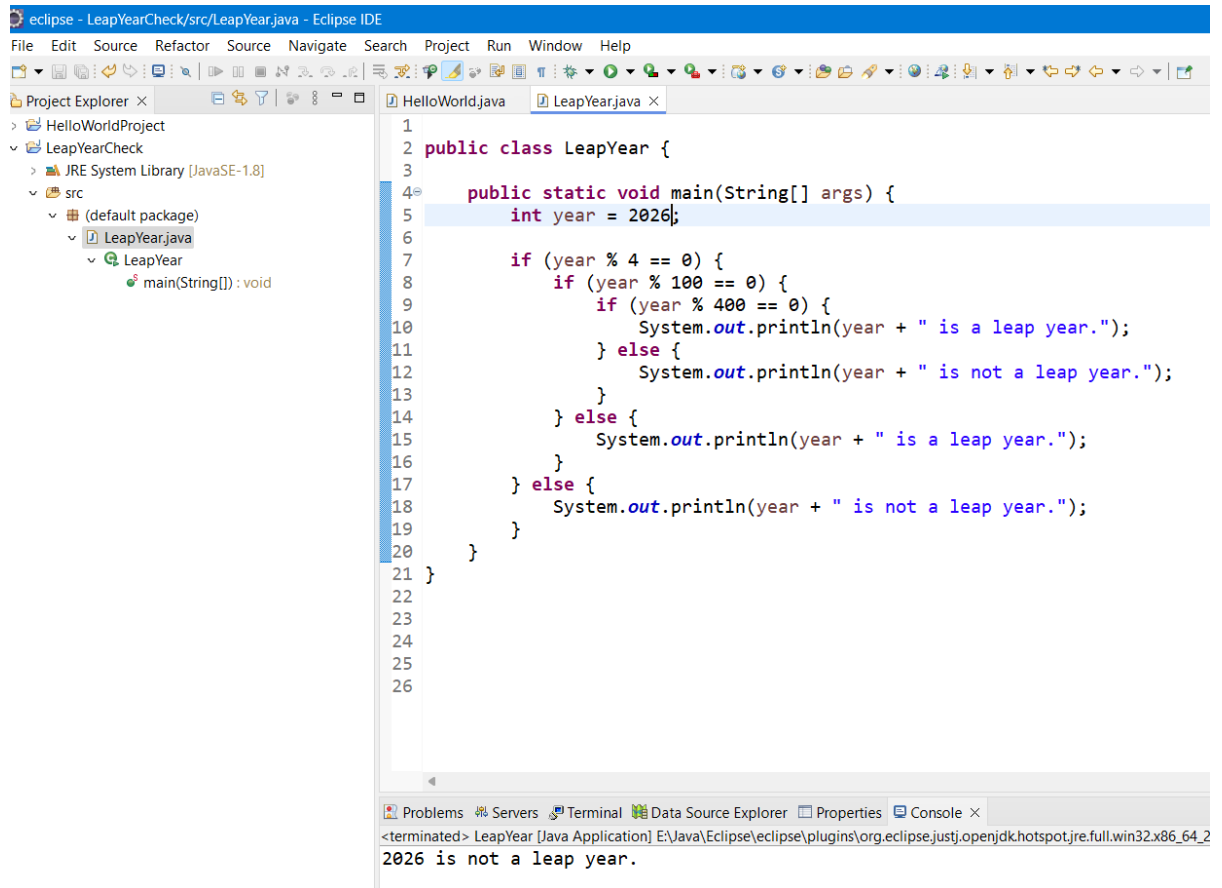


Assignment – 2

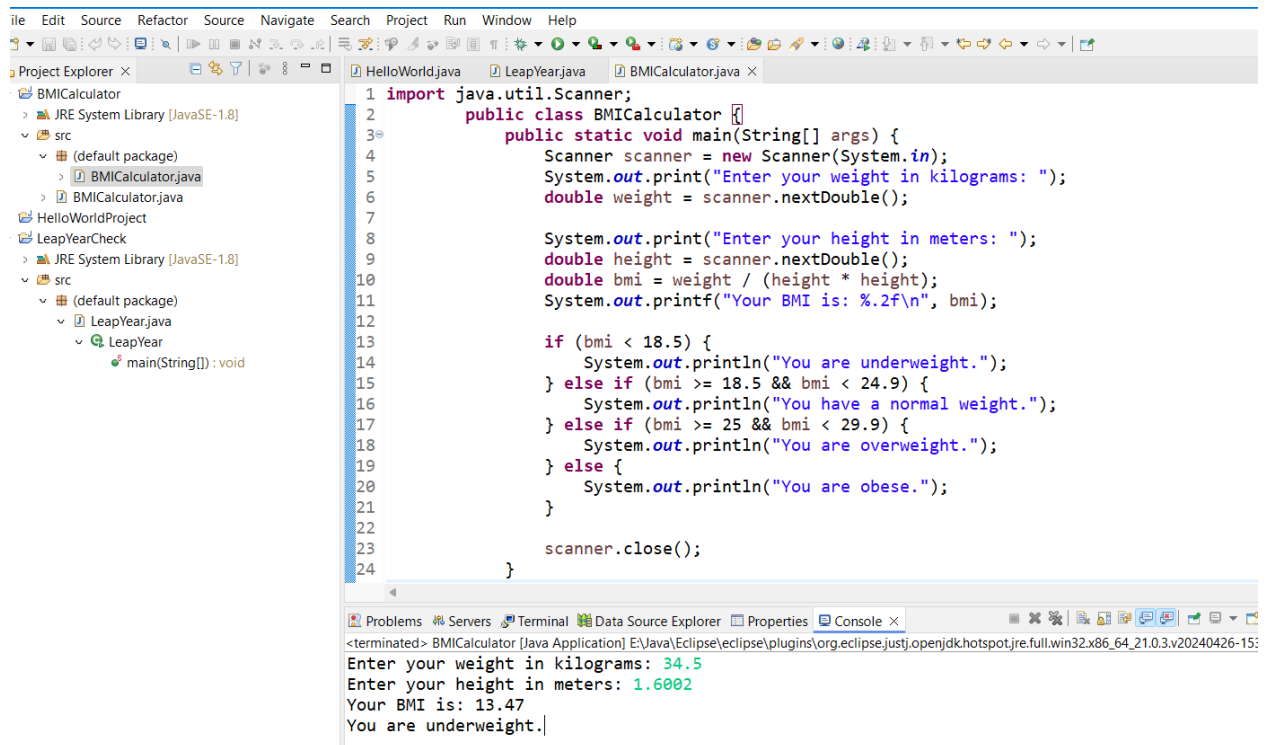
1. Write a program that checks if a given year is a leap year or not using if-else and switch case.



```
eclipse - LeapYearCheck/src/LeapYear.java - Eclipse IDE
File Edit Source Refactor Source Navigate Search Project Run Window Help
Project Explorer
  HelloWorldProject
  LeapYearCheck
    JRE System Library [JavaSE-1.8]
    src
      (default package)
        LeapYear.java
          LeapYear
            main(String[]): void
HelloWorld.java LeapYear.java
1
2 public class LeapYear {
3
4     public static void main(String[] args) {
5         int year = 2026;
6
7         if (year % 4 == 0) {
8             if (year % 100 == 0) {
9                 if (year % 400 == 0) {
10                    System.out.println(year + " is a leap year.");
11                } else {
12                    System.out.println(year + " is not a leap year.");
13                }
14            } else {
15                System.out.println(year + " is a leap year.");
16            }
17        } else {
18            System.out.println(year + " is not a leap year.");
19        }
20    }
21 }
22
23
24
25
26
Problems Servers Terminal Data Source Explorer Properties Console
<terminated> LeapYear [Java Application] E:\Java\Eclipse\eclipse\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_2
2026 is not a leap year.
```

```
eclipse - LeapYearCheck/src/LeapYear.java - Eclipse IDE
File Edit Source Refactor Source Navigate Search Project Run Window Help
Project Explorer
  HelloWorldProject
  LeapYearCheck
    JRE System Library [JavaSE-1.8]
    src
      (default package)
        LeapYear.java
          LeapYear
            main(String[]): void
HelloWorld.java
LeapYear.java
20 // Using switch-case
21 boolean isLeap = false;
22 switch (year % 4) {
23     case 0:
24         switch (year % 100) {
25             case 0:
26                 switch (year % 400) {
27                     case 0:
28                         isLeap = true;
29                         break;
30                     default:
31                         isLeap = false;
32                 }
33                 break;
34             default:
35                 isLeap = true;
36             }
37         break;
38     default:
39         isLeap = false;
40 }
41
42 if (isLeap) {
43     System.out.println(year + " is a leap year (checked by switch-case).");
44 } else {
45     System.out.println(year + " is not a leap year (checked by switch-case).");
46 }
47 }
48 }
Problems Servers Terminal Data Source Explorer Properties Console
<terminated> LeapYear [Java Application] E:\Java\Eclipse\eclipse\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_21.0.3.v20240426-1530\jre
2026 is not a leap year.
2026 is not a leap year (checked by switch-case).
```

2. Implement a program that calculates the BMI based on height and weight input using if-else to classify the BMI into categories (underweight, overweight, normal weight, etc).



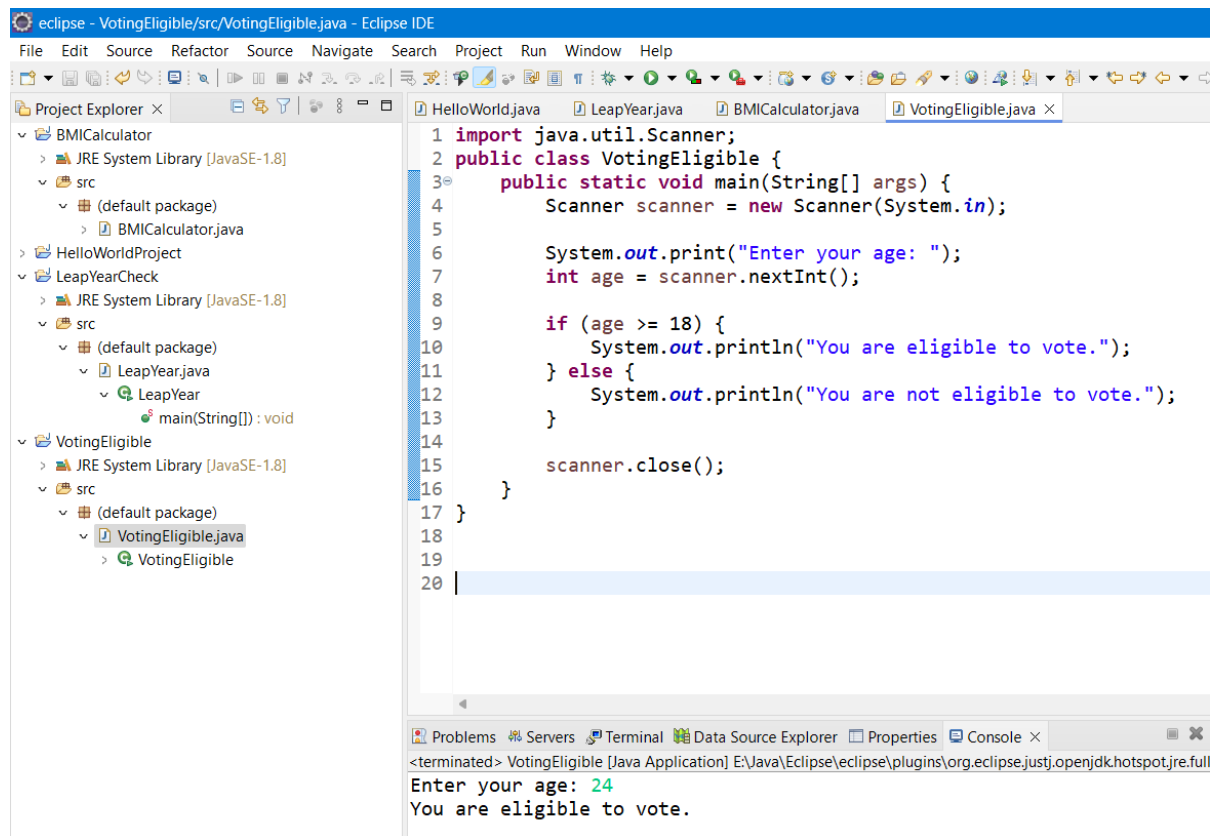
The screenshot shows the Eclipse IDE with the 'BMI Calculator' project selected in the Project Explorer. The main editor displays the code for 'BMICalculator.java'. The code imports 'java.util.Scanner' and defines a 'main' method that prompts the user for weight and height, calculates the BMI, and prints the result with a classification. The console at the bottom shows the program's execution with input values 34.5 and 1.6002, resulting in a BMI of 13.47 and the classification 'You are underweight.'.

```
1 import java.util.Scanner;
2 public class BMICalculator {
3     public static void main(String[] args) {
4         Scanner scanner = new Scanner(System.in);
5         System.out.print("Enter your weight in kilograms: ");
6         double weight = scanner.nextDouble();
7
8         System.out.print("Enter your height in meters: ");
9         double height = scanner.nextDouble();
10        double bmi = weight / (height * height);
11        System.out.printf("Your BMI is: %.2f\n", bmi);
12
13        if (bmi < 18.5) {
14            System.out.println("You are underweight.");
15        } else if (bmi >= 18.5 && bmi < 24.9) {
16            System.out.println("You have a normal weight.");
17        } else if (bmi >= 25 && bmi < 29.9) {
18            System.out.println("You are overweight.");
19        } else {
20            System.out.println("You are obese.");
21        }
22
23        scanner.close();
24    }
25 }
```

Console Output:

```
<terminated> BMICalculator [Java Application] E:\Java\Eclipse\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_21.0.3.v20240426-15:
Enter your weight in kilograms: 34.5
Enter your height in meters: 1.6002
Your BMI is: 13.47
You are underweight.
```

3. Write a program to check if a person is eligible to vote based on their age.



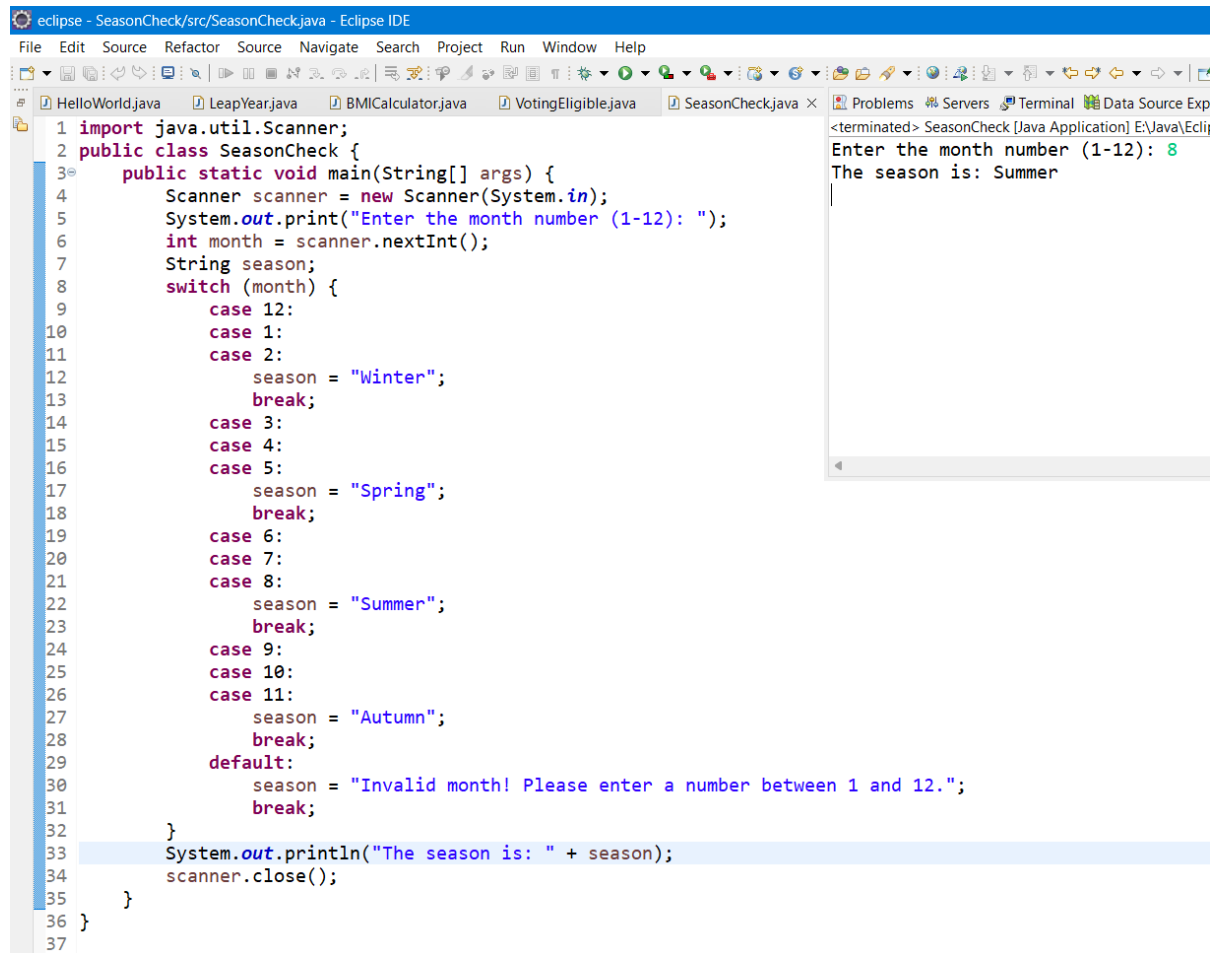
The screenshot shows the Eclipse IDE with the 'VotingEligible' project selected in the Project Explorer. The main editor displays the code for 'VotingEligible.java'. The code imports 'java.util.Scanner' and defines a 'main' method that prompts the user for their age and checks if they are eligible to vote based on whether their age is 18 or older. The console at the bottom shows the program's execution with input value 24, resulting in the output 'You are eligible to vote.'.

```
1 import java.util.Scanner;
2 public class VotingEligible {
3     public static void main(String[] args) {
4         Scanner scanner = new Scanner(System.in);
5
6         System.out.print("Enter your age: ");
7         int age = scanner.nextInt();
8
9         if (age >= 18) {
10            System.out.println("You are eligible to vote.");
11        } else {
12            System.out.println("You are not eligible to vote.");
13        }
14
15        scanner.close();
16    }
17 }
18
19
20
```

Console Output:

```
<terminated> VotingEligible [Java Application] E:\Java\Eclipse\plugins\org.eclipse.justj.openjdk.hotspot.jre.full
Enter your age: 24
You are eligible to vote.
```

4. Write a program that takes a month (1-12) & print the corresponding season (Winter, Summer, Spring, Autumn) using a switch case.



The screenshot shows the Eclipse IDE with a project named 'SeasonCheck'. The main editor displays the source code for 'SeasonCheck.java'. The code uses a switch statement to map month numbers to seasons. The right-hand side of the IDE shows the 'Terminal' view, which contains the output of the program's execution.

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

Terminal Output:

```
<terminated> SeasonCheck [Java Application] E:\Java\Eclij
Enter the month number (1-12): 8
The season is: Summer
```

5. Write a program that allows user to select the shape (Circle, Square, Rectangle, Triangle) & then calculate the area based on user-provided dimensions using switch case.

eclipse - ShapeArea/src/ShapeArea.java - Eclipse IDE

File Edit Source Refactor Source Navigate Search Project Run Window Help

Project Explorer X

- BMI Calculator
 - src
 - BMI Calculator.java
- HelloWorldProject
 - src
 - LeapYearCheck.java
- LeapYearCheck
 - src
 - LeapYear.java
- SeasonCheck
 - src
 - SeasonCheck.java
- ShapeArea
 - src
 - ShapeArea.java
- VotingEligible
 - src
 - VotingEligible.java

1 import java.util.Scanner;
2 public class ShapeArea {
3 public static void main(String[] args) {
4 Scanner scanner = new Scanner(System.in);
5 System.out.println("Select a shape (Circle, Square, Rectangle, Triangle):");
6 String shape = scanner.nextLine().toLowerCase();
7 switch (shape) {
8 case "circle":
9 System.out.print("Enter the radius of the circle: ");
10 double radius = scanner.nextDouble();
11 double circleArea = Math.PI * radius * radius;
12 System.out.printf("The area of the circle is: %.2f\n",
13 break;
14 case "square":
15 System.out.print("Enter the side length of the square:");
16 double side = scanner.nextDouble();
17 double squareArea = side * side;
18 System.out.printf("The area of the square is: %.2f\n", squareArea);
19 break;
20 case "rectangle":
21 System.out.print("Enter the width of the rectangle: ");
22 double width = scanner.nextDouble();
23 System.out.print("Enter the height of the rectangle: ");
24 double height = scanner.nextDouble();
25 double rectangleArea = width * height;
26 System.out.printf("The area of the rectangle is: %.2f\n", rectangleArea);
27 break;
28 case "triangle":
29 System.out.print("Enter the base of the triangle: ");
30 double base = scanner.nextDouble();
31 System.out.print("Enter the height of the triangle: ");
32 double triangleHeight = scanner.nextDouble();
33 double triangleArea = 0.5 * base * triangleHeight;
34 System.out.printf("The area of the triangle is: %.2f\n", triangleArea);
35 break;
36 default:
37 System.out.println("Invalid shape! Please select from Circle, Square, Rectangle, or Triangle.");
38 }
39 }
40 }

<terminated> ShapeArea [Java Application] E:\Java\ eclipse\ eclipse\org.eclipse.just
Select a shape (Circle, Square, Rectangle, Triangle):
Rectangle
Enter the width of the rectangle: 5
Enter the height of the rectangle: 3
The area of the rectangle is: 15.00