# Assignment 2

04 September 2024 12:31

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

```
import java.util.Scanner;
class LeapYear{
	public static void main(String[] args){

		System.out.print("Enter a year : ");
		Scanner sc = new Scanner(System.in);
		int year = sc.nextInt();

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

	}
}
```

```
C:\Users\Abhay\Desktop\Assignment\OOPJ>javac LeapYear.java

C:\Users\Abhay\Desktop\Assignment\OOPJ>java LeapYear
Enter a year : 2018
2018 is not a leap year.

C:\Users\Abhay\Desktop\Assignment\OOPJ>java LeapYear
Enter a year : 2024
2024 is a leap year.
```

Using switch:

```
import java.util.Scanner;
class LeapSwitch{
	public static void main(String[] args){

		Scanner sc = new Scanner(System.in);
		System.out.print("Enter a year : ");
		int year = sc.nextInt();
		int result = 0;

		if(year%4==0 && year%100!=0 || year%400==0){
			result = 0;
		}
		else{
			result = 1;
		}

		switch(result){
			case 0:
				System.out.println(year + " is a leap year.");
				break;
			case 1:
				System.out.println(year + " is not a leap year.");
				break;
		}

	}
}
```

```
C:\Users\Abhay\Desktop\Assignment\OOPJ>javac LeapSwitch.java

C:\Users\Abhay\Desktop\Assignment\OOPJ>java LeapSwitch
Enter a year : 2018
2018 is not a leap year.

C:\Users\Abhay\Desktop\Assignment\OOPJ>java LeapSwitch
Enter a year : 2024
2024 is a leap year.

C:\Users\Abhay\Desktop\Assignment\OOPJ>java LeapSwitch
Enter a year : 1800
1800 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, overweight,etc).
=>

```
import java.util.Scanner;

class BMI{
	public static void main(String[] args){

		Scanner sc = new Scanner(System.in);
		System.out.print("Weight in kilograms : ");
		float weight = sc.nextFloat();
		System.out.print("Height in centimeters : ");
		float height = sc.nextFloat();

		float bmi = (weight*10000)/(height*height);
		System.out.println("BMI is " + bmi);


		if(bmi<18.5){
			System.out.println("The person with bmi "+ bmi +" is underweight");
		}
		else if(bmi>=18.5 && bmi<25){
			System.out.println("The person with bmi "+ bmi +" is in normal weight");
		}
		else{
			System.out.println("The person with bmi "+ bmi +" is overweight");
		}
	}
}
```

```
C:\Users\Abhay\Desktop\Assignment\OOPJ>javac BMI.java

C:\Users\Abhay\Desktop\Assignment\OOPJ>java BMI
Weight in kilograms : 61
Height in centimeters : 188
BMI is 17.258942
The person with bmi 17.258942 is underweight

C:\Users\Abhay\Desktop\Assignment\OOPJ>java BMI
Weight in kilograms :
50
Height in centimeters : 160
BMI is 19.53125
The person with bmi 19.53125 is in normal weight

C:\Users\Abhay\Desktop\Assignment\OOPJ>java BMI
Weight in kilograms : 140
Height in centimeters : 180
BMI is 43.209877
The person with bmi 43.209877 is overweight
```

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

```
import java.util.Scanner;
class Voting{
	public static void main(String[] args){

		Scanner sc = new Scanner(System.in);
		System.out.print("Enter your age : ");
		int age = sc.nextInt();

		if(age>=18){
			System.out.println("You are "+ age + ". So, you can vote." );
		}
		else{
			System.out.println("You are "+ age + ". So, you can not vote.");
			int age2 = 18 - age;
			System.out.println("Wait for " + age2 +" years.");
		}


	}
}
```

```
C:\Users\Abhay\Desktop\Assignment\OOPJ>javac Voting.java

C:\Users\Abhay\Desktop\Assignment\OOPJ>java Voting
Enter your age : 22
You are 22. So, you can vote.

C:\Users\Abhay\Desktop\Assignment\OOPJ>java Voting
Enter your age : 13
You are 13. So, you can not vote.
Wait for 5 years.
```

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

=>

```
import java.util.Scanner;
class Seasons{
	public static void main(String args[]){
		System.out.print("Enter a number of a Month : ");
		Scanner sc = new Scanner(System.in);
		int month = sc.nextInt();
		switch(month){
			case 1,2,11,12:
				System.out.println("it is a Winter.");
				break;

			case 3,4:
				System.out.println("it is a Spring.");
				break;

			case 5,6:
				System.out.println("it is a Summer.");
				break;

			case 7,8:
				System.out.println("it is a Monsoon.");
				break;

			case 9,10:
				System.out.println("it is an Autumn.");
				break;

			default:
				System.out.println("PRINT VALID MONTH");
				break;
		}
	}
}
```

```
C:\Users\Abhay\Desktop\Assignment\OOPJ>javac Seasons.java

C:\Users\Abhay\Desktop\Assignment\OOPJ>java Seasons
Enter a number of a Month : 5
it is a Summer.

C:\Users\Abhay\Desktop\Assignment\OOPJ>
C:\Users\Abhay\Desktop\Assignment\OOPJ>java Seasons
Enter a number of a Month : 11
it is a Winter.

C:\Users\Abhay\Desktop\Assignment\OOPJ>java Seasons
Enter a number of a Month : 1232
PRINT VALID MONTH
```

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.
=>

```
import java.util.Scanner;

class ShapeArea{
	public static void main(String[] args){

		Scanner sc = new Scanner(System.in);
		System.out.print("Enter a Shape : ");
		String shape = sc.next();

		switch(shape){

			case "circle","Circle":
				System.out.print("Enter radius in cm : ");
				float radius = sc.nextFloat();
				System.out.println("Area of circle is " + (3.14*radius*radius));
				break;
			case "square","Square":
				System.out.print("Enter side in cm : ");
				float side = sc.nextFloat();
				System.out.println("Area of Square is " + (side*side));
				break;
			case "rectangle","Rectangle":
				System.out.print("Enter length in cm : ");
				float length = sc.nextFloat();
				System.out.print("Enter breadth in cm : ");
				float breadth = sc.nextFloat();
				System.out.println("Area of Rectangle is " + (length*breadth));
				break;
			case "triangle","Triangle":
				System.out.print("Enter base in cm : ");
				float base = sc.nextFloat();
				System.out.print("Enter height in cm : ");
				float heigtht = sc.nextFloat();
				System.out.println("Area of Triangle is " + (0.5*base*heigtht));
				break;


		}

	}
}
```

```
C:\Users\Abhay\Desktop\Assignment\OOPJ>javac ShapeArea.java

C:\Users\Abhay\Desktop\Assignment\OOPJ>java ShapeArea
Enter a Shape : circle
Enter radius in cm : 5
Area of circle is 78.5

C:\Users\Abhay\Desktop\Assignment\OOPJ>java ShapeArea
Enter a Shape : Square
Enter side in cm : 10
Area of Square is 100.0

C:\Users\Abhay\Desktop\Assignment\OOPJ>javac ShapeArea.java

C:\Users\Abhay\Desktop\Assignment\OOPJ>java ShapeArea
Enter a Shape : rectangle
Enter length in cm : 10
Enter breadth in cm : 20
Area of Rectangle is 200.0

C:\Users\Abhay\Desktop\Assignment\OOPJ>java ShapeArea
Enter a Shape : Triangle
Enter base in cm : 15
Enter height in cm : 25
Area of Triangle is 187.5
```