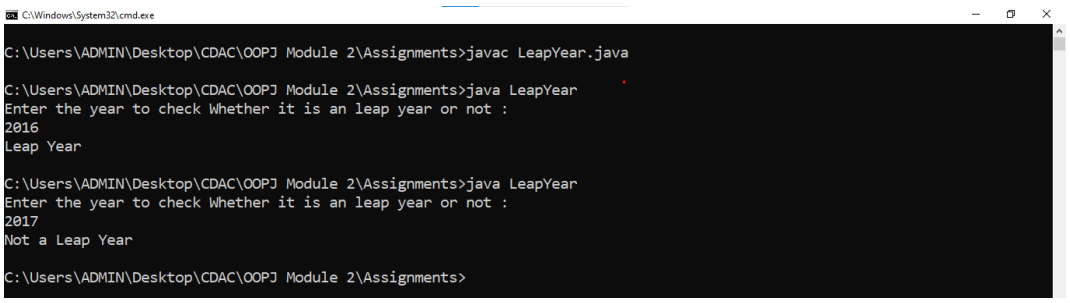
Assignment 2

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

Using if-else –

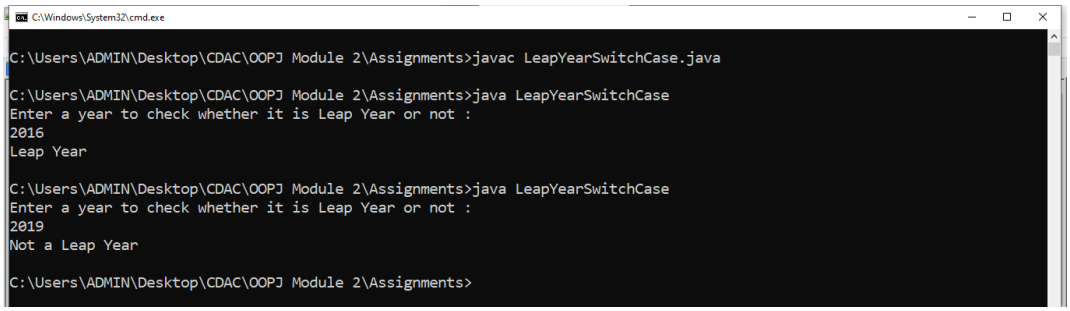
```
import java.util.Scanner;
public class LeapYear{
	public static void main(String[] args){
	Scanner sc = new Scanner(System.in);

	System.out.println("Enter the year to check Whether it is an leap year or not : ");
	int year = sc.nextInt();

	if( (year % 4 == 0) || (year % 400 == 0 && year % 100 == 0)){
		System.out.println("Leap Year");
	}else{
		System.out.println("Not a Leap Year");
	}
	}
}
```



Using Switch Case

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

		System.out.println("Enter a year to check whether it is Leap Year or not : ");
		int year = sc.nextInt();

		boolean db4 = ( year % 4 == 0 );
		boolean db400 = ( year % 400 == 0 );
		boolean db100 = ( year % 100 == 0 );

		int value = (db4 ? 1 : 0) + (db400 ? 2 : 0) + (db100 ? 4 : 0);

			switch(value){
```

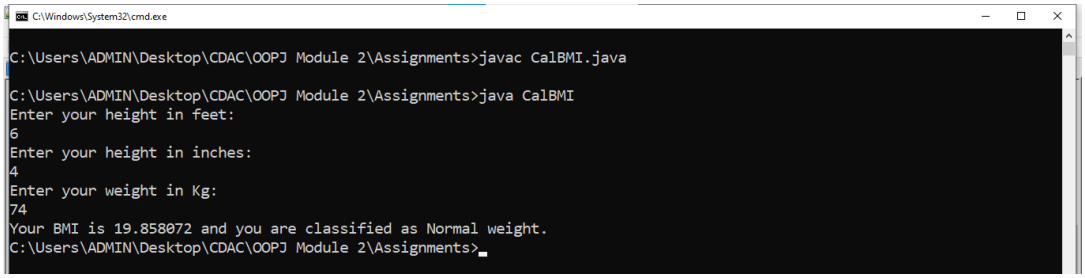
```
                        case 1:
                        case 7:
                                System.out.println("Leap Year");
                                break;
                        default:
                                System.out.println("Not a Leap Year");
                        }
                }
}
```



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).

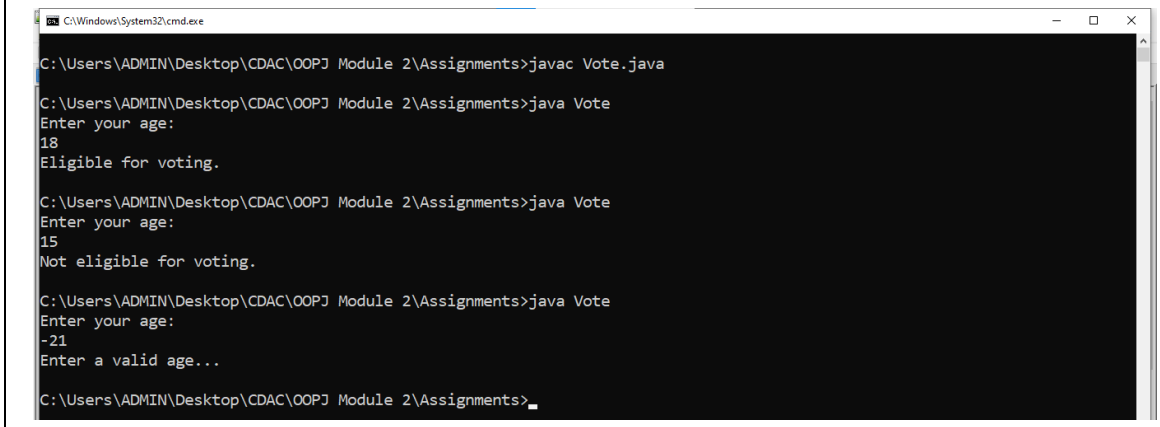
```
import java.util.Scanner;
public class CalBMI{
        public static void main(String[] args){

                Scanner sc = new Scanner(System.in);

                System.out.println("Enter your height in feet: ");
                int feet = sc.nextInt();

                System.out.println("Enter your height in inches: ");
                int inches = sc.nextInt();

                System.out.println("Enter your weight in Kg: ");
                double weight = sc.nextDouble();

                double hm = (feet * 0.3048) + (inches * 0.0254);
                double bmi = weight / (hm * hm);

                String category;

                if ( bmi < 18.5 ) {
```

```
                    category = "Underweight";
                } else if ( bmi >= 18.5 && bmi < 24.9 ) {
                    category = "Normal weight";
                } else if ( bmi >= 25 && bmi < 29.9 ) {
                    category = "Overweight";
                } else {
                    category = "Obesity";
                }

System.out.printf("Your BMI is " + (float)bmi + " and you are classified as " + category + ".");
}
}
```



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

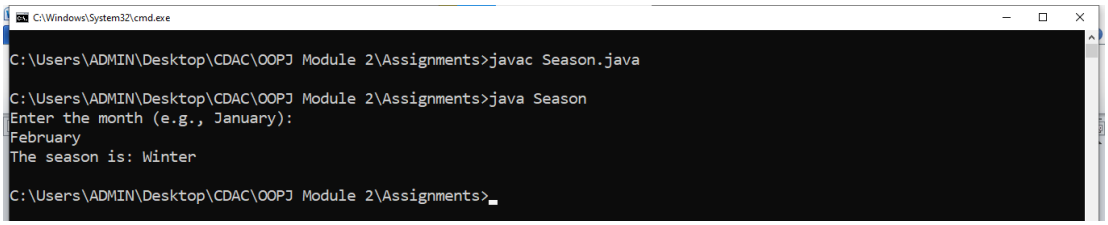
```
import java.util.Scanner;

public class Vote {

    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);

        System.out.println("Enter your age: ");
        int age = sc.nextInt();

        if (age >= 18) {
            System.out.println("Eligible for voting.");
        } else if (age < 0) {
            System.out.println("Enter a valid age...");
        } else {
            System.out.println("Not eligible for voting.");
        }

        sc.close();
    }
}
```



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;

public class Season{
   public static void main(String[] args) {
      Scanner sc = new Scanner(System.in);

      System.out.println("Enter the month e.g. January: ");
      String month = sc.nextLine();

      String season;
      switch (month) {
         case "December":
         case "January":
         case "February":
            season = "Winter";
            break;
         case "March":
         case "April":
         case "May":
            season = "Spring";
            break;
         case "June":
         case "July":
         case "August":
            season = "Summer";
            break;
         case "September":
         case "October":
         case "November":
            season = "Autumn";
            break;
```

```
        default:
            season = "Invalid month";
    }

    System.out.println("The season is: " + season);

  }
}
```



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;

public class AreaCalculator {
   public static void main(String[] args) {
      Scanner sc = new Scanner(System.in);

      System.out.println("Enter a shape to calculate the area:");
      System.out.println("1. Circle");
      System.out.println("2. Square");
      System.out.println("3. Rectangle");
      System.out.println("4. Triangle");
      System.out.print("Enter the shape name: ");
      int num = sc.nextInt();

      double area;

      switch (num) {
         case 1:
            System.out.print("Enter the radius: ");
            double radius = sc.nextDouble();
            area = Math.PI * radius * radius;
            break;

         case 2:
            System.out.print("Enter the side length: ");
            double side = sc.nextDouble();
            area = side * side;
            break;

         case 3:
            System.out.print("Enter the length: ");
```

```
                    double length = sc.nextDouble();
                    System.out.print("Enter the width: ");
                    double width = sc.nextDouble();
                    area = length * width;
                    break;

                case 4:
                    System.out.print("Enter the base: ");
                    double base = sc.nextDouble();
                    System.out.print("Enter the height: ");
                    double height = sc.nextDouble();
                    area = 0.5 * base * height;
                    break;

                default:
                    System.out.println("Invalid number selected.");
                    return;        }

            System.out.println("The area is: " + area);

            sc.close();
        }
}
```