

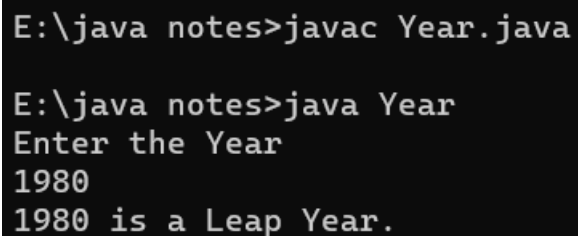
OBJECT ORIENTED PROGRAMMING WITH JAVA 8– LAB 2

Q1. Write a program to find if a given year is leap year or not.

Program:

```
import java.util.Scanner;
class Year
{
    public static void main(String[] args)
    {
        Scanner SC= new Scanner (System.in);
        System.out.println("Enter the Year");
        int Year= SC.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. ");
        }
    }
}
```

Output:

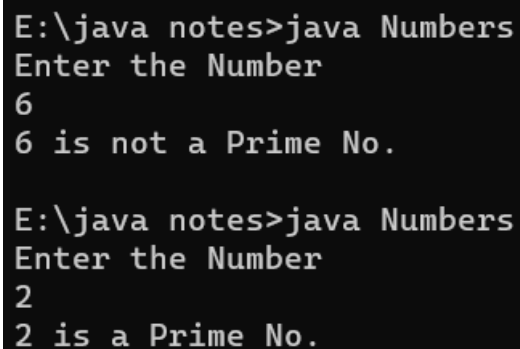


```
E:\java notes>javac Year.java

E:\java notes>java Year
Enter the Year
1980
1980 is a Leap Year.
```

Q2. Write a program to check whether a given number is prime or not.

Output:



```
E:\java notes>java Numbers
Enter the Number
6
6 is not a Prime No.

E:\java notes>java Numbers
Enter the Number
2
2 is a Prime No.
```

Program:

```
import java.util.Scanner;
```

```

class Numbers
{
    public static void main(String[] args)
    {
        Scanner SC= new Scanner(System.in);
        System.out.println("Enter the Number");
        int num=SC.nextInt();
        int i, a=0;
        if (num==0 || num==1)
        {
            System.out.println(num + " Number is not a Prime no. : ");
        }
        else if(num>=2)
        {
            for(i = 1; i<=num; i++)
            {
                if (num % i == 0){
                    a++; }
            }
        }
        if (a == 2)
        {
            System.out.println(num+ " is a Prime No.");
        }
        else{
            System.out.println(num+ " is not a Prime No.");
        }
    }
}

```

Q3. Write a program to find the factorial of a number.

Program:

```

import java.util.Scanner;
class Factorial
{
    public static void main(String[] args)
    {
        Scanner SC = new Scanner(System.in);
        System.out.println("Enter a No. :");
        int num = SC.nextInt();          // read number entered by user
        long factorial = 1;               // to calculate factorial of the number
        for(int i = 1; i<= num ; i++){
            factorial *= i ;}
        System.out.println("Factorial of the " + num + " is " + factorial);
    }
}

```

Output:

```

E:\java notes>java Factorial
Enter a No. :
5
Factorial of the 5 is 120

```

Q4. Write a program to calculate the grade of a student based on the marks entered by user in

each subject. No. of subjects is entered by the user. Program prints the grade based on the following logic.

If the average of marks is ≥ 80 then prints Grade 'A'

If the average is < 80 and ≥ 60 then prints Grade 'B'

If the average is < 60 and ≥ 40 then prints Grade 'C'

else prints Grade 'D'

program:

```
import java.util.Scanner;
class CalculateGrade
{
    public static void main (String args[])
    {
        Scanner SC = new Scanner (System.in);
        System.out.println("Enter the number of subjects");
        int subjects = SC.nextInt();
        int TotalMarks = 0 ;           //enter marks for each subject and calculate totalmarks.
        for (int i = 1; i <= subjects ; i++) {
            System.out.println("Enter marks for subjects : " + i );
            int marks= SC.nextInt();
            TotalMarks += marks;
        }
        float avg=(float) TotalMarks/subjects;
        char grade ;                   // grades calculation based on marks.
        if (avg >= 80 ) {
            grade = 'A';
        }
        else if (avg >= 60) {
            grade = 'B';
        }
        else if (avg >= 40) {
            grade = 'C' ;
        }
        else {
            grade = 'd' ; }
        System.out.println("Average Marks : " + avg);
        System.out.println("Grade : " + grade);
    }
}
```

Output :

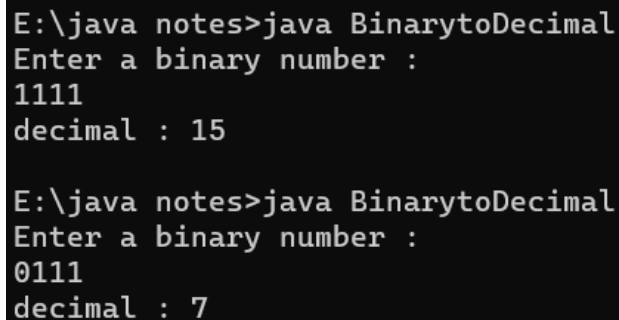
```
E:\java notes>java CalculateGrade
Enter the number of subjects
4
Enter marks for subjects : 1
70
Enter marks for subjects : 2
80
Enter marks for subjects : 3
90
Enter marks for subjects : 4
95
Average Marks : 83.75
Grade : A
```

Q5. Write a program to convert a binary number to a decimal number.

Program :

```
import java.util.Scanner;
class BinarytoDecimal
{
    public static void main(String args[])
    {
        Scanner SC = new Scanner(System.in);
        System.out.println("Enter a binary number : ");
        int n = SC.nextInt();
        int decimal= 0, p=0;
        while ( n != 0 )
        {
            decimal+= ((n % 10) * Math.pow(2, p));
            n = n/10;
            p++;
        }
        System.out.println("decimal : " + decimal);
    }
}
```

Output :



```
E:\java notes>java BinarytoDecimal
Enter a binary number :
1111
decimal : 15

E:\java notes>java BinarytoDecimal
Enter a binary number :
0111
decimal : 7
```

Q6. Write a program to demonstrate switch case for displaying the corresponding day for each number. (eg: case 0, display the day as Sunday)

program :

```
import java.util.Scanner;
class Days
{
    public static void main (String args [])
    {
        Scanner SC = new Scanner(System.in);
        System.out.println("Enter the number : ");
        int DayNumber = SC.nextInt();
        String day;
        switch (DayNumber){
            case 0:
```

```

        day = "Sunday";
        break;
    case 1:
        day = "Monday";
        break;
    case 2:
        day = "Tuesday";
        break;
    case 3:
        day = "Wednesday";
        break;
    case 4:
        day = "Thursday";
        break;
    case 5:
        day = "Friday";
        break;
    case 6:
        day = "Saturday";
        break;
    default:
        day = "Enter a valid day number";
    }
    System.out.println("Day is : " + day);
}
}

```

Output:

```

E:\java notes>java Days
Enter the number :
5
Day is : Friday

E:\java notes>java Days
Enter the number :
6
Day is : Saturday

```

Q7. Write a program to print the multiplication table of a given number.

Program :

```

import java.util.Scanner;
class MulTable
{
    public static void main(String args[])
    {
        Scanner SC = new Scanner(System.in);
        System.out.println("Enter the number :");
        int num = SC.nextInt();
        System.out.println("Multiplication Table for : " + num);
        for (int i = 1; i <= 10; i++)
        {
            int result = num * i;

```

```

        System.out.println(num + "*" + i + "=" + result);
    }
}
}

```

Output:

```

Multiplication Table for : 9
9*1=9
9*2=18
9*3=27
9*4=36
9*5=45
9*6=54
9*7=63
9*8=72
9*9=81
9*10=90

```

Q8. Write a program to generate the first n Fibonacci numbers.

Program :

```

import java.util.Scanner;
class FiboNum
{
    public static void main(String args[])
    {
        Scanner SC = new Scanner(System.in);
        System.out.println("Enter the number : ");
        int num = SC.nextInt();
        int first = 0;
        int second = 1;
        System.out.println(" The first " + num + " fibonacci numbers are : ");
        for (int i=1; i <= num; i++){
            System.out.println(first + " ");
            int next = first + second;
            first = second;
            second = next;
        }
    }
}

```

Output :

```

E:\java notes>java FiboNum
Enter the number :
6
The first 6 fibonacci numbers are :
0
1
1
2
3
5

```

Q9. Write a program to print the following Right Triangle Star Pattern where number of rows is given as input.

```

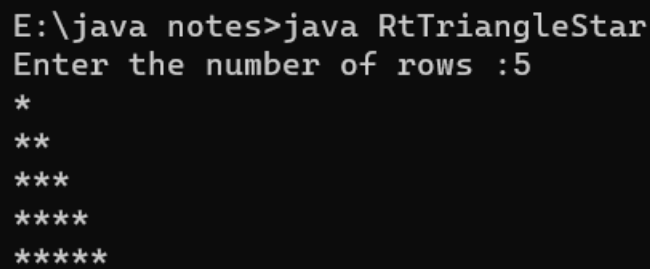
*
* *
* * *
* * * *
* * * * *

```

Program:

```
import java.util.Scanner;
class RtTriangleStar
{
    public static void main(String args[])
    {
        Scanner SC = new Scanner(System.in);
        System.out.print("Enter the number of rows :");
        int nrows = SC.nextInt();
        int i, j;
        for ( i = 1; i <= nrows ; i++){
            for ( j = 1; j <= i ; ++j){
                System.out.print("*");
            }
            System.out.println();
        }
    }
}
```

Output:



```
E:\java notes>java RtTriangleStar
Enter the number of rows :5
*
**
***
****
*****
```

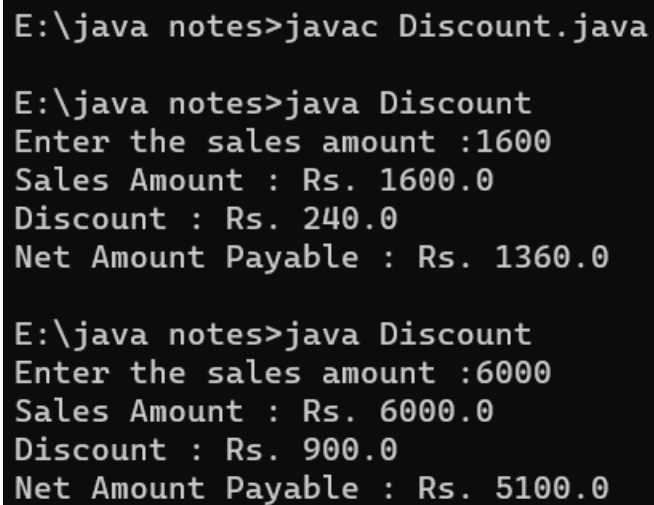
Q10. A cloth shop offers a discount of 10% for purchases made up to Rs.1000, 12% for purchases between 1000 and 1500 and 15% for purchases more than 1500. Write a program to implement the above scheme for a given sales amount and print out the sales value, discount and net amount payable by the customer.

Program:

```
import java.util.Scanner;
class Discount
{
    public static void main(String args[])
    {
        Scanner SC = new Scanner(System.in);
        System.out.print("Enter the sales amount :");
        double salesamount = SC.nextFloat();
        double discount = 0.0; //calculate discount and net amount payable
        if (salesamount <= 1000) {
            discount = salesamount*0.10;
        }
        else if(salesamount > 1000 && salesamount <= 1500){
```

```
        discount = salesamount*0.12;
    }
    else {
        discount = salesamount*0.15;
    }
    double netamount = salesamount - discount ;
    System.out.println("Sales Amount : Rs. " + salesamount);
    System.out.println("Discount : Rs. " + discount);
    System.out.println("Net Amount Payable : Rs. " + netamount);
}
}
```

Output:



```
E:\java notes>javac Discount.java

E:\java notes>java Discount
Enter the sales amount :1600
Sales Amount : Rs. 1600.0
Discount : Rs. 240.0
Net Amount Payable : Rs. 1360.0

E:\java notes>java Discount
Enter the sales amount :6000
Sales Amount : Rs. 6000.0
Discount : Rs. 900.0
Net Amount Payable : Rs. 5100.0
```