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 LeapYear{
   public static void main(String[] args){

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

      // if-else
      if ((year % 4 == 0 && year % 100 != 0) || year % 400 == 0) {
         System.out.printl (year + " is a leap year ");
      }
      else {
         System.out.println (year + " is not a leap year ");
      }

      //switch case
      int leap = (year%4 == 0 && year%100 != 0) || year%400 == 0 ? 1 : 0;

      switch (leap){
         case 1:
            System.out.println (year + " is a leap year.");
            break;
         case 0:
            System.out.println (year + " is not a leap year.");
            break;
      }

      scanner.close();
   }
}
```

```
PS C:\Users\91932\OneDrive\Desktop\CDAC\Modules\OOPJ\Day 2> javac LeapYear.java
PS C:\Users\91932\OneDrive\Desktop\CDAC\Modules\OOPJ\Day 2> java LeapYear
Enter a year: 2024
2024 is a leap year
2024 is a leap year.
PS C:\Users\91932\OneDrive\Desktop\CDAC\Modules\OOPJ\Day 2> java LeapYear
Enter a year: 2002
2002 is not a leap year
2002 is not a leap year.
PS C:\Users\91932\OneDrive\Desktop\CDAC\Modules\OOPJ\Day 2>
```

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 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.println ("Your BMI is: " + bmi);

      if (bmi < 18.5){
         System.out.println ("You are underweight.");
      } else if (bmi < 24.9){
         System.out.println ("You have a normal weight.");
      } else if (bmi < 29.9){
         System.out.println  ("You are overweight.");
      }

      scanner.close ();
   }
}
```

```
Enter your weight in kg: 45
Enter your height in meters: 1.55
Your BMI is: 18.730489073881373
You have a normal weight.
```

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

```
import java.util.Scanner;

public class Voting{
   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");
      }

      scanner.close();
```

```
    }
}
```

```
Enter your age: 21
You are eligible to vote
PS C:\Users\91932\OneDrive\Desktop\CDAC\Modules\OOPJ\Day 2>
java Voting }
Enter your age: 16
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 SeasonPrint{
    public static void main(String[] args){
        Scanner scanner = new Scanner (System.in);

        System.out.print ( "Enter the month number (1-12): " );
        int month= scanner.nextInt();

        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 );

        scanner.close();
    }
}
```

```
Enter the month number (1-12): 9
The season is: Autumn
PS C:\Users\91932\OneDrive\Desktop
?) { java SeasonPrint }
Enter the month number (1-12): 3
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 Area{
   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, 2. Square, 3. Rectangle, 4. Triangle");
      System.out.print ("Enter your choice from 1-4: ");

      int choice= scanner.nextInt();

      switch (choice){

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

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

         case 3:
            System.out.print ("Enter the length & width of the rectangle separated by a space: ");
            double length = scanner.nextDouble();
            double width = scanner.nextDouble();
            double areaRectangle = length * width;
            System.out.println ("The area of the rectangle is: " + areaRectangle);
            break;

         case 4:
            System.out.print ("Enter the base & height of the triangle separated by a space: ");
            double base = scanner.nextDouble();
            double height = scanner.nextDouble();
            double areaTriangle = 0.5 * base * height;
            System.out.println ("The area of the triangle is: " + areaTriangle);
            break;

         default:
            System.out.println ("Invalid choice.");
            break;
      }
      scanner.close();
   }
}
```

```
PS C:\Users\91932\OneDrive\Desktop\CDAC\Modules\OOPJ\Day 2> java Area
Select a shape to calculate the area:
1. Circle, 2. Square, 3. Rectangle, 4. Triangle
Enter your choice from 1-4: 2
Enter the side of the square: 4
The area of the square is: 16.0
PS C:\Users\91932\OneDrive\Desktop\CDAC\Modules\OOPJ\Day 2> java Area
Select a shape to calculate the area:
1. Circle, 2. Square, 3. Rectangle, 4. Triangle
Enter your choice from 1-4: 4
Enter the base & height of the triangle separated by a space: 4 6
The area of the triangle is: 12.0
```