2️⃣ Assignments 2 : Aditi_Mehre_KH

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.println("Enter a year: ");
        int year = scanner.nextInt();

        int caseValue = 0;

        if (year % 4 == 0) {
            caseValue = 1;
            if (year % 100 == 0) {
                caseValue = 2;
                if (year % 400 == 0) {
                    caseValue = 3;
                }
            }
        }

        switch (caseValue) {
            case 3:
                System.out.println(year + " is a leap year.");
                 break;
            case 2:
                  System.out.println(year + " is not a leap year.");
                break;
            case 1:
                System.out.println(year + " is a leap year.");
                 break;
            default:
                System.out.println(year + " is not a leap year.");
                   break;
        }
    }
}
```

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).

```
import java.util.Scanner;
public class Bmi {

    public static void main (String [] args ){
        Scanner sc = new Scanner (System.in);
        System.out.println("Enter your Weight in Kgs");
        double  weight = sc.nextDouble();
       System.out.println("Enter the height in meters");
       double height = sc.nextDouble();
        double BMI = weight / (height*height);
        System.out.println("Your BMI :" + BMI);

        if (BMI < 18.5) {
            System.out.println("Category: Underweight");
        } else if (BMI >= 18.5 && BMI < 24.9) {
            System.out.println("Category: Normal weight");
        } else if (BMI >= 25 && BMI < 29.9) {
```

```
            System.out.println("Category: Overweight");
        } else {
            System.out.println("Category: Obesity");
        }
    }
}
```

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("You are eligible for voting ");
    }else {
        System.out.println("You are not eligible for voting ");
    }
}
}
```

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 Seasons {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        int month = sc.nextInt();
        String season ;
        switch(month){
            case 1 : case 2 :  case 12 :
            season = "Winters";
            break;

            case 3 : case 4 :  case 5 :
            season = "Summer";
            break;
            case 6 : case 7 :  case 8 :
            season= "Monsoon";
            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 for the "+ month + " is "+ season);
    }
}
```

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 ShapeAreaCalculator {
```

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

        System.out.println("Select a shape to calculate its 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 of the shape: ");
        int shape = scanner.nextInt();

        double area;

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

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

            case 3: // Rectangle
                System.out.print("Enter the width of the rectangle: ");
        double width = scanner.nextDouble();
                System.out.print("Enter the height of the rectangle: ");
             double height = scanner.nextDouble();
                area = width * height;
                System.out.println("The area of the rectangle is: " + area);
                break;

            case 4: // Triangle
              System.out.print("Enter the base of the triangle: ");
           double base = scanner.nextDouble();
                System.out.print("Enter the height of the triangle: ");
                double triangleHeight = scanner.nextDouble();
                  area = 0.5 * base * triangleHeight;
                System.out.println("The area of the triangle is: " + area);
                break;

            default:
                System.out.println("Invalid selection Please enter a number between 1 and 4.");
                break;
        }

        scanner.close();
    }
}
```