

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.

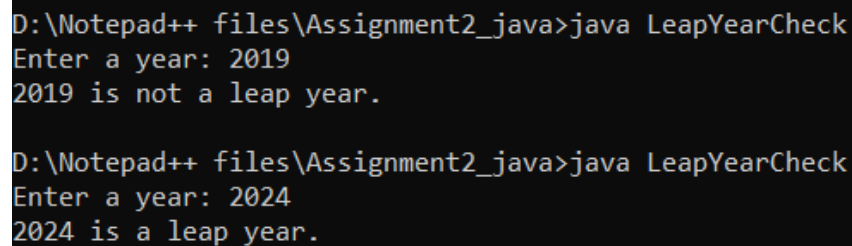
Solution:

Method 1:

```
import java.util.*;
public class LeapYearCheck{
    public static void main(String[] args){
        Scanner scanner = new Scanner(System.in);
        System.out.println("Enter year: ");
        int year = scanner.nextInt();

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

        scanner.close();
    }
}
```



```
D:\Notepad++ files\Assignment2_java>java LeapYearCheck
Enter a year: 2019
2019 is not a leap year.

D:\Notepad++ files\Assignment2_java>java LeapYearCheck
Enter a year: 2024
2024 is a leap year.
```

Method 2:

```
import java.util.*;
public class LeapYearCheck {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.print("Enter a year: ");
        int year = scanner.nextInt();
        int isLeap;
        if ((year % 4 == 0 && year % 100 != 0) || (year % 400 == 0)) {
            isLeap = 1;
        } else {
            isLeap = 0;
        }
        switch (isLeap) {
            case 1:
                System.out.println(year + " is a leap year.");
                break;
            case 0:
                System.out.println(year + " is not a leap year.");
                break;
        }
    }
}
```

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```
}
```

```
D:\Notepad++ files\Assignment2_java>java LeapYearCheck.java
Enter a year: 2024
2024 is a leap year.

D:\Notepad++ files\Assignment2_java>java LeapYearCheck.java
Enter a year: 2022
2022 is not 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 into categories (underweight, normal weight, over weight, etc).

Solution:

```
import java.util.*;
public class bim{
    public static void main(String[] args) {
        Scanner scan = new Scanner(System.in);
        System.out.print("Enter a Height in CM: ");
        double heightInCm = scan.nextDouble();
        System.out.print("Enter a weight in KG: ");
        double weightInKg = scan.nextDouble();

        double heightInMeters = heightInCm / 100;

        double bmi = weightInKg / (heightInMeters * heightInMeters);

        System.out.printf("Your BMI score is: %.2f%n", bmi);

        if (bmi < 18.5) {
            System.out.println("Category: Underweight");
        } else if (bmi >= 18.5 && bmi < 24.9) {
            System.out.println("Category: Normal weight");
        } else if (bmi >= 25.0 && bmi < 29.9) {
            System.out.println("Category: Overweight");
        } else {
            System.out.println("Category: Obesity");
        }
    }
}
```

```
D:\Notepad++ files\CODER>java bim.java
Enter a Height in CM: 160
Enter a weight in KG: 45
Your BMI score is: 17.58
Category: Underweight

D:\Notepad++ files\CODER>java bim.java
Enter a Height in CM: 160
Enter a weight in KG: 60
Your BMI score is: 23.44
Category: Normal weight

D:\Notepad++ files\CODER>java bim.java
Enter a Height in CM: 160
Enter a weight in KG: 90
Your BMI score is: 35.16
Category: Obesity
```

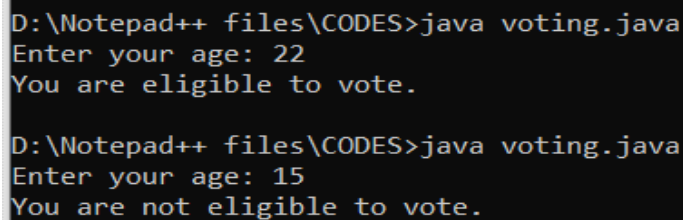
3) Write a program that checks if a person is eligible to vote based on their age.

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Solution:

```
import java.util.*;
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();
    }
}
```



```
D:\Notepad++ files\CODES>java voting.java
Enter your age: 22
You are eligible to vote.

D:\Notepad++ files\CODES>java voting.java
Enter your age: 15
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

Solution:

```
import java.util.*;
public class Tocheckseason{
    public static void main(String[] args){
        Scanner scanner = new Scanner(System.in);
        System.out.print("Enter a month : ");
        int month = scanner.nextInt();

        switch (month) {

            case 12:
            case 1:
            case 2:
                System.out.println("season is Winter");
                break;

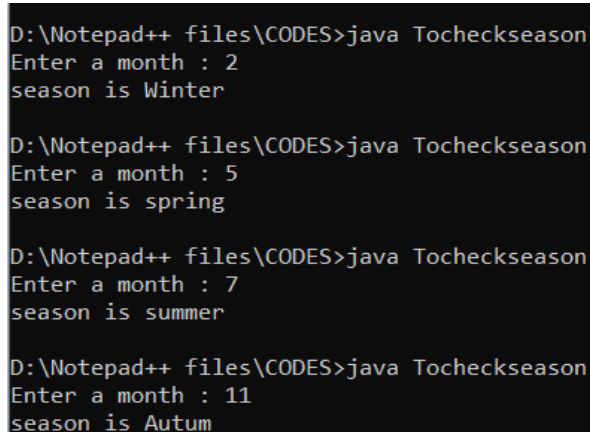
            case 3:
            case 4:
            case 5:
                System.out.println("season is spring");
                break;

            case 6:
            case 7:
            case 8:
                System.out.println("season is summer");
                break;

            case 9:
```

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```
        case 10:
        case 11:
            System.out.println("season is Autum");
            break;
        default:
            System.out.println("Enter valid Month number");
            break;
    }
}
}
```



The screenshot shows a terminal window with the following text:

```
D:\Notepad++ files\CODES>java Tocheckseason
Enter a month : 2
season is Winter

D:\Notepad++ files\CODES>java Tocheckseason
Enter a month : 5
season is spring

D:\Notepad++ files\CODES>java Tocheckseason
Enter a month : 7
season is summer

D:\Notepad++ files\CODES>java Tocheckseason
Enter a month : 11
season is Autum
```

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.

Solution:

```
import java.util.*;
public class ToCalculateShape{
    public static void main(String[] args){
        Scanner scanner = new Scanner(System.in);

        System.out.println("Type 1 To Calculate Circle ");
        System.out.println("Type 2 To Calculate Rectangle ");
        System.out.println("Type 3 To Calculate Square");
        System.out.println("Type 4 To Calculate Triangle ");

        Scanner sc = new Scanner(System.in);
        int shape = sc.nextInt();
        switch (shape) {
            case 1 :
                System.out.print("Enter the radius ");
                int b1 = sc.nextInt();
                double area = (3.14 *b1*b1);
                System.out.println("Area is "+ area);
                break;
            case 2 :
                System.out.print("Enter the length ");
                int c1 = sc.nextInt();
                System.out.print("Enter the Width ");
                int c2 = sc.nextInt();
                double are = (c1 * c2);
```

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```
        System.out.println("Area Of rectangle is "+ are);
        break;
    case 3 :
        System.out.print("Enter the Length ");
        int d1 = sc.nextInt();
        double ar = (d1*d1);
        System.out.println("Area Of Square is "+ ar);
        break;
    case 4 :
        System.out.print("Enter the base ");
        int e1 = sc.nextInt();
        System.out.print("Enter the Height");
        //int e1 = sc.nextInt();
        int e2 = sc.nextInt();
        double g = ((e1*e2)/2);
        System.out.println("Area of Triangle is "+ g);
        break;
    }
}
}
```

```
D:\Notepad++ files\CODES>javac TocalculateShape.java
D:\Notepad++ files\CODES>java ToCalculateShape.java
Type 1 To Calculate Circle
Type 2 To Calculate Rectangle
Type 3 To Calculate Square
Type 4 To Calculate Triangle
1
Enter the radius 4
Area is 50.24

D:\Notepad++ files\CODES>java TocalculateShape.java
Type 1 To Calculate Circle
Type 2 To Calculate Rectangle
Type 3 To Calculate Square
Type 4 To Calculate Triangle
2
Enter the length 6
Enter the Width 9
Area Of rectangle is 54.0

D:\Notepad++ files\CODES>java TocalculateShape.java
Type 1 To Calculate Circle
Type 2 To Calculate Rectangle
Type 3 To Calculate Square
Type 4 To Calculate Triangle
3
Enter the Length 7
Area Of Square is 49.0

D:\Notepad++ files\CODES>java TocalculateShape.java
Type 1 To Calculate Circle
Type 2 To Calculate Rectangle
Type 3 To Calculate Square
Type 4 To Calculate Triangle
4
Enter the base 11
Enter the Height 16
Area of Triangle is 88.0
D:\Notepad++ files\CODES>_
```