

## 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.

```
import java.util.Scanner;

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

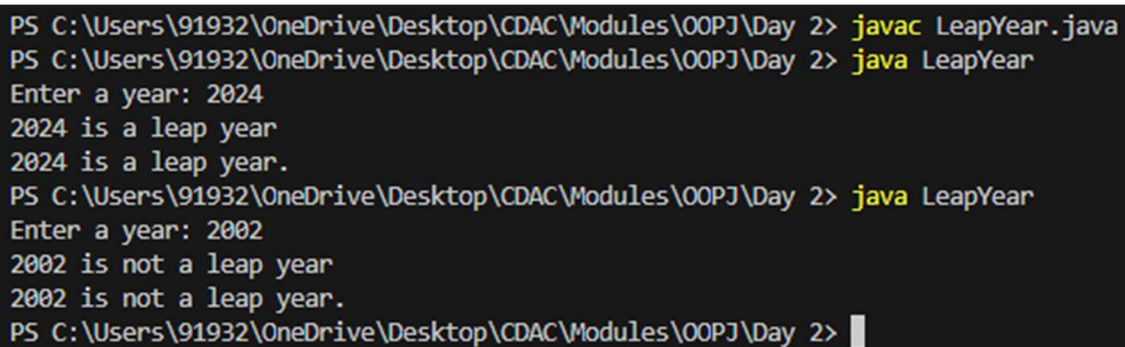
        Scanner scanner = new Scanner(System.in);
        System.out.print ("Enter a year: ");
        int year = scanner.nextInt();

        // if-else
        if ((year % 4 == 0 && year % 100 != 0) || year % 400 == 0) {
            System.out.println (year + " is a leap year ");
        }
        else {
            System.out.println (year + " is not a leap year ");
        }

        //switch case
        int leap = (year%4 == 0 && year%100 != 0) || year%400 == 0 ? 1 : 0;

        switch (leap){
            case 1:
                System.out.println (year + " is a leap year.");
                break;
            case 0:
                System.out.println (year + " is not a leap year.");
                break;
        }

        scanner.close();
    }
}
```



```
PS C:\Users\91932\OneDrive\Desktop\CDAC\Modules\00PJ\Day 2> javac LeapYear.java
PS C:\Users\91932\OneDrive\Desktop\CDAC\Modules\00PJ\Day 2> java LeapYear
Enter a year: 2024
2024 is a leap year
2024 is a leap year.
PS C:\Users\91932\OneDrive\Desktop\CDAC\Modules\00PJ\Day 2> java LeapYear
Enter a year: 2002
2002 is not a leap year
2002 is not a leap year.
PS C:\Users\91932\OneDrive\Desktop\CDAC\Modules\00PJ\Day 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 into categories (underweight, normal weight, overweight, etc).

```

import java.util.Scanner;

public class BMI{

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

        System.out.print ("Enter your weight in kg: ");
        double weight= scanner.nextDouble();

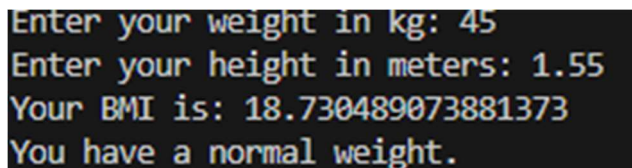
        System.out.print ("Enter your height in meters: ");
        double height= scanner.nextDouble();

        double bmi = weight / (height * height);
        System.out.println ("Your BMI is: " + bmi);

        if (bmi < 18.5){
            System.out.println ("You are underweight.");
        } else if (bmi < 24.9){
            System.out.println ("You have a normal weight.");
        } else if (bmi < 29.9){
            System.out.println ("You are overweight.");
        }

        scanner.close ();
    }
}

```



```

Enter your weight in kg: 45
Enter your height in meters: 1.55
Your BMI is: 18.730489073881373
You have a normal weight.

```

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

```

import java.util.Scanner;

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

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

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

        scanner.close();
    }
}

```

```
}  
}
```

```
Enter your age: 21  
You are eligible to vote  
PS C:\Users\91932\OneDrive\Desktop\CDAC\Modules\OOPJ\Day 2>  
java Voting }  
Enter your age: 16  
You are not eligible to vote
```

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

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

```
Enter the month number (1-12): 9  
The season is: Autumn  
PS C:\Users\91932\OneDrive\Desktop  
> { java SeasonPrint }  
Enter the month number (1-12): 3  
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.

```
import java.util.Scanner;

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

        System.out.println ("Select a shape to calculate the area:");
        System.out.println ("1. Circle, 2. Square, 3. Rectangle, 4. Triangle");
        System.out.print ("Enter your choice from 1-4: ");

        int choice= scanner.nextInt();

        switch (choice){

            case 1:
                System.out.print ("Enter the radius of the circle: ");
                double radius = scanner.nextDouble();
                double areaCircle = Math.PI * radius * radius;
                System.out.println ("The area of the circle is: " + areaCircle);
                break;

            case 2:
                System.out.print ("Enter the side of the square: ");
                double side = scanner.nextDouble();
                double areaSquare = side * side;
                System.out.println ("The area of the square is: " + areaSquare);
                break;

            case 3:
                System.out.print ("Enter the length & width of the rectangle separated by a space: ");
                double length = scanner.nextDouble();
                double width = scanner.nextDouble();
                double areaRectangle = length * width;
                System.out.println ("The area of the rectangle is: " + areaRectangle);
                break;

            case 4:
                System.out.print ("Enter the base & height of the triangle separated by a space: ");
                double base = scanner.nextDouble();
                double height = scanner.nextDouble();
                double areaTriangle = 0.5 * base * height;
                System.out.println ("The area of the triangle is: " + areaTriangle);
                break;

            default:
                System.out.println ("Invalid choice.");
                break;
        }
        scanner.close();
    }
}
```

```
PS C:\Users\91932\OneDrive\Desktop\CDAC\Modules\OOPJ\Day 2> java Area
Select a shape to calculate the area:
1. Circle, 2. Square, 3. Rectangle, 4. Triangle
Enter your choice from 1-4: 2
Enter the side of the square: 4
The area of the square is: 16.0
PS C:\Users\91932\OneDrive\Desktop\CDAC\Modules\OOPJ\Day 2> java Area
Select a shape to calculate the area:
1. Circle, 2. Square, 3. Rectangle, 4. Triangle
Enter your choice from 1-4: 4
Enter the base & height of the triangle separated by a space: 4 6
The area of the triangle is: 12.0
```