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:

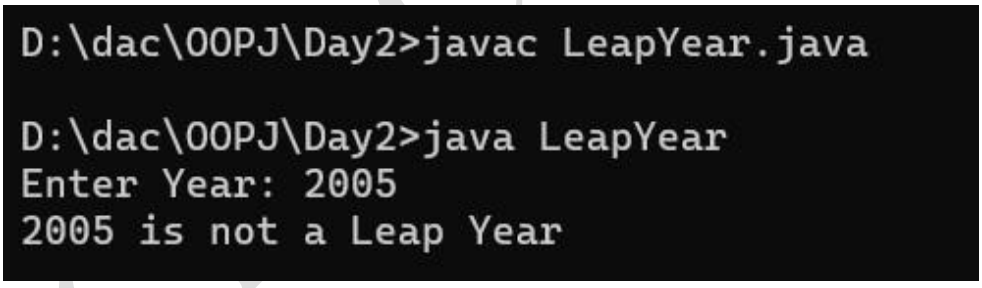
Using if-else

```
import java.util.*;

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

                if(a%400==0 || (a%4==0 && a%100!=0)){
                        System.out.println(a+ " is a Leap Year");
                }
                else{
                        System.out.println(a+ " is not a Leap Year");
                }
        }
 }
```

OUTPUT:



Using switch-case:

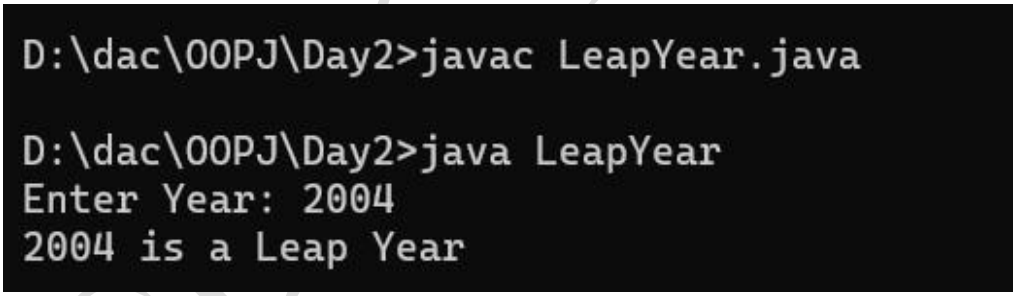
```
import java.util.*;

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

                switch(a%4){
                        case 0:
                        year = (a%400==0)|| (a%100!=0);
                        break;
                        default:
                        year = false;
                }

                if(year){
                        System.out.println(a+ " is a Leap Year");
                }
                else{
                        System.out.println(a+ " is 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.*;

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

		System.out.print("Enter Weight in kg: ");
		float w = sc.nextFloat();

		System.out.print("Enter Height in meters: ");
		float h = sc.nextFloat();

		float bmi = w / (h*h);

		if(bmi < 18.5){
			System.out.println("BMI is: "+ bmi+ " Underweight");
		}
		else if(bmi >= 18.5 && bmi < 24.9){
			System.out.println("BMI is: "+ bmi+ " Normal Weight");
		}
		else{
			System.out.println("BMI is: "+ bmi+ " Overweight");
		}
	}
}
```

OUTPUT:

```
D:\dac\OOPJ\Day2>javac Bmi.java

D:\dac\OOPJ\Day2>java Bmi
Enter Weight in kg: 54
Enter Height in meters: 155
BMI is: 0.0022476588 Underweight
```

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

CODE:

```
import java.util.*;

public class Vote{
	public static void main(String[] args){
		Scanner sc = new Scanner(System.in);
		System.out.print("Enter Age: ");

		int a = sc.nextInt();

		if(a < 18){
			System.out.println("Not Eligible");
		}
		else{
			System.out.println("Eligible");
		}

	}

}
```

OUTPUT:

```
D:\dac\OOPJ\Day2>javac Vote.java

D:\dac\OOPJ\Day2>java Vote
Enter Age: 45
Eligible

D:\dac\OOPJ\Day2>java Vote
Enter Age: 12
Not Eligible
```

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.*;

public class Season{
	public static void main(String[] args){
		Scanner sc = new Scanner(System.in);
		System.out.print("Enter 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";
			break;
		}

		System.out.println("The season is "+ season);
	}
}
```

OUTPUT:

```
D:\dac\OOPJ\Day2>javac Season.java

D:\dac\OOPJ\Day2>java Season
Enter Month(1-12): 4
The season is Spring
```

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.*;

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

		System.out.println("Select a shape: ");
		System.out.println("1. Circle");
		System.out.println("2. Square");
		System.out.println("3. Rectangle");
		System.out.println("4. Triangle");

		int shape = sc.nextInt();

		double area = 0;

		switch(shape){
			case 1:
			System.out.print("Enter radius: ");
			double r = sc.nextDouble();
			area = Math.PI * r * r;
			break;

			case 2:
			System.out.print("Enter side: ");
			double side = sc.nextDouble();
			area = side*side;
			break;

			case 3:
			System.out.print("Enter length: ");
			double length = sc.nextDouble();
			System.out.print("Enter breadth: ");
```

```
                    double breadth = sc.nextFloat();
                area = length*breadth;
                    break;

                    case 4:
                    System.out.print("Enter base: ");
                    double base = sc.nextDouble();
                    System.out.print("Enter height: ");
                    double height = sc.nextDouble();
                    area = 0.5*base*height;
                    break;

                    default:
                    System.out.print("Invalid Shape");
            }

            if(shape >=1 && shape <=4){
                    System.out.print("Area is: " + area);
            }

            //System.out.print("Area is: " + area);
        }
}
```

OUTPUT:

```
D:\dac\OOPJ\Day2>java Shape
Select a shape:
1. Circle
2. Square
3. Rectangle
4. Triangle
1
Enter radius: 3
Area is: 28.274333882308138
D:\dac\OOPJ\Day2>java Shape
Select a shape:
1. Circle
2. Square
3. Rectangle
4. Triangle
3
Enter length: 4
Enter breadth: 6
Area is: 24.0
```