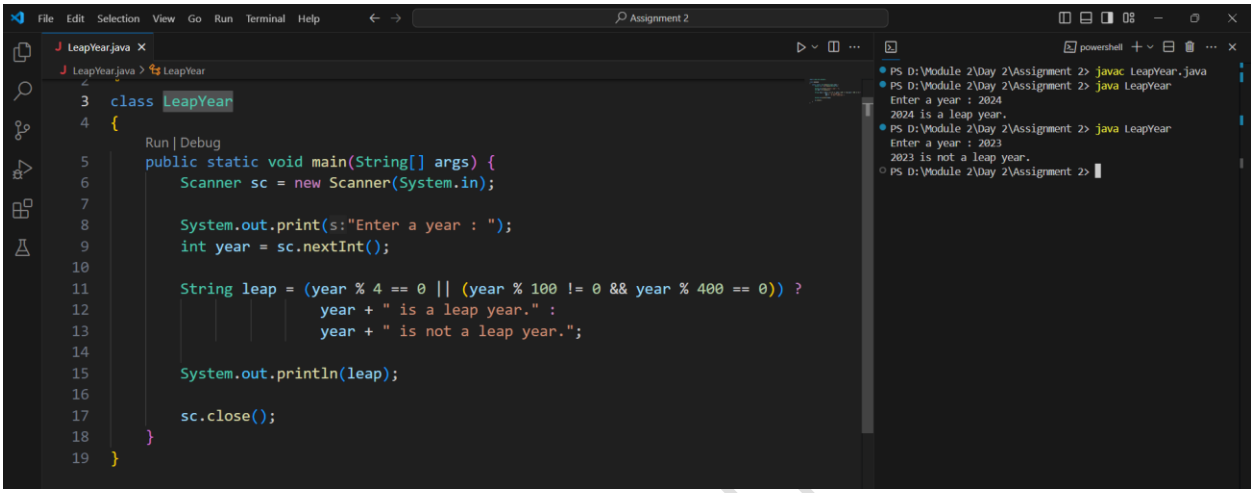
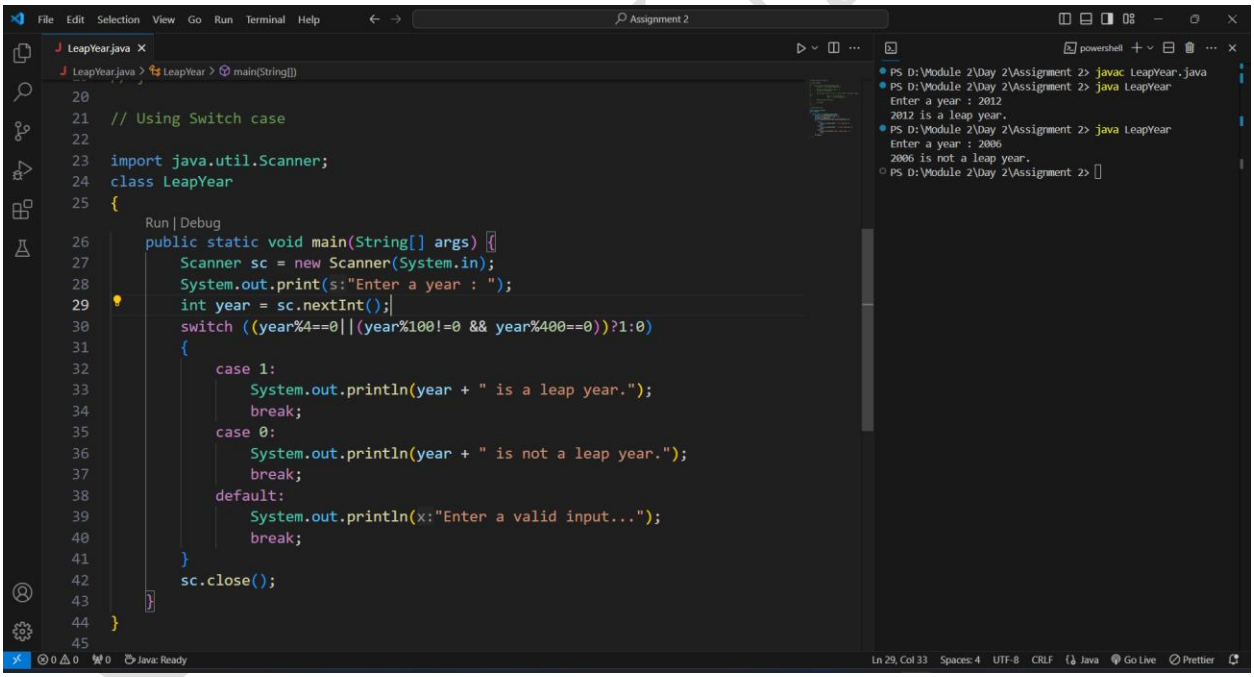
Assignment No- 2

1)Write a program that checks if a given year is a leap year or not using both if-else and switch-case.



```java
class LeapYear
{
    Run | Debug
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);

        System.out.print("Enter a year : ");
        int year = sc.nextInt();

        String leap = (year % 4 == 0 || (year % 100 != 0 && year % 400 == 0)) ?
                      year + " is a leap year." :
                      year + " is not a leap year.";

        System.out.println(leap);

        sc.close();
    }
}
```

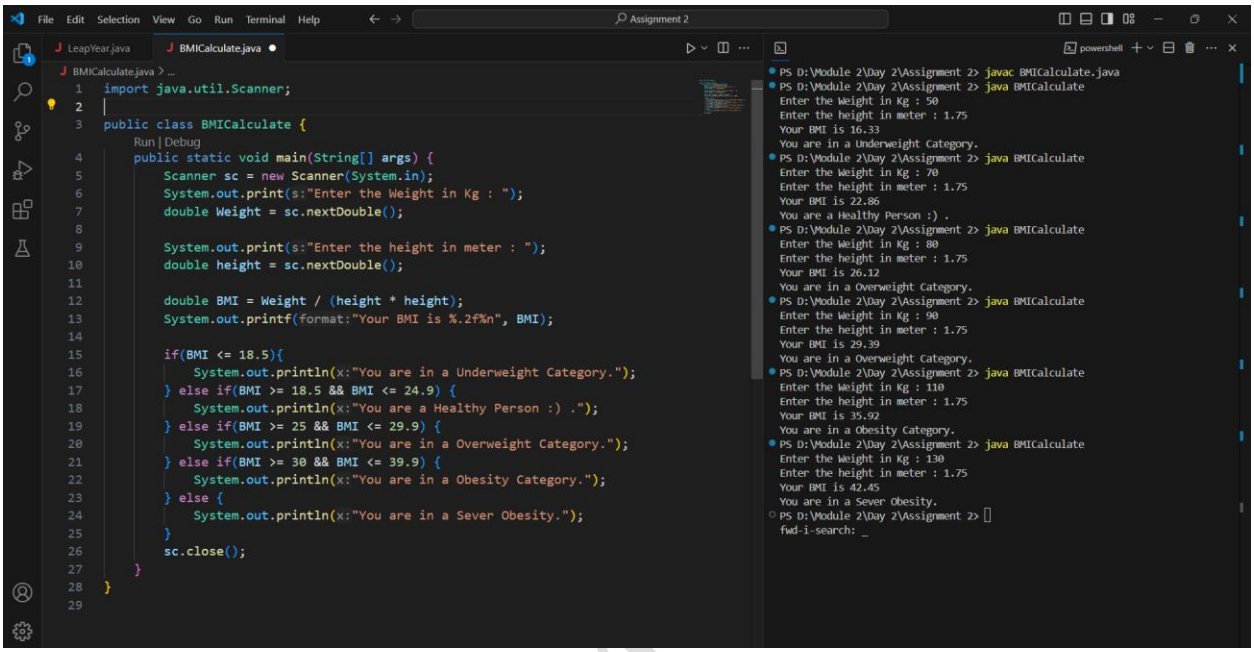
```
PS D:\Module 2\Day 2\Assignment 2> javac LeapYear.java
PS D:\Module 2\Day 2\Assignment 2> java LeapYear
Enter a year : 2024
2024 is a leap year.
PS D:\Module 2\Day 2\Assignment 2> java LeapYear
Enter a year : 2023
2023 is not a leap year.
PS D:\Module 2\Day 2\Assignment 2>
```



```java
// Using Switch case

import java.util.Scanner;
class LeapYear
{
    Run | Debug
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter a year : ");
        int year = sc.nextInt();
        switch ((year%4==0||(year%100!=0 && year%400==0))?1:0)
        {
            case 1:
                System.out.println(year + " is a leap year.");
                break;
            case 0:
                System.out.println(year + " is not a leap year.");
                break;
            default:
                System.out.println("Enter a valid input...");
                break;
        }
        sc.close();
    }
}
```

```
PS D:\Module 2\Day 2\Assignment 2> javac LeapYear.java
PS D:\Module 2\Day 2\Assignment 2> java LeapYear
Enter a year : 2012
2012 is a leap year.
PS D:\Module 2\Day 2\Assignment 2> java LeapYear
Enter a year : 2006
2006 is not a leap year.
PS D:\Module 2\Day 2\Assignment 2>
```

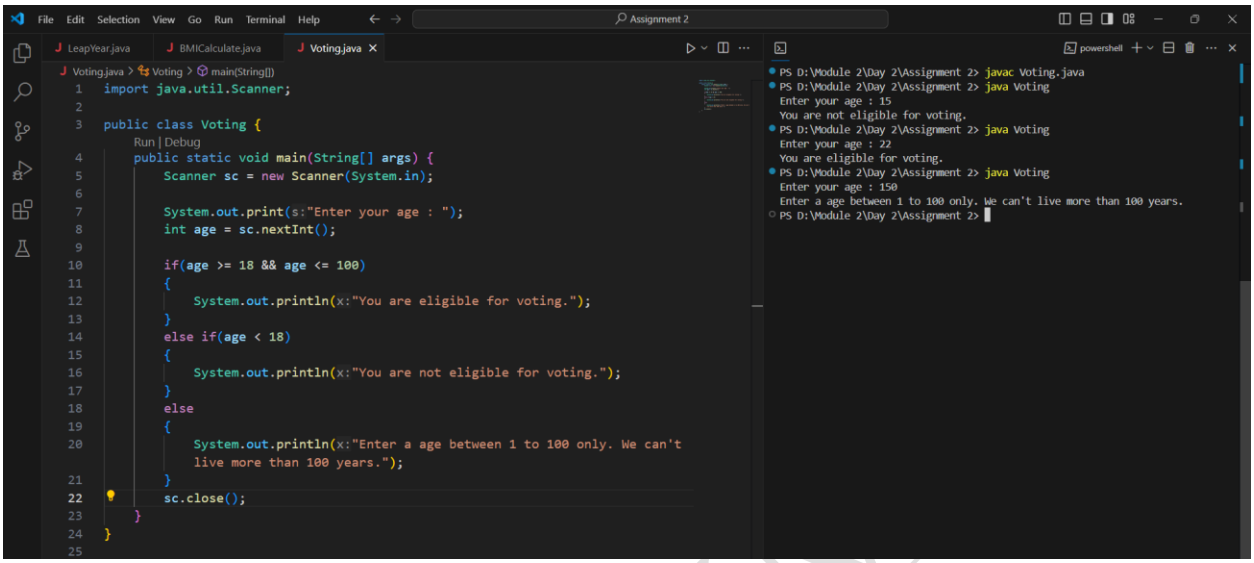
2)Implement a program that calculates the Body Mass Index (BMI) based on height and weight input using if-else to classify the BMI int categories (underweight, normal weight, overweight,etc).



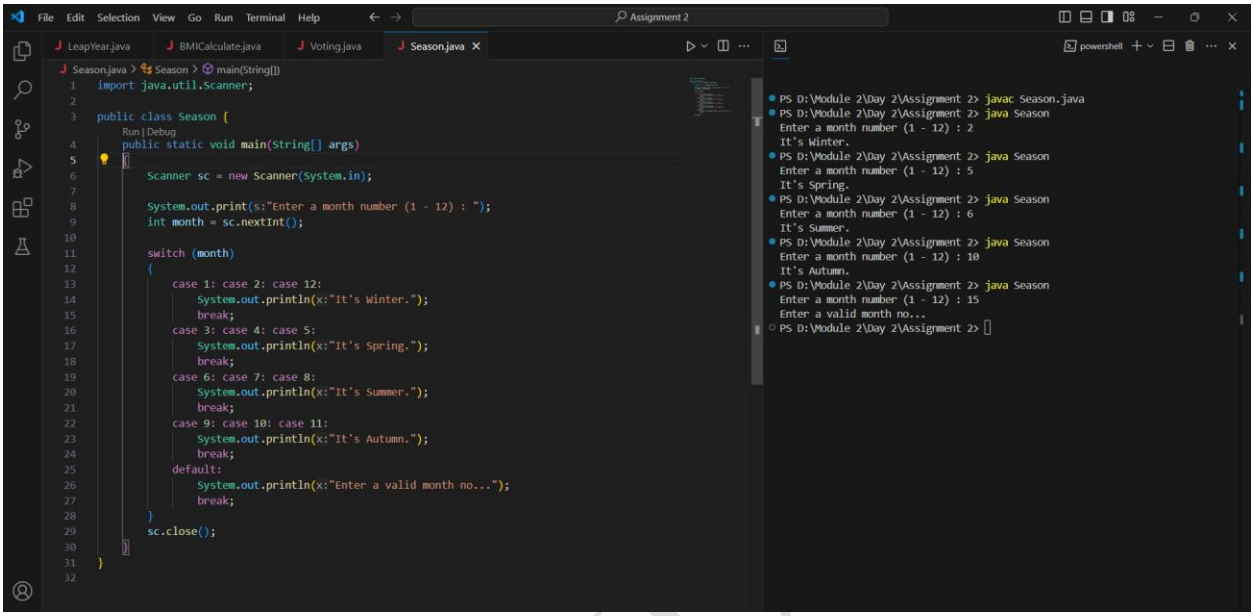
```java
import java.util.Scanner;

public class BMICalculate {
    Run | Debug
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print(s:"Enter the Weight in Kg : ");
        double Weight = sc.nextDouble();

        System.out.print(s:"Enter the height in meter : ");
        double height = sc.nextDouble();

        double BMI = Weight / (height * height);
        System.out.printf(format:"Your BMI is %.2f%n", BMI);

        if(BMI <= 18.5){
            System.out.println(x:"You are in a Underweight Category.");
        } else if(BMI >= 18.5 && BMI <= 24.9) {
            System.out.println(x:"You are a Healthy Person :) .");
        } else if(BMI >= 25 && BMI <= 29.9) {
            System.out.println(x:"You are in a Overweight Category.");
        } else if(BMI >= 30 && BMI <= 39.9) {
            System.out.println(x:"You are in a Obesity Category.");
        } else {
            System.out.println(x:"You are in a Sever Obesity.");
        }
        sc.close();
    }
}
```

```
PS D:\Module 2\Day 2\Assignment 2> javac BMICalculate.java
PS D:\Module 2\Day 2\Assignment 2> java BMICalculate
Enter the Weight in Kg : 50
Enter the height in meter : 1.75
Your BMI is 16.33
You are in a Underweight Category.
PS D:\Module 2\Day 2\Assignment 2> java BMICalculate
Enter the Weight in Kg : 70
Enter the height in meter : 1.75
Your BMI is 22.86
You are a Healthy Person :) .
PS D:\Module 2\Day 2\Assignment 2> java BMICalculate
Enter the Weight in Kg : 80
Enter the height in meter : 1.75
Your BMI is 26.12
You are in a Overweight Category.
PS D:\Module 2\Day 2\Assignment 2> java BMICalculate
Enter the Weight in Kg : 90
Enter the height in meter : 1.75
Your BMI is 29.39
You are in a Overweight Category.
PS D:\Module 2\Day 2\Assignment 2> java BMICalculate
Enter the Weight in Kg : 110
Enter the height in meter : 1.75
Your BMI is 35.92
You are in a Obesity Category.
PS D:\Module 2\Day 2\Assignment 2> java BMICalculate
Enter the Weight in Kg : 130
Enter the height in meter : 1.75
Your BMI is 42.45
You are in a Sever Obesity.
PS D:\Module 2\Day 2\Assignment 2>
fwd-i-search: _
```

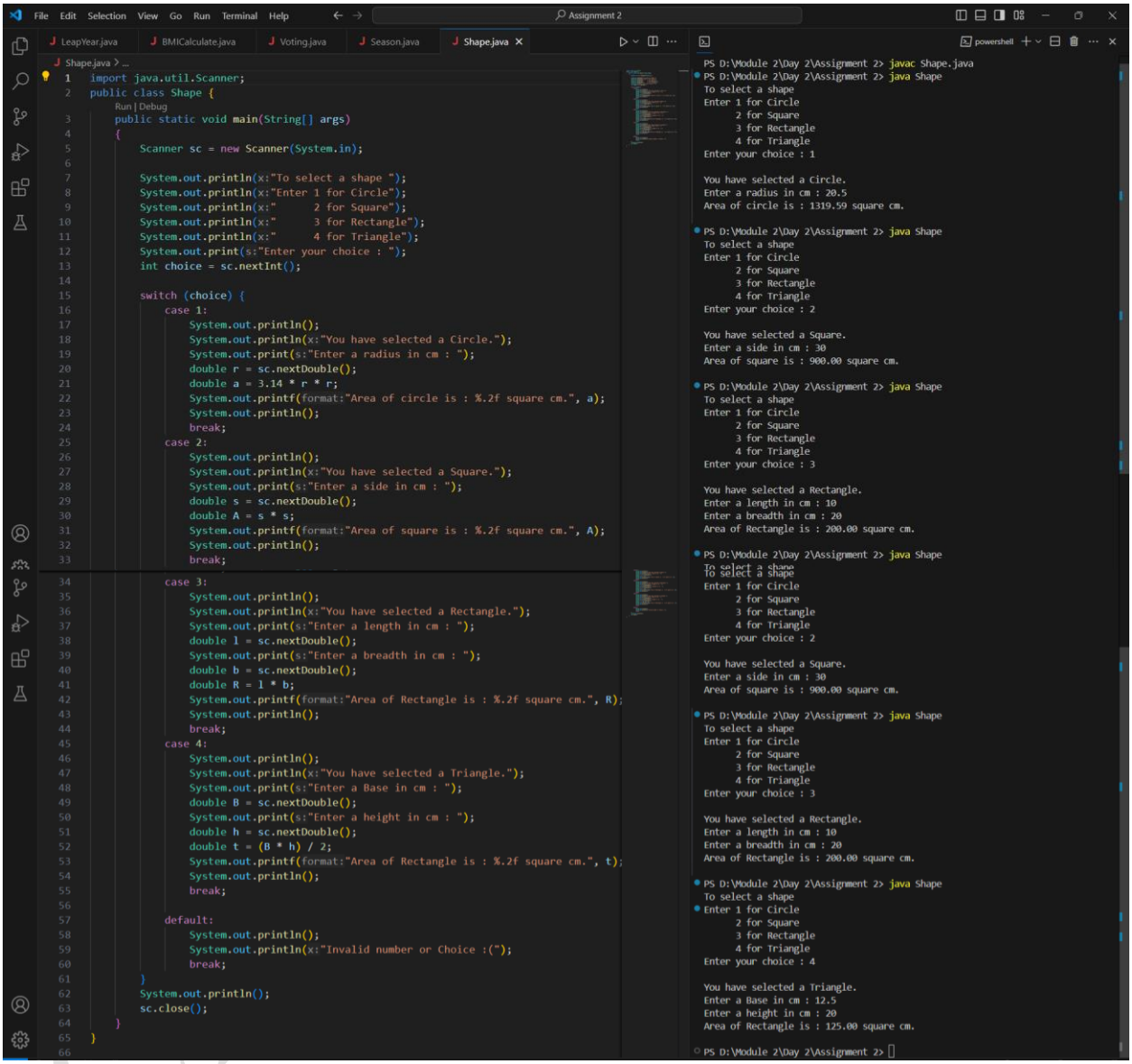
3)Write a program that checks if a person is eligible to vote based on their age.



4)Write a program that takes a month (1-12) and prints the corresponding season (Winter, Spring, Summer, Autumn) using a switch case



5)Write a program that allows the user to select a shape (Circle, Square, Rectangle, Triangle) and then calculates the area based on user-provided dimensions using a switch case.



```java
import java.util.Scanner;
public class Shape {
    Run | Debug
    public static void main(String[] args)
    {
        Scanner sc = new Scanner(System.in);

        System.out.println("To select a shape ");
        System.out.println("Enter 1 for Circle");
        System.out.println("      2 for Square");
        System.out.println("      3 for Rectangle");
        System.out.println("      4 for Triangle");
        System.out.print("Enter your choice : ");
        int choice = sc.nextInt();

        switch (choice) {
            case 1:
                System.out.println();
                System.out.println("You have selected a Circle.");
                System.out.print("Enter a radius in cm : ");
                double r = sc.nextDouble();
                double a = 3.14 * r * r;
                System.out.printf("Area of circle is : %.2f square cm.", a);
                System.out.println();
                break;
            case 2:
                System.out.println();
                System.out.println("You have selected a Square.");
                System.out.print("Enter a side in cm : ");
                double s = sc.nextDouble();
                double A = s * s;
                System.out.printf("Area of square is : %.2f square cm.", A);
                System.out.println();
                break;

            case 3:
                System.out.println();
                System.out.println("You have selected a Rectangle.");
                System.out.print("Enter a length in cm : ");
                double l = sc.nextDouble();
                System.out.print("Enter a breadth in cm : ");
                double b = sc.nextDouble();
                double R = l * b;
                System.out.printf("Area of Rectangle is : %.2f square cm.", R);
                System.out.println();
                break;
            case 4:
                System.out.println();
                System.out.println("You have selected a Triangle.");
                System.out.print("Enter a Base in cm : ");
                double B = sc.nextDouble();
                System.out.print("Enter a height in cm : ");
                double h = sc.nextDouble();
                double t = (B * h) / 2;
                System.out.printf("Area of Rectangle is : %.2f square cm.", t);
                System.out.println();
                break;

            default:
                System.out.println();
                System.out.println("Invalid number or Choice :(");
                break;
        }
        System.out.println();
        sc.close();
    }
}
```

```
PS D:\Module 2\Day 2\Assignment 2> javac Shape.java
PS D:\Module 2\Day 2\Assignment 2> java Shape
To select a shape
Enter 1 for Circle
      2 for Square
      3 for Rectangle
      4 for Triangle
Enter your choice : 1

You have selected a Circle.
Enter a radius in cm : 20.5
Area of circle is : 1319.59 square cm.

PS D:\Module 2\Day 2\Assignment 2> java Shape
To select a shape
Enter 1 for Circle
      2 for Square
      3 for Rectangle
      4 for Triangle
Enter your choice : 2

You have selected a Square.
Enter a side in cm : 30
Area of square is : 900.00 square cm.

PS D:\Module 2\Day 2\Assignment 2> java Shape
To select a shape
Enter 1 for Circle
      2 for Square
      3 for Rectangle
      4 for Triangle
Enter your choice : 3

You have selected a Rectangle.
Enter a length in cm : 10
Enter a breadth in cm : 20
Area of Rectangle is : 200.00 square cm.

PS D:\Module 2\Day 2\Assignment 2> java Shape
To select a shape
Enter 1 for Circle
      2 for Square
      3 for Rectangle
      4 for Triangle
Enter your choice : 2

You have selected a Square.
Enter a side in cm : 30
Area of square is : 900.00 square cm.

PS D:\Module 2\Day 2\Assignment 2> java Shape
To select a shape
Enter 1 for Circle
      2 for Square
      3 for Rectangle
      4 for Triangle
Enter your choice : 3

You have selected a Rectangle.
Enter a length in cm : 10
Enter a breadth in cm : 20
Area of Rectangle is : 200.00 square cm.

PS D:\Module 2\Day 2\Assignment 2> java Shape
To select a shape
Enter 1 for Circle
      2 for Square
      3 for Rectangle
      4 for Triangle
Enter your choice : 4

You have selected a Triangle.
Enter a Base in cm : 12.5
Enter a height in cm : 20
Area of Rectangle is : 125.00 square cm.

PS D:\Module 2\Day 2\Assignment 2>
```