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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;
      }
   }
```

}

```
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 int 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\CODES>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\CODES>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\CODES>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:
```

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

        }
}
```

```
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>_
```