

## Assignment 2

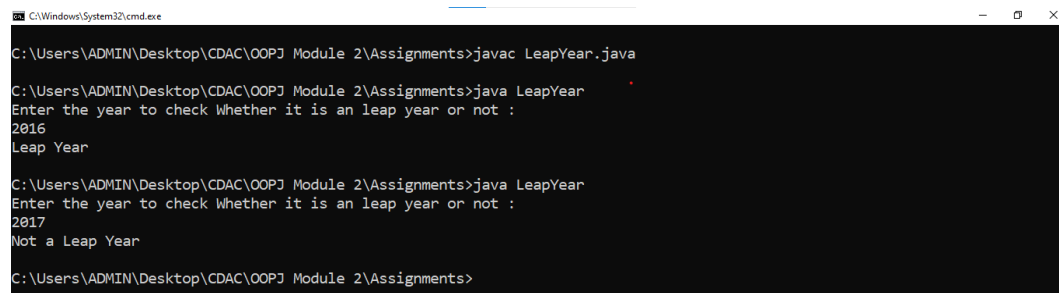
- 1) Write a program that checks if a given year is a leap year or not using both if-else and switch-case.

### Using if-else –

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

        System.out.println("Enter the year to check Whether it is an leap year or not : ");
        int year = sc.nextInt();

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



```
C:\Windows\System32\cmd.exe
C:\Users\ADMIN\Desktop\CDAC\OOPJ Module 2\Assignments>javac LeapYear.java
C:\Users\ADMIN\Desktop\CDAC\OOPJ Module 2\Assignments>java LeapYear
Enter the year to check Whether it is an leap year or not :
2016
Leap Year
C:\Users\ADMIN\Desktop\CDAC\OOPJ Module 2\Assignments>java LeapYear
Enter the year to check Whether it is an leap year or not :
2017
Not a Leap Year
C:\Users\ADMIN\Desktop\CDAC\OOPJ Module 2\Assignments>
```

### Using Switch Case

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

        System.out.println("Enter a year to check whether it is Leap Year or not : ");
        int year = sc.nextInt();

        boolean db4 = ( year % 4 == 0 );
        boolean db400 = ( year % 400 == 0 );
        boolean db100 = ( year % 100 == 0 );

        int value = (db4 ? 1 : 0) + (db400 ? 2 : 0) + (db100 ? 4 : 0);

        switch(value){
```

```

        case 1:
        case 7:
            System.out.println("Leap Year");
            break;
        default:
            System.out.println("Not a Leap Year");
        }
    }
}

```

```

C:\Users\ADMIN\Desktop\CDAC\OOPJ Module 2\Assignments>javac LeapYearSwitchCase.java
C:\Users\ADMIN\Desktop\CDAC\OOPJ Module 2\Assignments>java LeapYearSwitchCase
Enter a year to check whether it is Leap Year or not :
2016
Leap Year
C:\Users\ADMIN\Desktop\CDAC\OOPJ Module 2\Assignments>java LeapYearSwitchCase
Enter a year to check whether it is Leap Year or not :
2019
Not a Leap Year
C:\Users\ADMIN\Desktop\CDAC\OOPJ Module 2\Assignments>

```

- 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 CalBMI{
    public static void main(String[] args){

        Scanner sc = new Scanner(System.in);

        System.out.println("Enter your height in feet: ");
        int feet = sc.nextInt();

        System.out.println("Enter your height in inches: ");
        int inches = sc.nextInt();

        System.out.println("Enter your weight in Kg: ");
        double weight = sc.nextDouble();

        double hm = (feet * 0.3048) + (inches * 0.0254);
        double bmi = weight / (hm * hm);

        String category;

        if ( bmi < 18.5 ) {

```

```

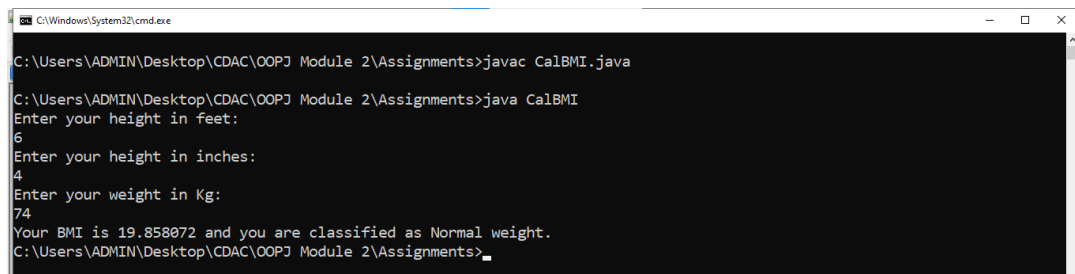
        category = "Underweight";
    } else if ( bmi >= 18.5 && bmi < 24.9 ) {
        category = "Normal weight";
    } else if ( bmi >= 25 && bmi < 29.9 ) {
        category = "Overweight";
    } else {
        category = "Obesity";
    }

```

```

System.out.printf("Your BMI is " + (float)bmi + " and you are classified as " + category + ".");
}
}

```



```

C:\Windows\System32\cmd.exe
C:\Users\ADMIN\Desktop\CDAC\OOPJ Module 2\Assignments>javac CalBMI.java
C:\Users\ADMIN\Desktop\CDAC\OOPJ Module 2\Assignments>java CalBMI
Enter your height in feet:
6
Enter your height in inches:
4
Enter your weight in Kg:
74
Your BMI is 19.858072 and you are classified as Normal weight.
C:\Users\ADMIN\Desktop\CDAC\OOPJ Module 2\Assignments>

```

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

```

import java.util.Scanner;

public class Vote {

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

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

        if (age >= 18) {
            System.out.println("Eligible for voting.");
        } else if (age < 0) {
            System.out.println("Enter a valid age...");
        } else {
            System.out.println("Not eligible for voting.");
        }

        sc.close();
    }
}

```

```
C:\Windows\System32\cmd.exe

C:\Users\ADMIN\Desktop\CDAC\OOPJ Module 2\Assignments>javac Vote.java

C:\Users\ADMIN\Desktop\CDAC\OOPJ Module 2\Assignments>java Vote
Enter your age:
18
Eligible for voting.

C:\Users\ADMIN\Desktop\CDAC\OOPJ Module 2\Assignments>java Vote
Enter your age:
15
Not eligible for voting.

C:\Users\ADMIN\Desktop\CDAC\OOPJ Module 2\Assignments>java Vote
Enter your age:
-21
Enter a valid age...

C:\Users\ADMIN\Desktop\CDAC\OOPJ Module 2\Assignments>_
```

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

        System.out.println("Enter the month e.g. January: ");
        String month = sc.nextLine();

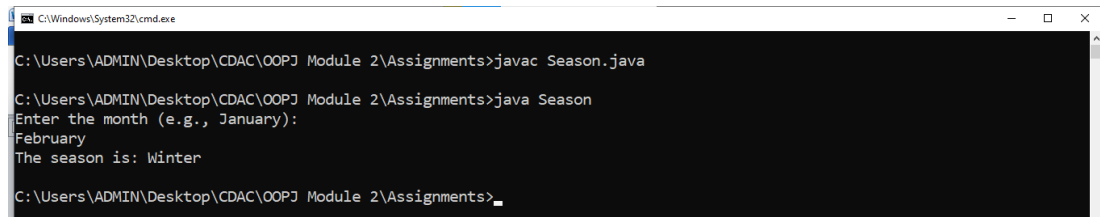
        String season;
        switch (month) {
            case "December":
            case "January":
            case "February":
                season = "Winter";
                break;
            case "March":
            case "April":
            case "May":
                season = "Spring";
                break;
            case "June":
            case "July":
            case "August":
                season = "Summer";
                break;
            case "September":
            case "October":
            case "November":
                season = "Autumn";
                break;
        }
    }
}
```

```

        default:
            season = "Invalid month";
        }

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

```



```

C:\Windows\System32\cmd.exe
C:\Users\ADMIN\Desktop\CDAC\OOPJ Module 2\Assignments>javac Season.java
C:\Users\ADMIN\Desktop\CDAC\OOPJ Module 2\Assignments>java Season
Enter the month (e.g., January):
February
The season is: Winter
C:\Users\ADMIN\Desktop\CDAC\OOPJ Module 2\Assignments>

```

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

        System.out.println("Enter 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 shape name: ");
        int num = sc.nextInt();

        double area;

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

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

            case 3:
                System.out.print("Enter the length: ");

```

```

        double length = sc.nextDouble();
        System.out.print("Enter the width: ");
        double width = sc.nextDouble();
        area = length * width;
        break;

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

    default:
        System.out.println("Invalid number selected.");
        return;    }

    System.out.println("The area is: " + area);

    sc.close();
}
}

```

```

C:\Users\ADMIN\Desktop\CDAC\OOPJ Module 2\Assignments>javac AreaCalculator.java
C:\Users\ADMIN\Desktop\CDAC\OOPJ Module 2\Assignments>java AreaCalculator
Select your choice to calculate the area:
1. Circle
2. Square
3. Rectangle
4. Triangle
Select your choice: 1
Enter the radius: 3
The area is: 28.274333882308138
C:\Users\ADMIN\Desktop\CDAC\OOPJ Module 2\Assignments>java AreaCalculator
Select your choice to calculate the area:
1. Circle
2. Square
3. Rectangle
4. Triangle
Select your choice: 2
Enter the side length: 4
The area is: 16.0
C:\Users\ADMIN\Desktop\CDAC\OOPJ Module 2\Assignments>java AreaCalculator
Select your choice to calculate the area:
1. Circle
2. Square
3. Rectangle
4. Triangle
Select your choice: 3
Enter the length: 5
Enter the width: 4
The area is: 20.0

```

```

C:\Users\ADMIN\Desktop\CDAC\OOPJ Module 2\Assignments>java AreaCalculator
Select your choice to calculate the area:
1. Circle
2. Square
3. Rectangle
4. Triangle
Select your choice: 4
Enter the base: 2
Enter the height: 1
The area is: 1.0
C:\Users\ADMIN\Desktop\CDAC\OOPJ Module 2\Assignments>A

```