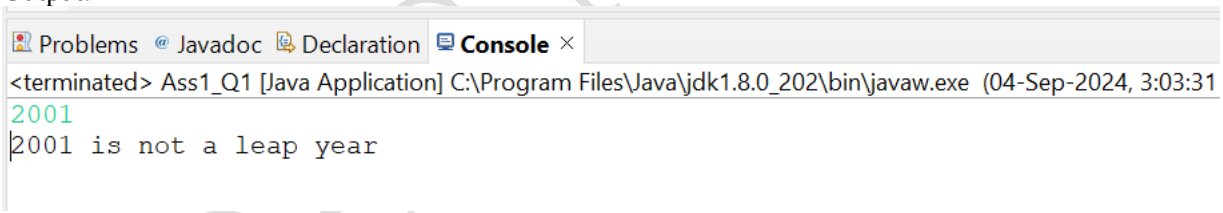
Assignment 2

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

i)Using if else

```
package javaSE;
import java.util.Scanner;
public class Ass1_Q1 {
public static void main(String[] args) {
Scanner sc = new Scanner(System.in);
int year = sc.nextInt();
// using if else statement
if (year % 4 == 0) {
System.out.println(year + " is a leap year");
} else if(year % 100 == 0) {
System.out.println(year + " is a leap year");
}
else if(year %400==0) {
System.out.println(year + " is a leap year");
}
else {
System.out.println(year+" is not a leap year");
}
sc.close();
}
}
```

Output:

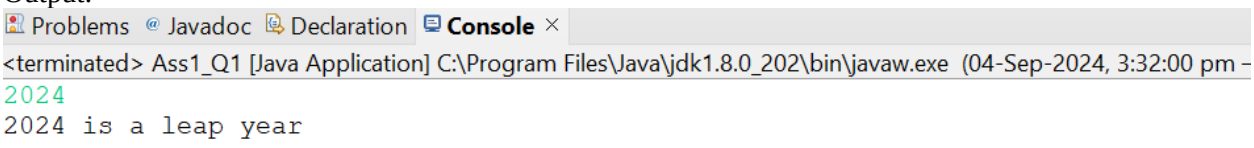


ii) Using switch case

```
package javaSE;
import java.util.Scanner;
public class Ass1_Q1 {
int year=sc.nextInt();
char result = ((year%4==0 && year%100!=0))||(year%400==0) ? 'T' : 'F' ;
switch(result) {
case 'T':
System.out.println(year+" is a leap year");
break;
case 'F':
System.out.println(year+" is not a leap year");
break;
```

```
}
sc.close();
}
}
```

Output:



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).

```
package javaSE;
import java.util.Scanner;
public class Ass1_Q2 {
public static void main(String[] args) {
Scanner sc= new Scanner(System.in);
System.out.println("Enter the weight");
double weight=sc.nextDouble();
System.out.println("Enter the height");
int height=sc.nextInt();
double heightInMeters=height/100.0;
double BMI=weight / (heightInMeters * heightInMeters);
System.out.println("BMI is:"+BMI);
if (BMI <= 24.9 && BMI >= 18.5 ) {
System.out.println("BMI indicates: normal weight");
}
else if(BMI>= 25 && BMI <= 29.9) {
System.out.println("BMI indicates: over weight");
}
else if(BMI <= 18.5 && BMI >= 0){
System.out.println("BMI indicates: under weight");
}
else {
System.out.println("BMI indicates: Obese weight");
}
sc.close();
}
}
```

Output:

```
<terminated> Ass1_Q2 [Java Application] C:\Program Files\Java\jdk1.8.0_202\bin\javaw.exe  (04-Sep-2024, 4:19:2
Enter the weight
72
Enter the height
152
BMI is:31.16343490304709
BMI indicates: Obese weight
```

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

```
package javaSE;
import java.util.Scanner;

public class Ass2Q3 {

	public static void main(String[] args) {
		Scanner sc=new Scanner(System.in);
		int age=sc.nextInt();
		System.out.println("Enter age:"+age);
		if(age>=18) {
			System.out.println("Eligible for voting");
		}
		else {
			System.out.println("Eligible for voting");
		}

	}

}
```

Output:

```
<terminated> Ass2Q3 [Java Application] C:\Program Files\Java\jdk1.8.0_202\bin\javaw.exe  (04-Sep-202
89
Enter age:89
Eligible for voting
```

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

```
package javaSE;
import java.util.Scanner;
public class Ass2_Q4 {

	public static void main(String[] args) {
```

```
        Scanner sc= new Scanner(System.in);
        int season=sc.nextInt();
        switch(season) {
        case 1:
                System.out.println("Winter");
                break;
        case 2:
                System.out.println("Winter");
                break;
        case 3:
                System.out.println("Spring");
                break;
        case 4:
                System.out.println("Spring");
                break;
        case 5:
                System.out.println("Spring");
                break;
        case 6:
                System.out.println("Summer");
                break;
        case 7:
                System.out.println("Summer");
                break;
        case 8:
                System.out.println("Summer");
                break;
        case 9:
                System.out.println("Autumn");
                break;
        case 10:
                System.out.println("Autumn");
                break;
        case 11:
                System.out.println("Autumn");
                break;
        case 12:
                System.out.println("Winter");
                break;

        default:
                System.out.println("Invalid input!");
        }
    }

}
```

Output:

```
4
Spring
```

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.

```
package javaSE;
import java.util.Scanner;

public class Ass2_Q5 {

	public static void main(String[] args) {
		Scanner sc=new Scanner(System.in);
		String shape= sc.next();
		System.out.println("Enter a shape: "+shape);
		switch(shape) {
		case "Circle":
			int r=sc.nextInt();
			System.out.println("Enter radius: "+r);
			double circleArea=r*r;
			System.out.println("Area of circle is: "+circleArea);
				break;

		case "Square":
			int s=sc.nextInt();
			System.out.println("Enter side: "+s);
			double squareArea=s*s;
			System.out.println("Area of square is: "+squareArea);
				break;

		case "Rectangle":
			int l=sc.nextInt();
			System.out.println("Enter length: "+l);
			int b=sc.nextInt();
			System.out.println("Enter breadth: "+b);
			double rectangleArea=2*l*b;
			System.out.println("Area of rectangle is: "+rectangleArea);
				break;

		case "Triangle":
			int h=sc.nextInt();
			System.out.println("Enter height: "+h);
			int b1=sc.nextInt();
```

```
                        System.out.println("Enter base: "+b1);
                        double triangleArea=0.5*h*b1;
                        System.out.println("Area of triangle is: "+triangleArea);
                                break;

                                default:
                                        System.out.println("Wrong shape entered!");
                                        break;
                }
                sc.close();

        }

}
```

Output:

```
Circle
Enter a shape: Circle
12
Enter radius: 12
Area of circle is: 144.0
```