**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.\*;

class Leapyear1

{

    public static void main(String... args)

    {

//      while (true)

//      {

            System.out.println("Enter Year to check");

            Scanner s= new Scanner(System.in);

            int year = s.nextInt();

            int ch ;

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

                        {

                            ch=1;

                        }

                        else

                        {

                            ch=2;

                        }

            switch(ch)

            {

                case 1:

                    System.out.println("Leap year");

                    break;

                case 2:

                    System.out.println("Not a Leap year");

                    break;

                default:

                    System.out.println("default");

                    break;

            }

        // }

    }

}

**Output:**

Enter Year to check

200

Not a Leap year

Enter Year to check

2000

Leap year

**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).**

// Underweight: BMI < 18.5

// Normal weight: 18.5 ≤ BMI < 24.9

// Overweight: 25 ≤ BMI < 29.9

// Obesity: BMI ≥ 30

import java.util.\*;

class Bmi {

    public static void main(String args[]){

        Scanner sc = new Scanner(System.in);

        System.out.println("Enter Weight: ");

        double weight = sc.nextDouble();

        System.out.println("Enter Height: ");

        double height = sc.nextDouble();

        double bmi = weight / (height\*height);

        sc.close();

        if(bmi < 18.5)

        {

            System.out.println("Underweight!");

        }

        else if((18.5 <= bmi) || (bmi <= 24.9 ))

        {

            System.out.println("NormalWeight!");

        }

        else if((25 <= bmi ) || (bmi <= 29.9))

        {

            System.out.println("OverWeight!");

        }

        else if(bmi >= 30)

        {

            System.out.println("Obesity!!!");

        }

    }

}

**Output:**

Enter Weight:

200

Enter Height:

2

NormalWeight!

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

import java.util.\*;

class Votes{

    public static void main(String args[]){

        Scanner sc = new Scanner(System.in);

        System.out.println("Enter an age: ");

        int vote = sc.nextInt();

        sc.close();

        if(vote >= 18)

        {

            System.out.println("Eligible to vote!");

        }

        else

        {

            System.out.println("Not Eligible to vote!");

        }

    }

}

**Output:**

Enter an age:

18

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.\*;

public class Season {

    public static void main(String[] args) {

        Scanner sc = new Scanner(System.in);

        System.out.print("Enter month (1-12) : ");

        int month = sc.nextInt();

        sc.close();

        String season;

        switch (month) {

            case 12:

            case 1:

            case 2:

                season = "Winter";

                break;

            case 3:

            case 4:

            case 5:

                season = "Spring";

                break;

            case 6:

            case 7:

            case 8:

                season = "Summer";

                break;

            case 9:

            case 10:

            case 11:

                season = "Autumn";

                break;

            default:

                season = "Invalid month";

                break;

        }

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

    }

}

**Output:**

Enter month (1-12) : 2

The season is: Winter

**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;

class AreaCalculator {

    public static void main(String[] args) {

        Scanner sc = new Scanner(System.in);

        System.out.println("1. Area of Square.");

        System.out.println("2. Area of a triangle.");

        System.out.println("3. Area of a Rectangle.");

        System.out.println("4. Area of a circle.");

        System.out.print("\nEnter your choice: ");

        switch(sc.nextInt()){

            case 1:

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

            double s=sc.nextDouble();

            s\*=s;

            System.out.println("Area of the Square is: "+s);

            break;

            case 2:

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

            double len=sc.nextDouble();

            System.out.print("Enter breadth of triangle: ");

            double bre=sc.nextDouble();

            System.out.println("Area of the triangle is: "+0.5\*len\*bre);

            break;

            case 3:

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

            double l=sc.nextDouble();

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

            double b=sc.nextDouble();

            System.out.println("Area of the rectangle is: "+l\*b);

            break;

            case 4:

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

            double rad=sc.nextDouble();

            double ar=Math.PI\*rad\*rad;

            System.out.println("Area of the circle is: "+ar);

            break;

            default: System.out.println("Invalid Choice.");

            }

            sc.close();

            }

            }

**Output:**

1. Area of Square.

2. Area of a triangle.

3. Area of a Rectangle.

4. Area of a circle.

Enter your choice: 1

Enter side length: 4

Area of the Square is: 16.0