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.

-->>

1.) if-else :-

```
import java.util.Scanner;

public class LeapYear{

   public static boolean isLeapYear(int year) {
      if ((year % 4 == 0 && year % 100 != 0) || (year % 400 == 0)) {
         return true;
      } else {
         return false;
      }
   }

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

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


      if (isLeapYear(year)) {
         System.out.println(year + " is a leap year.");
      } else {
         System.out.println(year + " is not a leap year.");
      }
```

```
        scanner.close();
    }
}
```

2.) Switch-case :-

```
import java.util.Scanner;
public class LeapYearCheckS{
    public static void main(String[] args){
        Scanner scanner = new Scanner(System.in);
        System.out.print("Enter a year: ");
        int year = scanner.nextInt();

        boolean isLeapYear = (year % 4 == 0 && year % 100 != 0) || (year % 400 == 0);

        switch (isLeapYear ? 1 : 0) {
            case 1:
                System.out.println(year + " is a leap year.");
                break;
            case 0:
                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 BMICalculator {
   public static void main(String[] args){
      Scanner scanner = new Scanner(System.in);
      System.out.print("Enter weight in kilograms: ");
      double weight = scanner.nextDouble();
      System.out.print("Enter height in meters: ");
      double height = scanner.nextDouble();

      double bmi = weight / (height * height);
      System.out.printf("Your BMI is %.2f\n", 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 >= 25.0 && 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 VotingEligibility{
   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.");
    }
  }
}
```

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 SeasonFinder {
  public static void main(String[] args){
    Scanner scanner = new Scanner(System.in);
    System.out.print("Enter month (1-12): ");
    int month = scanner.nextInt();

    switch (month) {
      case 12: case 1: case 2:
        System.out.println("Winter");
        break;
      case 3: case 4: case 5:
        System.out.println("Spring");
        break;
      case 6: case 7: case 8:
        System.out.println("Summer");
        break;
      case 9: case 10: case 11:
        System.out.println("Autumn");
        break;
      default:
        System.out.println("Invalid month.");
        break;
    }
  }
}
```

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 ShapeAreaCalc{
   public static void main(String[] args){
      Scanner scanner = new Scanner(System.in);
      System.out.print("Select a shape (Circle, Square, Rectangle, Triangle): ");
      String shape = scanner.nextLine().toLowerCase();

      switch (shape) {
         case "circle":
            System.out.print("Enter the radius: ");
            double radius = scanner.nextDouble();
            double circleArea = Math.PI * radius * radius;
            System.out.printf("The area of the circle is %.2f\n", circleArea);
            break;
         case "square":
            System.out.print("Enter the side length: ");
            double side = scanner.nextDouble();
            double squareArea = side * side;
            System.out.printf("The area of the square is %.2f\n", squareArea);
            break;
         case "rectangle":
            System.out.print("Enter the length: ");
            double length = scanner.nextDouble();
            System.out.print("Enter the width: ");
            double width = scanner.nextDouble();
            double rectangleArea = length * width;
            System.out.printf("The area of the rectangle is %.2f\n", rectangleArea);
            break;
         case "triangle":
            System.out.print("Enter the base: ");
```

```
            double base = scanner.nextDouble();
            System.out.print("Enter the height: ");
            double height = scanner.nextDouble();
            double triangleArea = 0.5 * base * height;
            System.out.printf("The area of the triangle is %.2f\n", triangleArea);
            break;
        default:
            System.out.println("Invalid shape.");
            break;
    }
  }
}
```