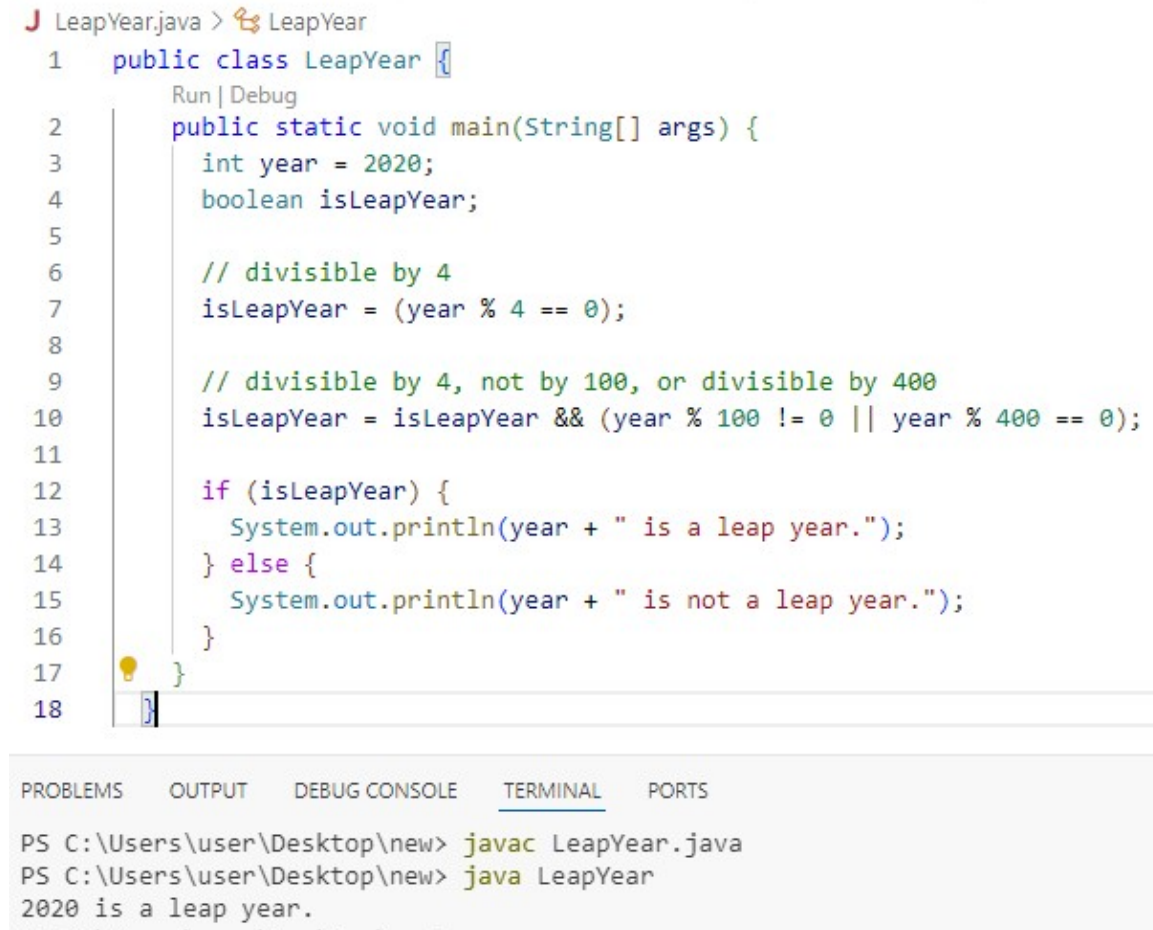# CDAC Mumbai PG-DAC AUGUST 24
Assignment No- 2

1)Write a program that checks if a given year is a leap year or not using both if-else and switch-case.

```
J LeapYear.java > ⌘ LeapYear
 1    public class LeapYear {
           Run | Debug
 2          public static void main(String[] args) {
 3            int year = 2020;
 4            boolean isLeapYear;
 5
 6            // divisible by 4
 7            isLeapYear = (year % 4 == 0);
 8
 9            // divisible by 4, not by 100, or divisible by 400
10            isLeapYear = isLeapYear && (year % 100 != 0 || year % 400 == 0);
11
12            if (isLeapYear) {
13               System.out.println(year + " is a leap year.");
14            } else {
15               System.out.println(year + " is not a leap year.");
16            }
17        }
18    }
```

```
PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS

PS C:\Users\user\Desktop\new> javac LeapYear.java
PS C:\Users\user\Desktop\new> java LeapYear
2020 is a 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).

1

```java
1    import java.util.Scanner;
2
3    public class BMICalculator {
     Run | Debug
4        public static void main(String[] args) {
5            Scanner scanner = new Scanner(System.in);
6
7            // Input weight in kilograms
8            System.out.print("Enter your weight in kilograms: ");
9            double weight = scanner.nextDouble();
10
11           // Input height in meters
12           System.out.print("Enter your height in meters: ");
13           double height = scanner.nextDouble();
14
15           // Calculate BMI
16           double bmi = weight / (height * height);
17
18           // Output the calculated BMI
19           System.out.printf("Your BMI is: %.2f\n", bmi);
20
21           // Classify the BMI
22           if (bmi < 18.5) {
23               System.out.println("You are underweight.");
24           } else if (bmi >= 18.5 && bmi < 24.9) {
25               System.out.println("You have a normal weight.");
26           } else if (bmi >= 25 && bmi < 29.9) {
27               System.out.println("You are overweight.");
28           } else if (bmi >= 30 && bmi < 34.9) {
29               System.out.println("You have obesity (Class 1).");
30           } else if (bmi >= 35 && bmi < 39.9) {
31               System.out.println("You have obesity (Class 2).");
32           } else {
33               System.out.println("You have extreme obesity (Class 3).");
34           }
35       }
36   }
37
```

PROBLEMS 1   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS

```
PS C:\Users\user\Desktop\new> javac BMICalculator.java
PS C:\Users\user\Desktop\new> java BMICalculator
Enter your weight in kilograms: 60
Enter your height in meters: 5.4
Your BMI is: 2.06
You are underweight.
PS C:\Users\user\Desktop\new>
```

2

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

```java
J VotingEligibilityChecker.java > ...
 1    import java.util.Scanner;
 2
 3    public class VotingEligibilityChecker {
          Run | Debug
 4        public static void main(String[] args) {
 5            Scanner scanner = new Scanner(System.in);
 6
 7            // Input age
 8            System.out.print("Enter your age: ");
 9            int age = scanner.nextInt();
10
11            // Check eligibility
12            if (age >= 18) {
13                System.out.println("You are eligible to vote.");
14            } else {
15                System.out.println("You are not eligible to vote.");
16            }
17        }
18    }
19
```

PROBLEMS 2   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS

```
n processing is explicitly requested
1 error
PS C:\Users\user\Desktop\new> javac VotingEligibilityChecker.java
PS C:\Users\user\Desktop\new> java VotingEligibilityChecker
Enter your age: 34
You are eligible to vote.
PS C:\Users\user\Desktop\new> javac VotingEligibilityChecker.java
PS C:\Users\user\Desktop\new> java VotingEligibilityChecker
Enter your age: 10
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

3

```java
J SeasonFinder.java > SeasonFinder
 1    import java.util.Scanner;
 2
 3    public class SeasonFinder {
      Run | Debug
 4        public static void main(String[] args) {
 5            Scanner scanner = new Scanner(System.in);
 6
 7            // Input month number
 8            System.out.print("Enter the month number (1-12): ");
 9            int month = scanner.nextInt();
10
11            // Determine the season using switch-case
12            String season;
13            switch (month) {
14                case 12:
15                case 1:
16                case 2:
17                    season = "Winter";
18                    break;
19                case 3:
20                case 4:
21                case 5:
22                    season = "Spring";
23                    break;
24                case 6:
25                case 7:
26                case 8:
27                    season = "Summer";
28                    break;
29                case 9:
30                case 10:
31                case 11:
32                    season = "Autumn";
33                    break;
34                default:
35                    season = "Invalid month number! Please enter a number between 1 and 12.";
36                    break;
37            }
38
39            // Output the season
40            System.out.println("The season is: " + season);
41        }
42    }
43
```

Activate Windows

```
35            season = "Invalid month number! Please enter
PROBLEMS 3   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS

PS C:\Users\user\Desktop\new> javac SeasonFinder.java
PS C:\Users\user\Desktop\new> java SeasonFinder
Enter the month number (1-12): 6
The season is: Summer
PS C:\Users\user\Desktop\new> java SeasonFinder
Enter the month number (1-12): 12
The season is: Winter
PS C:\Users\user\Desktop\new> ||
```

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.

```java
import java.util.Scanner;

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

        // Display shape options
        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");

        // Input shape choice
        System.out.print("Enter the number corresponding to your choice: ");
        int choice = scanner.nextInt();

        double area = 0;

        // Calculate area based on shape choice using switch-case
        switch (choice) {
            case 1: // Circle
                System.out.print("Enter the radius of the circle: ");
                double radius = scanner.nextDouble();
                area = Math.PI * radius * radius;
                break;
            case 2: // Square
                System.out.print("Enter the side length of the square: ");
                double side = scanner.nextDouble();
                area = side * side;
                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();
                area = length * width;
                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();
                area = 0.5 * base * height;
```

```
            break;
        default:
            System.out.println("Invalid choice! Please select a valid shape.");
            return; // Exit the program for invalid choice
    }

    // Output the calculated area
    System.out.printf("The area of the selected shape is: %.2f\n", area);
  }
}
```

PROBLEMS 4   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS

```
The area of the selected shape is: 78.54
PS C:\Users\user\Desktop\new> java ShapeAreaCalculator
Select a shape to calculate the area:
1. Circle
2. Square
3. Rectangle
4. Triangle
Enter the number corresponding to your choice: 2
Enter the side length of the square: 3
The area of the selected shape is: 9.00
PS C:\Users\user\Desktop\new> java ShapeAreaCalculator
Select a shape to calculate the area:
1. Circle
2. Square
3. Rectangle
4. Triangle
Enter the number corresponding to your choice: 3
Enter the length of the rectangle: 6              Activate Wind
Enter the width of the rectangle: 6
The area of the selected shape is: 36.00          Go to Settings to a
PS C:\Users\user\Desktop\new> ||
```