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 CheckLeapYear {
    //checking leap year by using if else
    public static void LeapYearIfElse(int year) {
        if (year % 4 == 0 && year % 100 == 0 && year % 400 == 0) {
            System.out.println(year+ " is leap year (using if-else)");
        } else {
            System.out.println(year+ " is not a leap year (using if-else)");
        }
    }
    //checking leap year by using switch-case statement
    public static void LeapYearSwitch(int year) {
        switch ((year % 4 == 0 ? 1 : 0) + (year % 100 == 0 ? 2 : 0) + (year % 400 == 0 ? 3 :
0)) {
            case 6:
            System.out.println(year + " is a leap year (using switch-case)");
                break;

            default:
            System.out.println(year + " is not a leap year (using switch-case)");
                break;
        }
    }
    public static void main(String[] args) {
        Scanner scn = new Scanner(System.in);
        System.out.print("Enter a year: ");
        int year = scn.nextInt();
        LeapYearIfElse(year);
        LeapYearSwitch(year);
        scn.close();
    }
}
```

Output:

D:\CDAC\Java_Module_2\Java_Programs>javac CheckLeapYear.java
D:\CDAC\Java_Module_2\Java_Programs>java CheckLeapYear
Enter a year: 2000
2000 is leap year (using if-else)
2000 is a leap year (using switch-case)

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 calculateBmi {

    public static double BmiResult(double weight, double height) {
        return weight / (height * height);
    }
    public static void main(String[] args) {
        Scanner scn = new Scanner(System.in);
        System.out.print("Enter weight (kg): ");
        double weight = scn.nextDouble();
        System.out.print("Enter height (meters): ");
        double height = scn.nextDouble();
        double result = BmiResult(weight, height);
        System.out.println("Your BMI: " + result);
        if (result < 18.5) {
            System.out.println("Underweight");
        } else if (result >= 18.5 && result < 24.9) {
            System.out.println("Normal weight");
        } else if (result >= 25 && result < 30) {
            System.out.println("Overweight");
        }
        scn.close();
    }
}
```

Output:

D:\CDAC\Java_Module_2\Java_Programs>javac calculateBmi.java
D:\CDAC\Java_Module_2\Java_Programs>java calculateBmi
Enter weight (kg): 70
Enter height (meters): 1.7
Your BMI: 24.221453287197235
Normal weight

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

```java
import java.util.Scanner;

public class VoteEligibilityCheck {
    public static void main(String[] args){
        Scanner scn = new Scanner(System.in);
        System.out.print("Enter your age: ");
        int age = scn.nextInt();
        if (age >= 18) {
            System.out.println("Eligible for vote.");
        }else{
            System.out.println("Not eligible");
        }
        scn.close();
    }
}
```

Output:

```
D:\CDAC\Java_Module_2\Java_Programs>javac VoteEligibilityCheck.java
D:\CDAC\Java_Module_2\Java_Programs>java VoteEligibilityCheck
Enter your age: 20
Eligible for vote
```

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

```java
import java.util.Scanner;

public class PrintSeasons {
    public static void main(String[] args) {
        Scanner scn = new Scanner(System.in);
        System.out.print("Enter month number (1-12): ");
        int month = scn.nextInt();
        switch (month) {
            case 1:
            case 2:
            case 12:
                System.out.println("The season is Winter");
                break;
            case 3:
            case 4:
            case 5:
                System.out.println("The season is Spring");
                break;
            case 6:
            case 7:
            case 8:
                System.out.println("The season is Summer");
                break;
            case 9:
            case 10:
            case 11:
                System.out.println("The season is Autumn");
                break;
            default:
                System.out.println("Invalid month number.");
                break;
        }
        scn.close();
    }
}
```

Output:

D:\CDAC\Java_Module_2\Java_Programs>javac PrintSeasons.java
D:\CDAC\Java_Module_2\Java_Programs>java PrintSeasons
Enter month number (1-12): 5
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 AreaCalculator {

    public static void main(String[] args) {
        Scanner scn = new Scanner(System.in);
        System.out.println("Enter 1 to calculate area of a Circle");
        System.out.println("Enter 2 to calculate area of a Square");
        System.out.println("Enter 3 to calculate area of a Rectangle");
        System.out.println("Enter 4 to calculate area of a Triangle");
        int choice = scn.nextInt();
        switch (choice) {
            case 1:
                System.out.print("Enter Circle radius: ");
                int radius = scn.nextInt();
                double circleArea = 3.14 * (radius * radius);
                System.out.println("Area of a Circle is: " + circleArea);
                break;
            case 2:
                System.out.print("Enter side length of a Square: ");
                int a = scn.nextInt();
                double squareArea = a * a;
                System.out.println("Area of a Square is: " + squareArea);
                break;
            case 3:
                System.out.print("Enter lengh & width of a Rectangle: ");
                int lengh = scn.nextInt();
                int width = scn.nextInt();
                double rectangleArea = lengh * width;
                System.out.println("Area of a Rectangle is: " + rectangleArea);
                break;
            case 4:
                System.out.print("Enter base & height of a Triangle: ");
                int base = scn.nextInt();
                int height = scn.nextInt();
                double TriangleArea = (base * height) / 2;
                System.out.println("Area of a Triangle is: " + TriangleArea);
                break;
           default:
                System.out.println("Invalid choice, enter choice from 1 to 4");
                break;
        }
        scn.close();
    }
}
```

Output:

D:\CDAC\Java_Module_2\Java_Programs>javac AreaCalculator.java
D:\CDAC\Java_Module_2\Java_Programs>java AreaCalculator

```
Enter 1 to calculate area of a Circle
Enter 2 to calculate area of a Square
Enter 3 to calculate area of a Rectangle
Enter 4 to calculate area of a Triangle
2
Enter side length of a Square: 5
Area of a Square is: 25.0
```