Chetan kirange\_KH **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;

import java.util.Scanner;

public class LeapYearChecker {

    public static void main(String[] args) {

        Scanner scanner = new Scanner(System.in);

        System.out.print("Enter a year: ");

        int year = scanner.nextInt();

        // Using if-else

        if (isLeapYearIfElse(year)) {

            System.out.println(year + " is a leap year.");

        } else {

            System.out.println(year + " is not a leap year.");

        }

        // Using switch-case

        checkLeapYearSwitchCase(year);

    }

    public static boolean isLeapYearIfElse(int year) {

        if ((year % 4 == 0 && year % 100 != 0) || (year % 400 == 0)) {

            return true;

        }

        return false;

    }

    public static void checkLeapYearSwitchCase(int year) {

        switch (year % 4) {

            case 0:

                if (year % 100 == 0) {

                    switch (year % 400) {

                        case 0:

                            System.out.println(year + " is a leap year (checked using switch-case).");

                            break;

                        default:

                            System.out.println(year + " is not a leap year (checked using switch-case).");

                            break;

                    }

                } else {

                    System.out.println(year + " is a leap year (checked using switch-case).");

                }

                break;

            default:

                System.out.println(year + " is not a leap year (checked 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).

import java.util.Scanner;

public class BMICalculator {

    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.printf("Your BMI is: %.2f\n", bmi);

        if (bmi < 18.5) {

            System.out.println("Underweight");

        } else if (bmi >= 18.5 && bmi < 24.9) {

            System.out.println("Normal weight");

        } else if (bmi >= 25 && bmi < 29.9) {

            System.out.println("Overweight");

        } else {

            System.out.println("Obesity");

        }

    }

}

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

import java.util.Scanner;

public class VotingEligibilityChecker {

    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 SeasonChecker {

    public static void main(String[] args) {

        Scanner scanner = new Scanner(System.in);

        System.out.print("Enter a 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 ShapeAreaCalculator {

    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");

        System.out.println("2. Square");

        System.out.println("3. Rectangle");

        System.out.println("4. Triangle");

        int choice = scanner.nextInt();

        switch (choice) {

            case 1: // Circle

                System.out.print("Enter the radius of the circle: ");

                double radius = scanner.nextDouble();

                double circleArea = Math.PI \* radius \* radius;

                System.out.printf("The area of the circle is: %.2f\n", circleArea);

                break;

            case 2: // Square

                System.out.print("Enter the side length of the square: ");

                double side = scanner.nextDouble();

                double squareArea = side \* side;

                System.out.printf("The area of the square is: %.2f\n", squareArea);

                break;

            case 3: // Rectangle

                System.out.print("Enter the length of the rectangle: ");

                double length = scanner.nextDouble();

                System.out.print("Enter the width of the rectangle: ");

                double width = scanner.nextDouble();

                double rectangleArea = length \* width;

                System.out.printf("The area of the rectangle is: %.2f\n", rectangleArea);

                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 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 choice.");

                break;

        }

    }

}