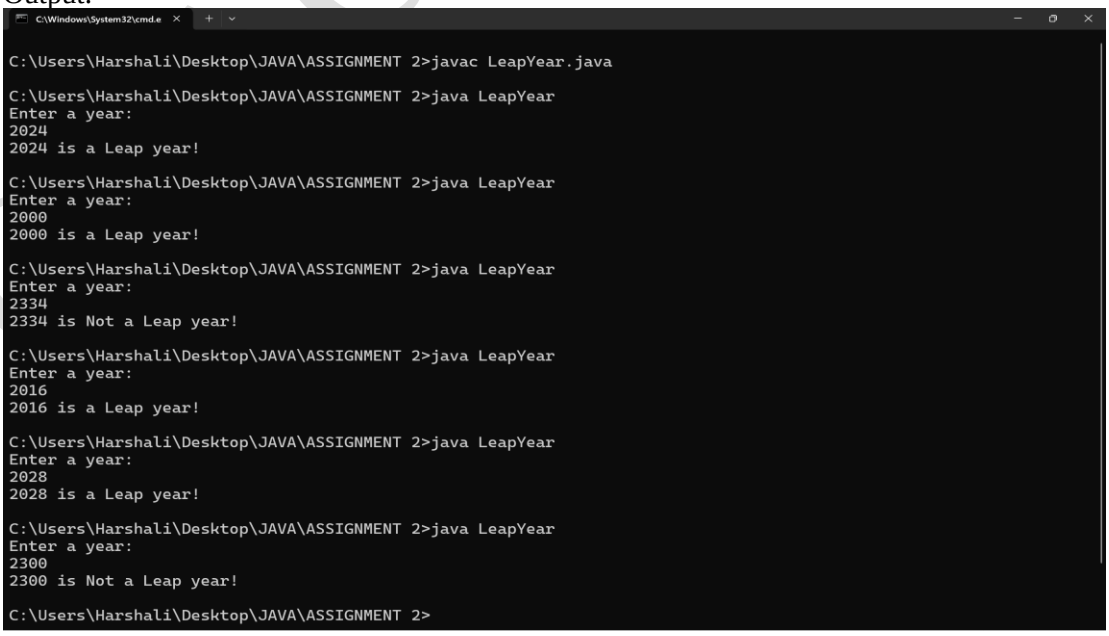
CDAC Mumbai PG-DAC AUGUST 24
Assignment No- 2

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

```
import java.util.Scanner;

class LeapYear{
	public static void main(String[] args){
	Scanner sc = new Scanner(System.in);
	System.out.println("Enter a year: ");
	int year = sc.nextInt();
	sc.close();

	// System.out.println(year);
	//logic
	// If the year is divisible by 400, it is a leap year.
	if(year%400==0){
		System.out.println(year+" is a Leap year!");
	}
	// If the year is divisible by 100 but not by 400, it is not a leap year.
	else if(year%100==0 && year%400 != 0){
		System.out.println(year+" is Not a Leap year!");
	}
	// If the year is divisible by 4 but not by 100, it is a leap year.
	else if(year%4==0 && year%100!=0){
		System.out.println(year+" is a Leap year!");
	}
	else{
		System.out.println(year+" is Not a Leap year!");
	}}}
```

Output:



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).

Code:

```
import java.util.Scanner;

public class BMI{
   public static void main(String[] args){

   Scanner sc= new Scanner(System.in);
   System.out.println("Enter weight in kg: ");
   double weight = sc.nextDouble();
   System.out.println("Enter height in meters: ");
   double height = sc.nextDouble();
   System.out.println(weight+" "+height);

   double bmi = weight / (height*height);
   System.out.printf("BMI IS %.2f\n", bmi);

   if (bmi < 18.5) {
      System.out.println("You are underweight.");
   } else if (bmi >= 18.5 && bmi < 24.9) {
      System.out.println("You have a normal weight.");
   } else if (bmi >= 25 && bmi < 29.9) {
      System.out.println("You are overweight.");
   } else if (bmi >= 30 && bmi < 34.9) {
      System.out.println("You have obesity class I.");
   } else if (bmi >= 35 && bmi < 39.9) {
      System.out.println("You have obesity class II.");
   } else {
      System.out.println("You have obesity class III.");
   }

   sc.close();
   }

}
```

Output:

```
PS C:\Users\Harshali\Desktop\JAVA\ASSIGNMENT 2> java BMI
Enter weight in kg:
56
Enter height in meters:
1.60
56.0 1.6
BMI IS 21.87
You have a normal weight.
PS C:\Users\Harshali\Desktop\JAVA\ASSIGNMENT 2> java BMI
Enter weight in kg:
45
Enter height in meters:
1.65
45.0 1.65
BMI IS 16.53
You are underweight.
PS C:\Users\Harshali\Desktop\JAVA\ASSIGNMENT 2> java BMI
Enter weight in kg:
85
Enter height in meters:
1.75
85.0 1.75
BMI IS 27.76
You are overweight.
PS C:\Users\Harshali\Desktop\JAVA\ASSIGNMENT 2> java BMI
Enter weight in kg:
95
Enter height in meters:
1.75
95.0 1.75
BMI IS 31.02
You have obesity class I.
PS C:\Users\Harshali\Desktop\JAVA\ASSIGNMENT 2> java BMI
Enter weight in kg:
110
Enter height in meters:
1.75
110.0 1.75
BMI IS 35.92
You have obesity class II.
PS C:\Users\Harshali\Desktop\JAVA\ASSIGNMENT 2> java BMI
Enter weight in kg:
130
Enter height in meters:
1.75
130.0 1.75
BMI IS 42.45
You have obesity class III.
PS C:\Users\Harshali\Desktop\JAVA\ASSIGNMENT 2>
```

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

Code:

```
import java.util.Scanner;

public class Voting {
   public static void main(String[] args) {
      Scanner sc = new Scanner(System.in);

      System.out.print("Enter your age: ");
      int age = sc.nextInt();

      if (age >= 18) {
         System.out.println("You are eligible to vote.");
      } else {
         System.out.println("You are not eligible to vote.");
      }

      sc.close();
   }
}
```

Output:

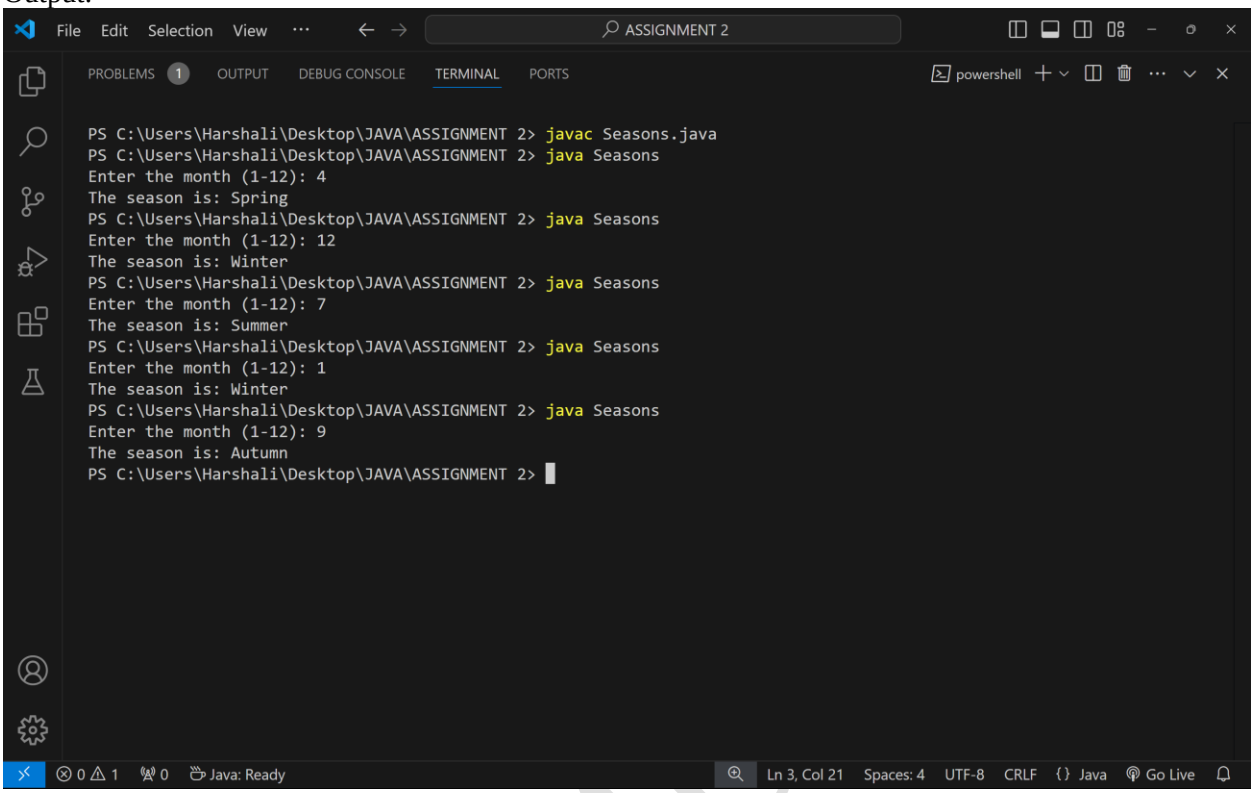
```
PS C:\Users\Harshali\Desktop\JAVA\ASSIGNMENT 2> javac Voting.java
PS C:\Users\Harshali\Desktop\JAVA\ASSIGNMENT 2> java Voting
Enter your age: 12
You are not eligible to vote.
PS C:\Users\Harshali\Desktop\JAVA\ASSIGNMENT 2> java Voting
Enter your age: 18
You are eligible to vote.
PS C:\Users\Harshali\Desktop\JAVA\ASSIGNMENT 2> java Voting
Enter your age: 43
You are eligible to vote.
PS C:\Users\Harshali\Desktop\JAVA\ASSIGNMENT 2>
```

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

Code:

```
import java.util.Scanner;
public class Seasons {
   public static void main(String[] args) {
      Scanner sc = new Scanner(System.in);
      System.out.print("Enter the month (1-12): ");
      int month = sc.nextInt();

      String season;
      switch (month) {
         case 12:
         case 1:
         case 2:
            season = "Winter";
            break;
         case 3:
         case 4:
         case 5:
            season = "Spring";
            break;
         case 6:
         case 7:
         case 8:
            season = "Summer";
            break;
         case 9:
         case 10:
         case 11:
            season = "Autumn";
            break;
         default:
            season = "Invalid month! Please enter a number between 1 and 12.";
            break;
      }
      System.out.println("The season is: " + season);
      sc.close();
   }}
```

Output:



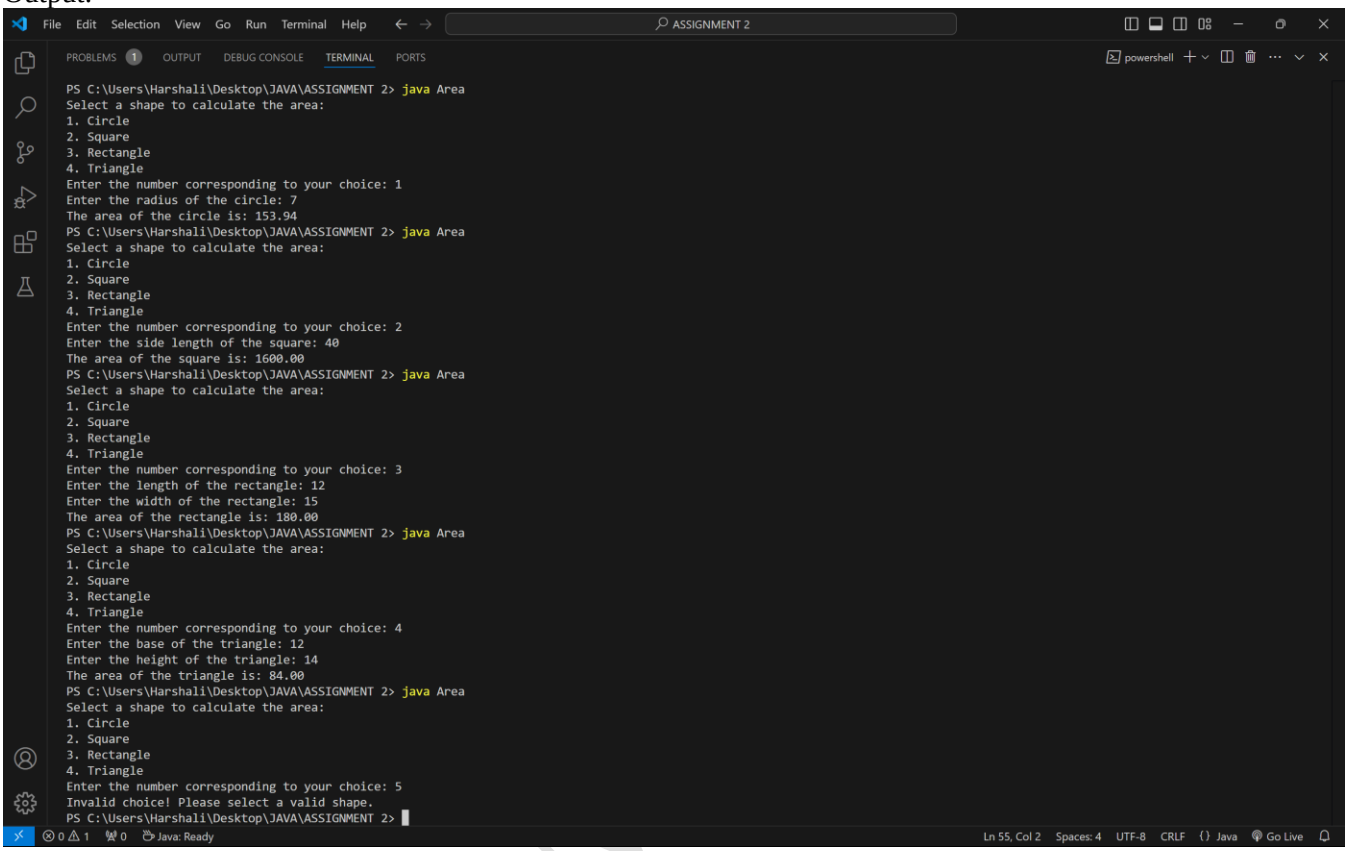
5)Write a program that allows the user to select a shape (Circle, Square, Rectangle, Triangle) and then calculates the area based on user-provided dimensions using a switch case.

Code:

```
import java.util.Scanner;

public class Area {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);

        System.out.println("Select a shape to calculate the area:");
        System.out.println("1. Circle");
        System.out.println("2. Square");
        System.out.println("3. Rectangle");
        System.out.println("4. Triangle");
        System.out.print("Enter the number corresponding to your choice: ");
        int choice = sc.nextInt();

        switch (choice) {
            case 1: // Circle
                System.out.print("Enter the radius of the circle: ");
                double radius = sc.nextDouble();
                double circleArea = Math.PI * radius * radius;
                System.out.printf("The area of the circle is: %.2f\n", circleArea);
                break;
```

```
            case 2: // Square
                System.out.print("Enter the side length of the square: ");
                double side = sc.nextDouble();
                double squareArea = side * side;
                System.out.printf("The area of the square is: %.2f\n", squareArea);
                break;

            case 3: // Rectangle
                System.out.print("Enter the length of the rectangle: ");
                double length = sc.nextDouble();
                System.out.print("Enter the width of the rectangle: ");
                double width = sc.nextDouble();
                double rectangleArea = length * width;
                System.out.printf("The area of the rectangle is: %.2f\n", rectangleArea);
                break;

            case 4: // Triangle
                System.out.print("Enter the base of the triangle: ");
                double base = sc.nextDouble();
                System.out.print("Enter the height of the triangle: ");
                double height = sc.nextDouble();
                double triangleArea = 0.5 * base * height;
                System.out.printf("The area of the triangle is: %.2f\n", triangleArea);
                break;

            default:
                System.out.println("Invalid choice! Please select a valid shape.");
                break;
        }

        sc.close();
    }
}
```

Output:


File Edit Selection View Go Run Terminal Help
ASSIGNMENT 2
PROBLEMS 1 OUTPUT DEBUG CONSOLE TERMINAL PORTS
powershell
PS C:\Users\Harshali\Desktop\JAVA\ASSIGNMENT 2> java Area
Select a shape to calculate the area:
1. Circle
2. Square
3. Rectangle
4. Triangle
Enter the number corresponding to your choice: 1
Enter the radius of the circle: 7
The area of the circle is: 153.94
PS C:\Users\Harshali\Desktop\JAVA\ASSIGNMENT 2> java Area
Select a shape to calculate the area:
1. Circle
2. Square
3. Rectangle
4. Triangle
Enter the number corresponding to your choice: 2
Enter the side length of the square: 40
The area of the square is: 1600.00
PS C:\Users\Harshali\Desktop\JAVA\ASSIGNMENT 2> java Area
Select a shape to calculate the area:
1. Circle
2. Square
3. Rectangle
4. Triangle
Enter the number corresponding to your choice: 3
Enter the length of the rectangle: 12
Enter the width of the rectangle: 15
The area of the rectangle is: 180.00
PS C:\Users\Harshali\Desktop\JAVA\ASSIGNMENT 2> java Area
Select a shape to calculate the area:
1. Circle
2. Square
3. Rectangle
4. Triangle
Enter the number corresponding to your choice: 4
Enter the base of the triangle: 12
Enter the height of the triangle: 14
The area of the triangle is: 84.00
PS C:\Users\Harshali\Desktop\JAVA\ASSIGNMENT 2> java Area
Select a shape to calculate the area:
1. Circle
2. Square
3. Rectangle
4. Triangle
Enter the number corresponding to your choice: 5
Invalid choice! Please select a valid shape.
PS C:\Users\Harshali\Desktop\JAVA\ASSIGNMENT 2>
Java: Ready
Ln 55, Col 2 Spaces: 4 UTF-8 CRLF Java Go Live