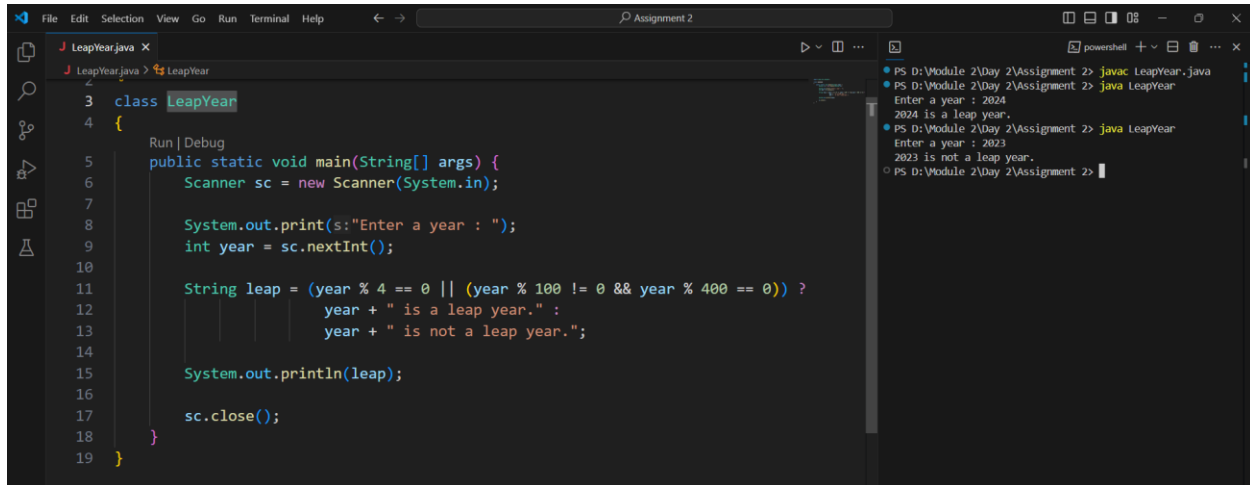


Assignment No- 2

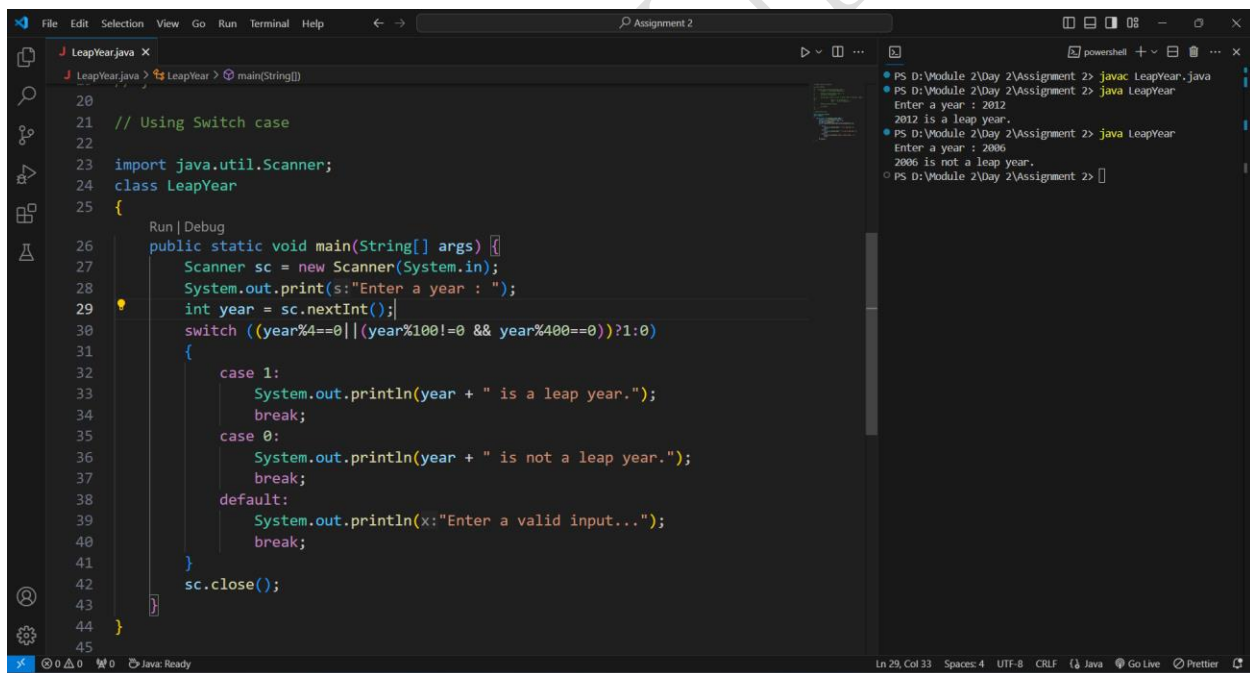
1) Write a program that checks if a given year is a leap year or not using both if-else and switch-case.



```
File Edit Selection View Go Run Terminal Help
Assignment 2
J LeapYear.java x
J LeapYear.java > LeapYear
3 class LeapYear
4 {
5     Run | Debug
6     public static void main(String[] args) {
7         Scanner sc = new Scanner(System.in);
8
9         System.out.print(s:"Enter a year : ");
10        int year = sc.nextInt();
11
12        String leap = (year % 4 == 0 || (year % 100 != 0 && year % 400 == 0)) ?
13            year + " is a leap year." :
14            year + " is not a leap year.";
15
16        System.out.println(leap);
17
18        sc.close();
19    }
}
```

Terminal Output:

```
PS D:\Module 2\Day 2\Assignment 2> javac LeapYear.java
PS D:\Module 2\Day 2\Assignment 2> java LeapYear
Enter a year : 2024
2024 is a leap year.
PS D:\Module 2\Day 2\Assignment 2> java LeapYear
Enter a year : 2023
2023 is not a leap year.
PS D:\Module 2\Day 2\Assignment 2>
```

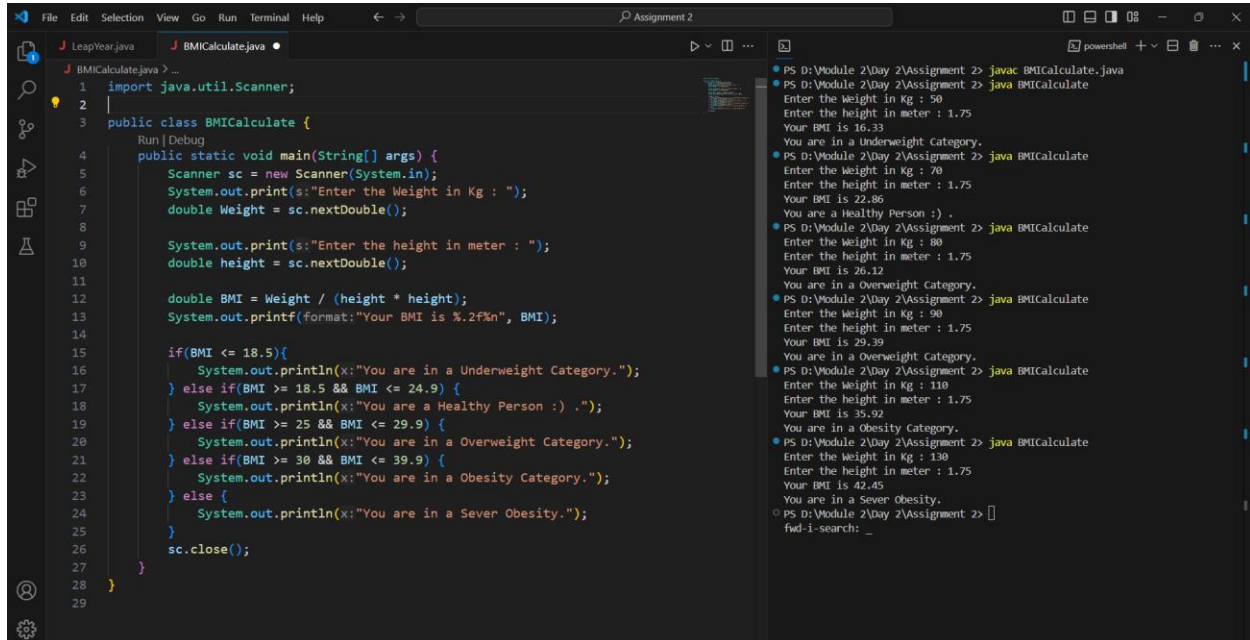


```
File Edit Selection View Go Run Terminal Help
Assignment 2
J LeapYear.java x
J LeapYear.java > LeapYear > main(String[])
20
21 // Using Switch case
22
23 import java.util.Scanner;
24 class LeapYear
25 {
26     Run | Debug
27     public static void main(String[] args) {
28         Scanner sc = new Scanner(System.in);
29         System.out.print(s:"Enter a year : ");
30         int year = sc.nextInt();
31         switch ((year%4==0||(year%100!=0 && year%400==0)) ? 1 : 0)
32         {
33             case 1:
34                 System.out.println(year + " is a leap year.");
35                 break;
36             case 0:
37                 System.out.println(year + " is not a leap year.");
38                 break;
39             default:
40                 System.out.println(x:"Enter a valid input...");
41                 break;
42         }
43         sc.close();
44     }
45 }
```

Terminal Output:

```
PS D:\Module 2\Day 2\Assignment 2> javac LeapYear.java
PS D:\Module 2\Day 2\Assignment 2> java LeapYear
Enter a year : 2012
2012 is a leap year.
PS D:\Module 2\Day 2\Assignment 2> java LeapYear
Enter a year : 2006
2006 is not a leap year.
PS D:\Module 2\Day 2\Assignment 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 into categories (underweight, normal weight, overweight, etc).



The screenshot displays an IDE with a Java file named `BMICalculate.java` and its execution output in a terminal window.

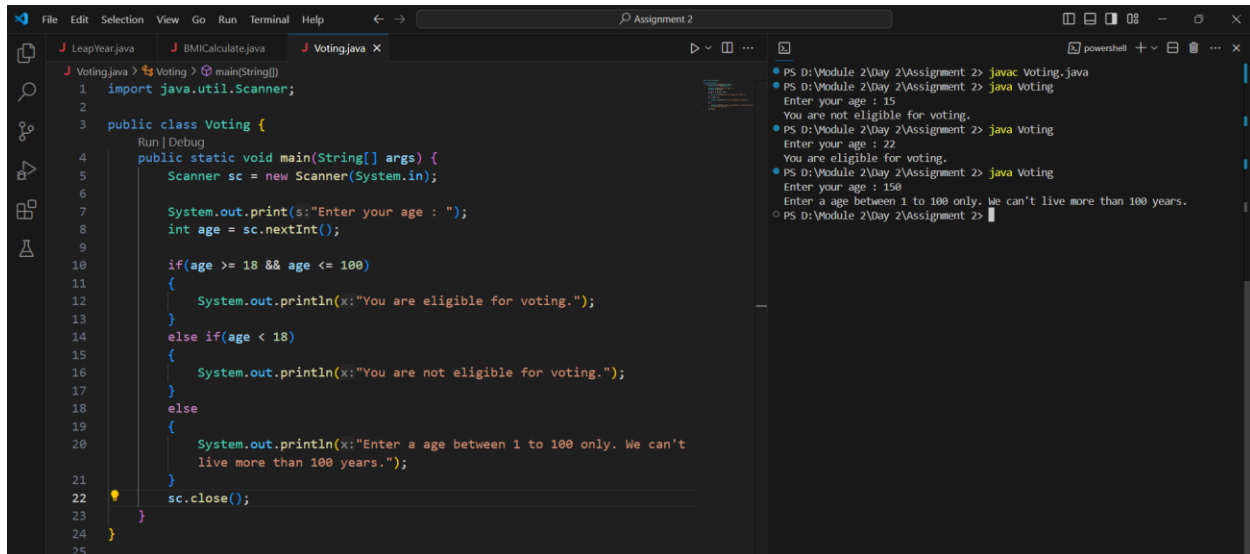
Java Code:

```
1 import java.util.Scanner;
2
3 public class BMICalculate {
4     public static void main(String[] args) {
5         Scanner sc = new Scanner(System.in);
6         System.out.print("Enter the Weight in Kg : ");
7         double Weight = sc.nextDouble();
8
9         System.out.print("Enter the height in meter : ");
10        double height = sc.nextDouble();
11
12        double BMI = Weight / (height * height);
13        System.out.printf("Your BMI is %.2f\n", BMI);
14
15        if(BMI <= 18.5){
16            System.out.println("You are in a Underweight Category.");
17        } else if(BMI >= 18.5 && BMI <= 24.9) {
18            System.out.println("You are a Healthy Person :) .");
19        } else if(BMI >= 25 && BMI <= 29.9) {
20            System.out.println("You are in a Overweight Category.");
21        } else if(BMI >= 30 && BMI <= 39.9) {
22            System.out.println("You are in a Obesity Category.");
23        } else {
24            System.out.println("You are in a Sever Obesity.");
25        }
26        sc.close();
27    }
28 }
29
```

Terminal Output:

```
PS D:\Module 2\Day 2\Assignment 2> javac BMICalculate.java
PS D:\Module 2\Day 2\Assignment 2> java BMICalculate
Enter the Weight in Kg : 50
Enter the height in meter : 1.75
Your BMI is 16.33
You are in a Underweight Category.
PS D:\Module 2\Day 2\Assignment 2> java BMICalculate
Enter the Weight in Kg : 70
Enter the height in meter : 1.75
Your BMI is 22.86
You are a Healthy Person :) .
PS D:\Module 2\Day 2\Assignment 2> java BMICalculate
Enter the Weight in Kg : 80
Enter the height in meter : 1.75
Your BMI is 26.12
You are in a Overweight Category.
PS D:\Module 2\Day 2\Assignment 2> java BMICalculate
Enter the Weight in Kg : 90
Enter the height in meter : 1.75
Your BMI is 29.39
You are in a Overweight Category.
PS D:\Module 2\Day 2\Assignment 2> java BMICalculate
Enter the Weight in Kg : 110
Enter the height in meter : 1.75
Your BMI is 35.92
You are in a Obesity Category.
PS D:\Module 2\Day 2\Assignment 2> java BMICalculate
Enter the Weight in Kg : 130
Enter the height in meter : 1.75
Your BMI is 42.45
You are in a Sever Obesity.
PS D:\Module 2\Day 2\Assignment 2>
```

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



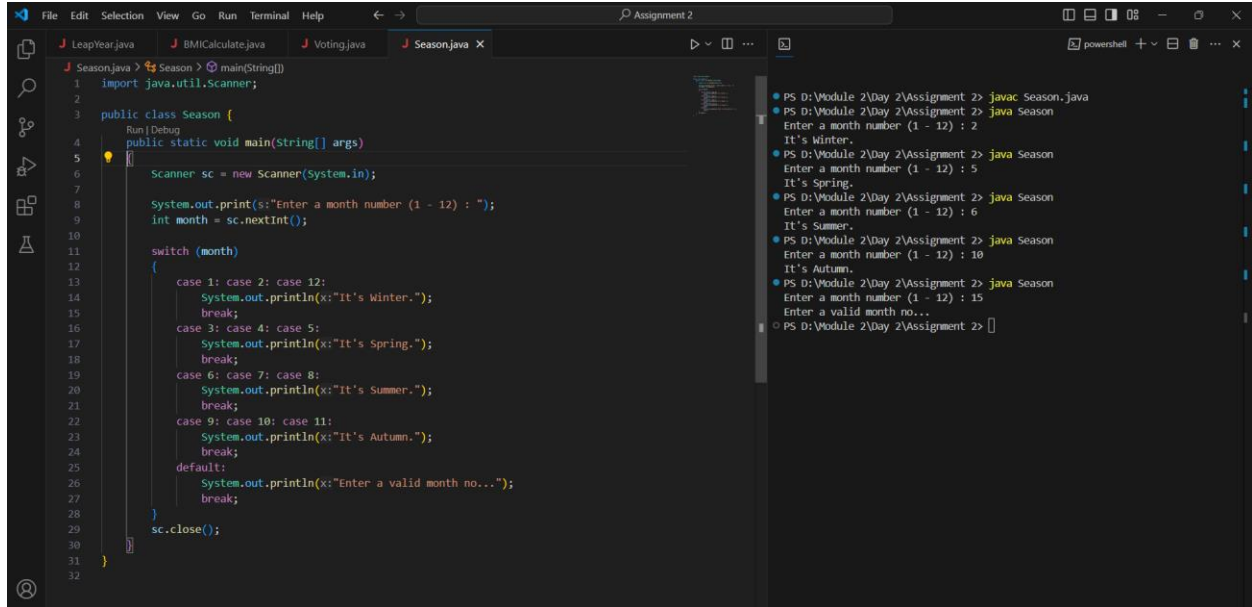
The screenshot shows an IDE with a Java file named `Voting.java` and a terminal window. The Java code defines a `Voting` class with a `main` method that uses a `Scanner` to read an age and prints a message based on whether the age is 18 or older and 100 or younger.

```
1 import java.util.Scanner;
2
3 public class Voting {
4     public static void main(String[] args) {
5         Scanner sc = new Scanner(System.in);
6
7         System.out.print("Enter your age : ");
8         int age = sc.nextInt();
9
10        if(age >= 18 && age <= 100)
11        {
12            System.out.println("You are eligible for voting.");
13        }
14        else if(age < 18)
15        {
16            System.out.println("You are not eligible for voting.");
17        }
18        else
19        {
20            System.out.println("Enter a age between 1 to 100 only. We can't
live more than 100 years.");
21        }
22        sc.close();
23    }
24 }
25
```

The terminal window shows the following output:

```
PS D:\Module 2\Day 2\Assignment 2> javac Voting.java
PS D:\Module 2\Day 2\Assignment 2> java Voting
Enter your age : 15
You are not eligible for voting.
PS D:\Module 2\Day 2\Assignment 2> java Voting
Enter your age : 22
You are eligible for voting.
PS D:\Module 2\Day 2\Assignment 2> java Voting
Enter your age : 150
Enter a age between 1 to 100 only. We can't live more than 100 years.
PS D:\Module 2\Day 2\Assignment 2>
```

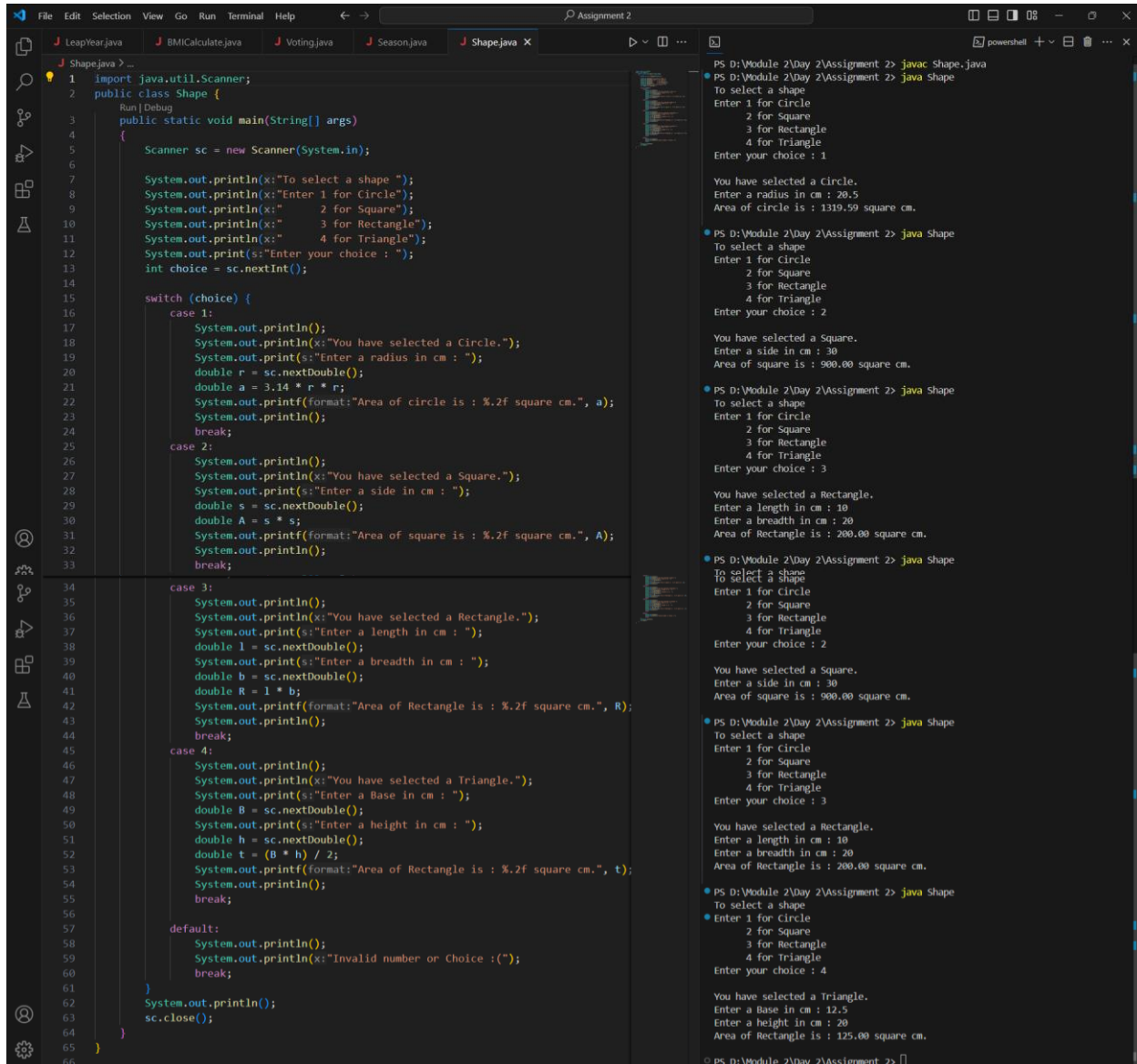
4) Write a program that takes a month (1-12) and prints the corresponding season (Winter, Spring, Summer, Autumn) using a switch case



```
File Edit Selection View Go Run Terminal Help
Season.java Season > main(String[])
1 import java.util.Scanner;
2
3 public class Season {
4     public static void main(String[] args) {
5
6         Scanner sc = new Scanner(System.in);
7
8         System.out.print("Enter a month number (1 - 12) : ");
9         int month = sc.nextInt();
10
11         switch (month)
12         {
13             case 1: case 2: case 12:
14                 System.out.println("It's Winter.");
15                 break;
16             case 3: case 4: case 5:
17                 System.out.println("It's Spring.");
18                 break;
19             case 6: case 7: case 8:
20                 System.out.println("It's Summer.");
21                 break;
22             case 9: case 10: case 11:
23                 System.out.println("It's Autumn.");
24                 break;
25             default:
26                 System.out.println("Enter a valid month no...");
27                 break;
28         }
29         sc.close();
30     }
31 }
32
```

PS D:\Module 2\Day 2\Assignment 2> javac Season.java
PS D:\Module 2\Day 2\Assignment 2> java Season
Enter a month number (1 - 12) : 2
It's Winter.
PS D:\Module 2\Day 2\Assignment 2> java Season
Enter a month number (1 - 12) : 5
It's Spring.
PS D:\Module 2\Day 2\Assignment 2> java Season
Enter a month number (1 - 12) : 6
It's Summer.
PS D:\Module 2\Day 2\Assignment 2> java Season
Enter a month number (1 - 12) : 10
It's Autumn.
PS D:\Module 2\Day 2\Assignment 2> java Season
Enter a month number (1 - 12) : 15
Enter a valid month no...
PS D:\Module 2\Day 2\Assignment 2>

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.



```
1 import java.util.Scanner;
2 public class Shape {
3     Run | Debug
4     public static void main(String[] args)
5     {
6         Scanner sc = new Scanner(System.in);
7
8         System.out.println("To select a shape ");
9         System.out.println("Enter 1 for Circle");
10        System.out.println("2 for Square");
11        System.out.println("3 for Rectangle");
12        System.out.println("4 for Triangle");
13        System.out.print("Enter your choice : ");
14        int choice = sc.nextInt();
15
16        switch (choice) {
17            case 1:
18                System.out.println();
19                System.out.println("You have selected a Circle.");
20                System.out.print("Enter a radius in cm : ");
21                double r = sc.nextDouble();
22                double a = 3.14 * r * r;
23                System.out.printf("Area of circle is : %.2f square cm.", a);
24                System.out.println();
25                break;
26            case 2:
27                System.out.println();
28                System.out.println("You have selected a Square.");
29                System.out.print("Enter a side in cm : ");
30                double s = sc.nextDouble();
31                double A = s * s;
32                System.out.printf("Area of square is : %.2f square cm.", A);
33                System.out.println();
34                break;
35            case 3:
36                System.out.println();
37                System.out.println("You have selected a Rectangle.");
38                System.out.print("Enter a length in cm : ");
39                double l = sc.nextDouble();
40                System.out.print("Enter a breadth in cm : ");
41                double b = sc.nextDouble();
42                double R = l * b;
43                System.out.printf("Area of Rectangle is : %.2f square cm.", R);
44                System.out.println();
45                break;
46            case 4:
47                System.out.println();
48                System.out.println("You have selected a Triangle.");
49                System.out.print("Enter a Base in cm : ");
50                double B = sc.nextDouble();
51                System.out.print("Enter a height in cm : ");
52                double h = sc.nextDouble();
53                double t = (B * h) / 2;
54                System.out.printf("Area of Triangle is : %.2f square cm.", t);
55                System.out.println();
56                break;
57            default:
58                System.out.println();
59                System.out.println("Invalid number or Choice :");
60                break;
61        }
62        System.out.println();
63        sc.close();
64    }
65 }
66
```

PS D:\Module 2\Day 2\Assignment 2> javac Shape.java

PS D:\Module 2\Day 2\Assignment 2> java Shape

To select a shape

Enter 1 for Circle

2 for Square

3 for Rectangle

4 for Triangle

Enter your choice : 1

You have selected a Circle.

Enter a radius in cm : 20.5

Area of circle is : 1319.59 square cm.

PS D:\Module 2\Day 2\Assignment 2> java Shape

To select a shape

Enter 1 for Circle

2 for Square

3 for Rectangle

4 for Triangle

Enter your choice : 2

You have selected a Square.

Enter a side in cm : 30

Area of square is : 900.00 square cm.

PS D:\Module 2\Day 2\Assignment 2> java Shape

To select a shape

Enter 1 for Circle

2 for Square

3 for Rectangle

4 for Triangle

Enter your choice : 3

You have selected a Rectangle.

Enter a length in cm : 10

Enter a breadth in cm : 20

Area of Rectangle is : 200.00 square cm.

PS D:\Module 2\Day 2\Assignment 2> java Shape

To select a shape

Enter 1 for Circle

2 for Square

3 for Rectangle

4 for Triangle

Enter your choice : 2

You have selected a Square.

Enter a side in cm : 30

Area of square is : 900.00 square cm.

PS D:\Module 2\Day 2\Assignment 2> java Shape

To select a shape

Enter 1 for Circle

2 for Square

3 for Rectangle

4 for Triangle

Enter your choice : 3

You have selected a Rectangle.

Enter a length in cm : 10

Enter a breadth in cm : 20

Area of Rectangle is : 200.00 square cm.

PS D:\Module 2\Day 2\Assignment 2> java Shape

To select a shape

Enter 1 for Circle

2 for Square

3 for Rectangle

4 for Triangle

Enter your choice : 4

You have selected a Triangle.

Enter a Base in cm : 12.5

Enter a height in cm : 20

Area of Triangle is : 125.00 square cm.

PS D:\Module 2\Day 2\Assignment 2>