

OOPJ 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.

```
/* The year must be evenly divisible by 4
   If the year can also be evenly divided by 100, it is not a leap year;
   The year is also evenly divisible by 400. Then it is a leap year.*/
import java.util.Scanner;
```

```
class ifleapYear{
    public static void main(String args[]){
        Scanner scan = new Scanner(System.in);
        System.out.println("Enter year no: ");

        int yearNo = scan.nextInt();
        if( yearNo % 4 == 0 || yearNo % 400 == 0 ){
            System.out.println(yearNo + " is Leap year");
        }
        else{
            System.out.println(yearNo + " is not Leap year");
        }
        //System.out.println(yearNo);
    }
}
```

```
D:\CDAC\OOPJ\Assignmernt>java ifleapYear
Enter year no:
2048
2048 is Leap year
```

```
class switchleapYear{
    public static void main(String args[]){
        int result;
        Scanner scan = new Scanner(System.in);
        System.out.println("Enter year");
        int yearNo = scan.nextInt();
        result = yearNo % 400 == 0 || yearNo % 4 == 0 ? 1 : 0;
        switch(result){

            case 1:
                System.out.println ("\n" + yearNo+ " is the leap year.");
                break;

            case 0:
                System.out.println ("\n" + yearNo + " is not the leap year.");
                break;

            default:
                System.out.println ("\n" + yearNo + " is not the leap year.");
                }
        }
    }
}
```

```
D:\CDAC\OOPJ\Assignmernt>java switchleapYear
Enter year
2011

2011 is not the 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).

/*BMI Categories:

Underweight = <18.5

Normal weight = 18.5–24.9

Overweight = 25–29.9

Obesity = BMI of 30 or greater

BMI = weight (kg) / [height (m)]²

*/

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

        Scanner scan = new Scanner(System.in);
        System.out.println("Enter your weight in Kgs");
        float w = scan.nextFloat();
        System.out.println("Enter your height in meters");
        float h = scan.nextFloat();

        h *= h;
        float BMI = w / h;
        System.out.println("Your BMI is "+BMI);

        if(BMI<18.5){
            System.out.println("You are underweight");
        }

        else if(BMI >= 18.5 && BMI <= 24.9){
```

```

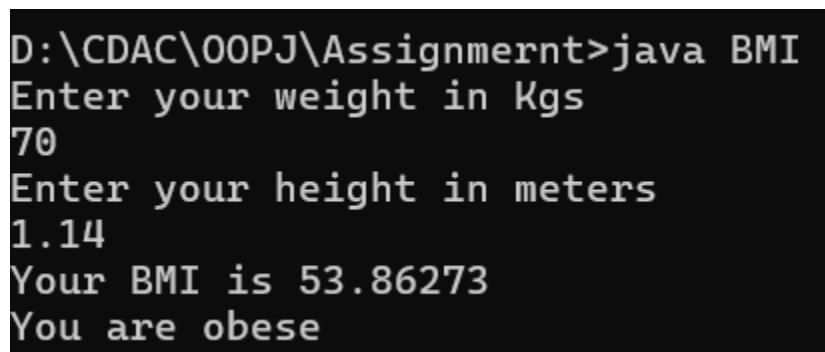
        System.out.println("You are normalweight");
    }

    else if(BMI >= 25 && BMI <= 29.9){
        System.out.println("You are overweight");
    }

    else {
        System.out.println("You are obese");
    }

}
}

```



A screenshot of a terminal window showing the execution of a Java program. The prompt is 'D:\CDAC\OOPJ\Assignmernt>java BMI'. The program prompts the user to 'Enter your weight in Kgs' and the user enters '70'. It then prompts 'Enter your height in meters' and the user enters '1.14'. The program outputs 'Your BMI is 53.86273' and 'You are obese'.

```

D:\CDAC\OOPJ\Assignmernt>java BMI
Enter your weight in Kgs
70
Enter your height in meters
1.14
Your BMI is 53.86273
You are obese

```

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

```

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

        Scanner age = new Scanner(System.in);
        System.out.println("Enter year");
        int a = age.nextInt();
        if(a<18){
            System.out.println("Not a legal voting age");
        }
        else{

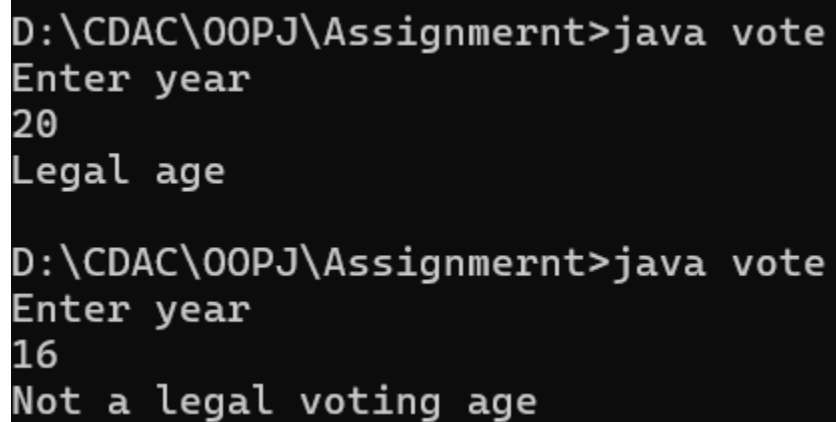
```

```

        System.out.println("Legal age");
    }

}

```



```

D:\CDAC\00PJ\Assignmernt>java vote
Enter year
20
Legal age

D:\CDAC\00PJ\Assignmernt>java vote
Enter year
16
Not a legal voting age

```

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

```

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

        Scanner month = new Scanner(System.in);
        System.out.println("Enter year");
        int a = month.nextInt();

        switch (a) {
        case 12 ,1, 2:
            System.out.println("Winter");
            break;

        case 3, 4, 5:
            System.out.println("Spring");
            break;

        case 6,7,8:

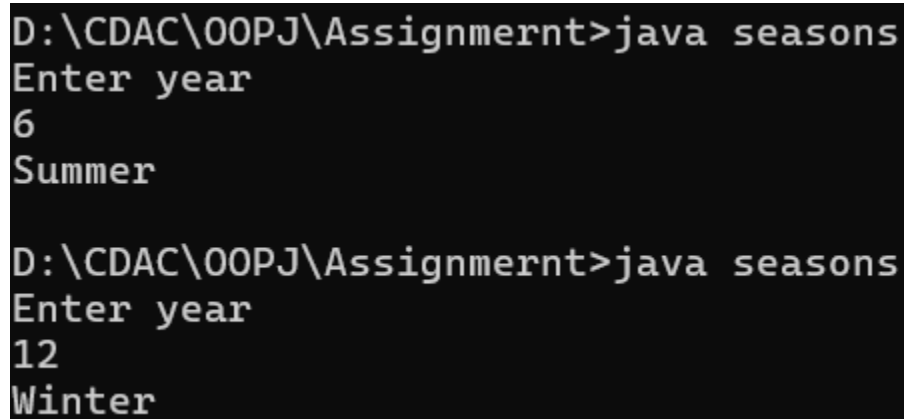
```

```

        System.out.println("Summer");
        break;

    case 9,10,11:
        System.out.println("Autumn");
        break;
    default:
        System.out.println("Invalid month number");
    }
}
}

```



```

D:\CDAC\OOPJ\Assignmernt>java seasons
Enter year
6
Summer

D:\CDAC\OOPJ\Assignmernt>java seasons
Enter year
12
Winter

```

//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.

```

/*class calculator{
    public static void main(String args[]){

        Scanner scanner = new Scanner(System.in);
        System.out.println("1. Rectangle");
        System.out.println("2. Triangle");
        System.out.println("3. Circle");
        System.out.println("4. Quit");
        System.out.print("Enter your choice : ");
    }
}

```

```

        String Area = scanner.nextLine();

        circle();
        square();
        rectangle();
        triangle();
    }

    public void circle(){
        float pi=3.17;
        //float r;
        Scanner scan = new Scanner(System.in);
        System.out.println("Enter value of r");
        float r = scan.nextFloat();
        r = pi*r*r;
    }

    public void square(){
        //float r;
        Scanner scan = new Scanner(System.in);
        System.out.println("Enter value of side");
        float area = scan.nextFloat();
        area = side*side;
    }

    switch(Area){
        case 1:circle();
        break;
        case 3 :square();
        break;
    }
}*/

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

```

```
System.out.println("1. Area of Square.");
System.out.println("2. Area of a triangle.");
System.out.println("3. Area of a Rectangle.");
System.out.println("4. Area of a circle.");
System.out.print("\nEnter your choice: ");
switch(sc.nextInt()){
    case 1:
        System.out.print("Enter side length: ");
        double s=sc.nextDouble();
        s*=s;
        System.out.println("Area of the Square is: "+s);
        break;

    case 2:
        System.out.print("Enter length of triangle: ");
        double len=sc.nextDouble();
        System.out.print("Enter breadth of triangle: ");
        double bre=sc.nextDouble();
        System.out.println("Area of the triangle is: "+0.5*len*bre);
        break;

    case 3:
        System.out.print("Enter length of rectangle: ");
        double l=sc.nextDouble();
        System.out.print("Enter breadth of rectangle: ");
        double b=sc.nextDouble();
        System.out.println("Area of the rectangle is: "+l*b);
        break;

    case 4:
        System.out.print("Enter radius of the circle: ");
        double rad=sc.nextDouble();
        double ar=Math.PI*rad*rad;
        System.out.println("Area of the circle is: "+ar);
        break;
    default: System.out.println("Invalid Choice.");
}
```



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

```
D:\CDAC\OOPJ\Assignmernt>java areacalculator
```

1. Area of Square.
2. Area of a triangle.
3. Area of a Rectangle.
4. Area of a circle.

Enter your choice: 1

Enter side length: 4

Area of the Square is: 16.0

```
D:\CDAC\OOPJ\Assignmernt>java areacalculator
```

1. Area of Square.
2. Area of a triangle.
3. Area of a Rectangle.
4. Area of a circle.

Enter your choice: 3

Enter length of rectangle: 5

Enter breadth of rectangle: 4

Area of the rectangle is: 20.0