

LAB 2: PROGRAMS ON BASIC PROGRAMMING CONSTRUCTS LIKE BRANCHING AND LOOPING

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Decision Making

Q 1. Write a Program to check if the Triangle can be drawn or not if yes give the type of triangle.

CODE:

```
chkTriangle - Notepad
File Edit Format View Help
import java.util.Scanner;
class chkTriangle
{ public static void main(String args[])
{ Scanner s=new Scanner(System.in);
  System.out.println("Enter the length of three sides of triangle");
  int a=s.nextInt();
  int b=s.nextInt();
  int c=s.nextInt();

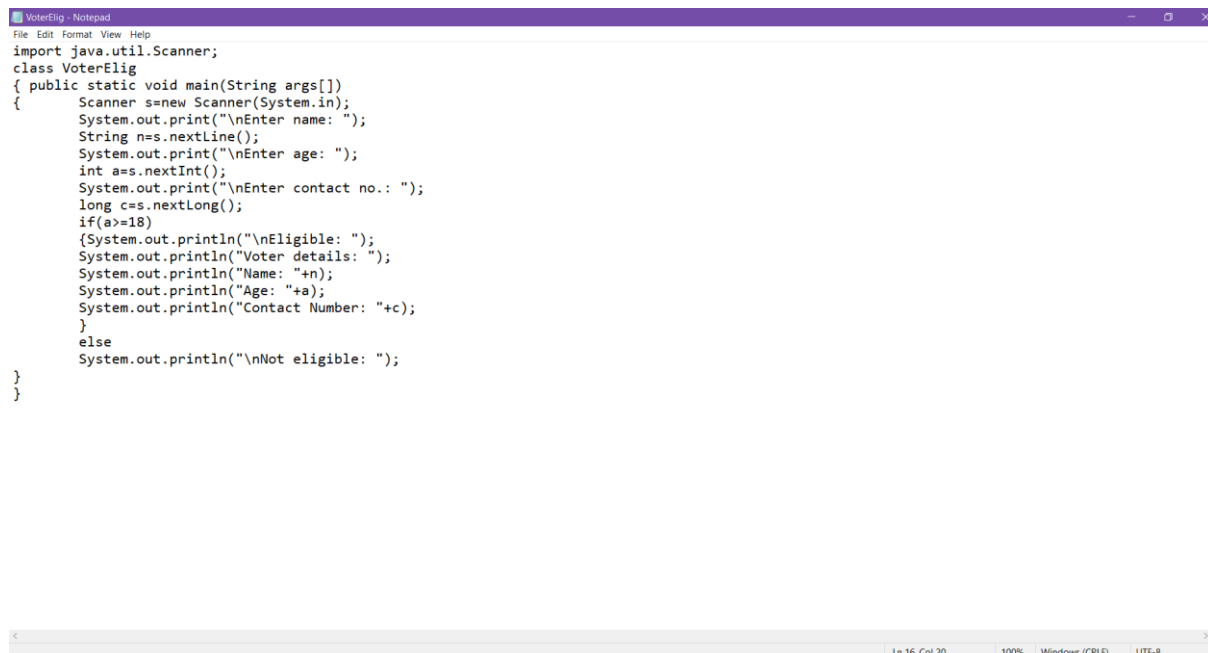
  if(a+b>c && b+c>a && c+a>b)
  {System.out.println("Triangle can be formed");
   if(a==b&&b==c&&a==c)
   System.out.println("Triangle formed is equilateral");
   else if(a==b || b==c || c==a)
   System.out.println("Triangle formed is isocoles");
   else
   System.out.println("Triangle formed is scalene");
  }
  else
  System.out.println("Triangle cannot be formed");
}
}
```

OUTPUT

```
C:\Windows\System32\cmd.exe
C:\Users\user\Desktop\SHREYAS\Java Programs\LAB 02>javac chkTriangle.java
C:\Users\user\Desktop\SHREYAS\Java Programs\LAB 02>java chkTriangle
Enter the length of three sides of triangle
12
12
12
Triangle can be formed
Triangle formed is scalene
C:\Users\user\Desktop\SHREYAS\Java Programs\LAB 02>java chkTriangle
Enter the length of three sides of triangle
1
2
0
Triangle cannot be formed
C:\Users\user\Desktop\SHREYAS\Java Programs\LAB 02>java chkTriangle
Enter the length of three sides of triangle
45
45
45
Triangle can be formed
Triangle formed is equilateral
C:\Users\user\Desktop\SHREYAS\Java Programs\LAB 02>java chkTriangle
Enter the length of three sides of triangle
30
30
20
Triangle can be formed
Triangle formed is isocoles
C:\Users\user\Desktop\SHREYAS\Java Programs\LAB 02>
```

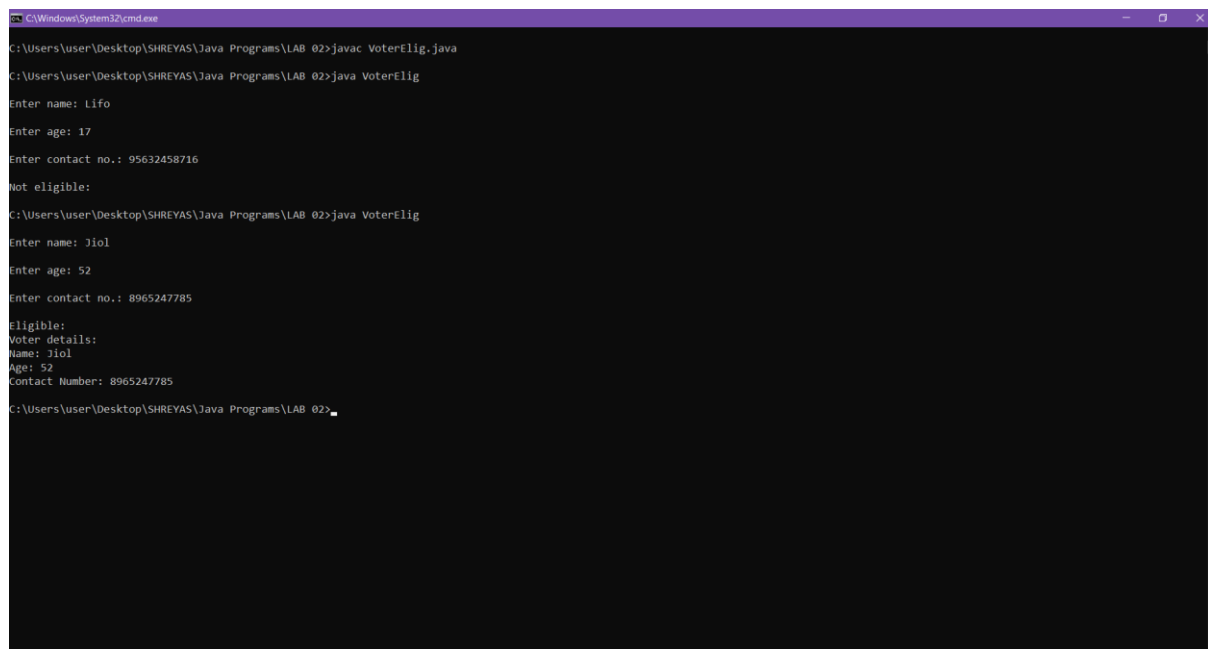
Q 2. Write a Program to check if the Voter is eligible for voting or not if yes print the details like name, age, contact no. etc.

CODE:



```
import java.util.Scanner;
class VoterElig
{
    public static void main(String args[])
    {
        Scanner s=new Scanner(System.in);
        System.out.print("\nEnter name: ");
        String n=s.nextLine();
        System.out.print("\nEnter age: ");
        int a=s.nextInt();
        System.out.print("\nEnter contact no.: ");
        long c=s.nextLong();
        if(a>=18)
        {
            System.out.println("\nEligible: ");
            System.out.println("Voter details: ");
            System.out.println("Name: "+n);
            System.out.println("Age: "+a);
            System.out.println("Contact Number: "+c);
        }
        else
        {
            System.out.println("\nNot eligible: ");
        }
    }
}
```

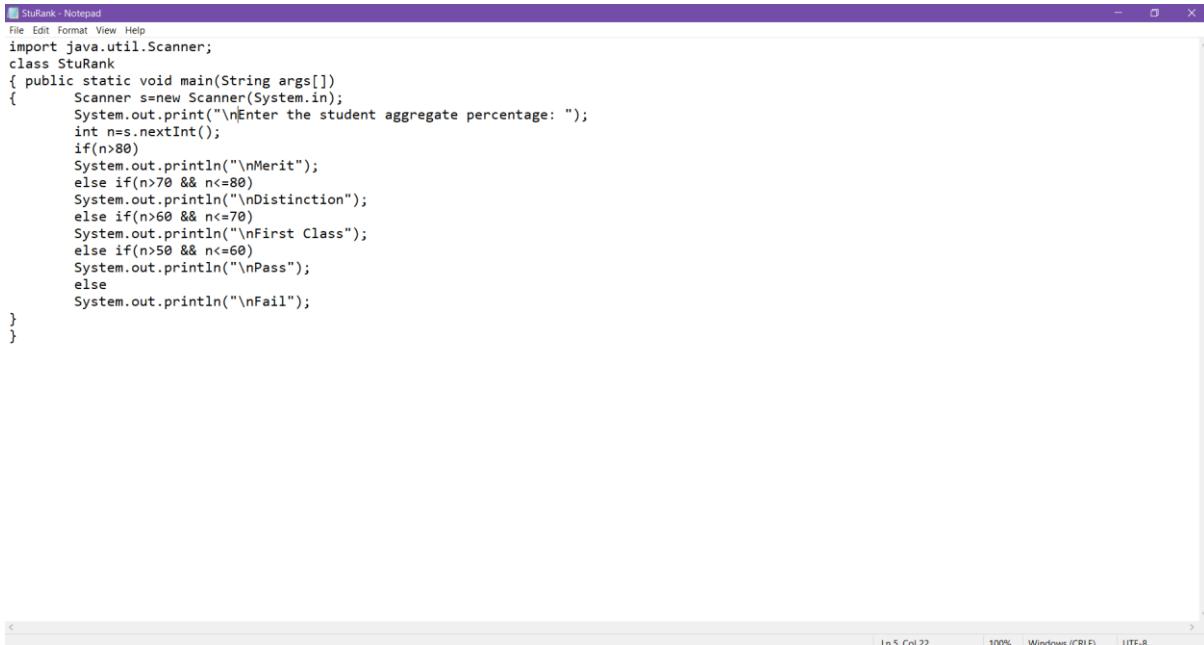
OUTPUT:



```
C:\Windows\System32\cmd.exe
C:\Users\user\Desktop\SHREYAS\Java Programs\LAB 02>javac VoterElig.java
C:\Users\user\Desktop\SHREYAS\Java Programs\LAB 02>java VoterElig
Enter name: Lifo
Enter age: 17
Enter contact no.: 95632458716
Not eligible:
C:\Users\user\Desktop\SHREYAS\Java Programs\LAB 02>java VoterElig
Enter name: Jiol
Enter age: 52
Enter contact no.: 8965247785
Eligible:
Voter details:
Name: Jiol
Age: 52
Contact Number: 8965247785
C:\Users\user\Desktop\SHREYAS\Java Programs\LAB 02>
```

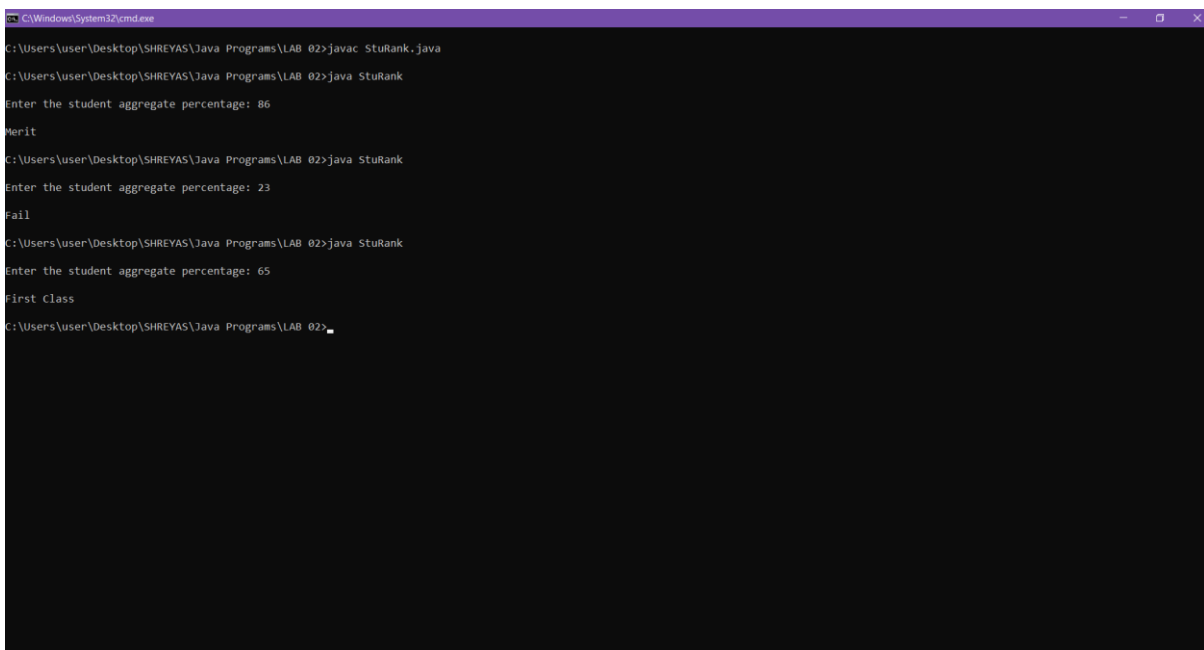
Q3. Write a Program to print the grade of students given aggregate percentage of marks: above 80 print Merit, between 70-80 print distinction, between 60-70 print first class and so on....use else-if ladder.

CODE:



```
StuRank - Notepad
File Edit Format View Help
import java.util.Scanner;
class StuRank
{ public static void main(String args[])
{ Scanner s=new Scanner(System.in);
  System.out.print("\nEnter the student aggregate percentage: ");
  int n=s.nextInt();
  if(n>80)
    System.out.println("\nMerit");
  else if(n>70 && n<=80)
    System.out.println("\nDistinction");
  else if(n>60 && n<=70)
    System.out.println("\nFirst Class");
  else if(n>50 && n<=60)
    System.out.println("\nPass");
  else
    System.out.println("\nFail");
}
}
```

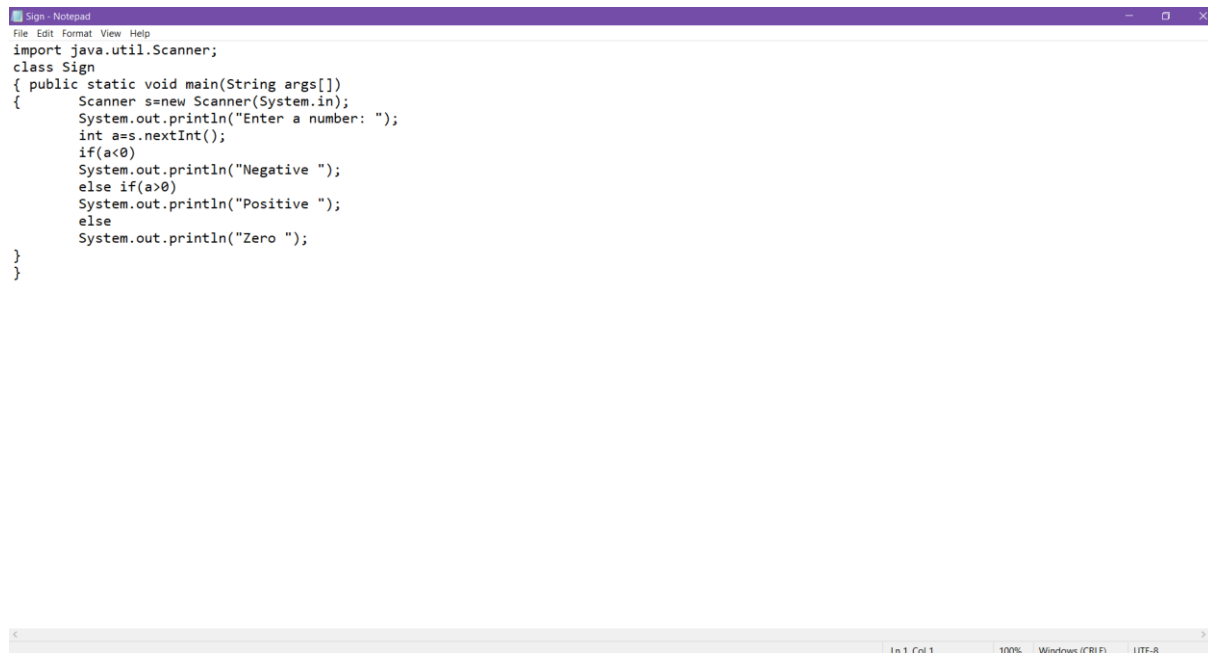
OUTPUT:



```
C:\Windows\System32\cmd.exe
C:\Users\user\Desktop\SHREYAS\Java Programs\LAB 02>javac StuRank.java
C:\Users\user\Desktop\SHREYAS\Java Programs\LAB 02>java StuRank
Enter the student aggregate percentage: 86
Merit
C:\Users\user\Desktop\SHREYAS\Java Programs\LAB 02>java StuRank
Enter the student aggregate percentage: 23
Fail
C:\Users\user\Desktop\SHREYAS\Java Programs\LAB 02>java StuRank
Enter the student aggregate percentage: 65
First class
C:\Users\user\Desktop\SHREYAS\Java Programs\LAB 02>
```

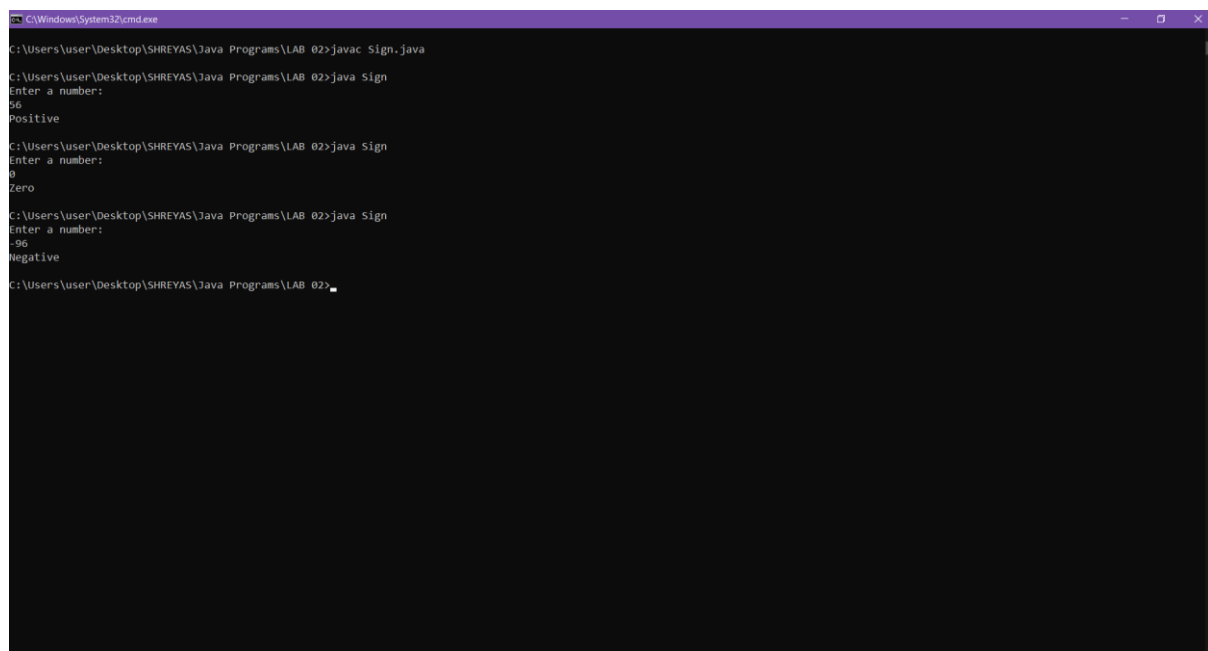
Q.4 Write a Program to check if the given number is positive, negative or zero.

CODE:



```
Sign - Notepad
File Edit Format View Help
import java.util.Scanner;
class Sign
{ public static void main(String args[])
{
    Scanner s=new Scanner(System.in);
    System.out.println("Enter a number: ");
    int a=s.nextInt();
    if(a<0)
        System.out.println("Negative ");
    else if(a>0)
        System.out.println("Positive ");
    else
        System.out.println("Zero ");
}
}
```

OUTPUT:

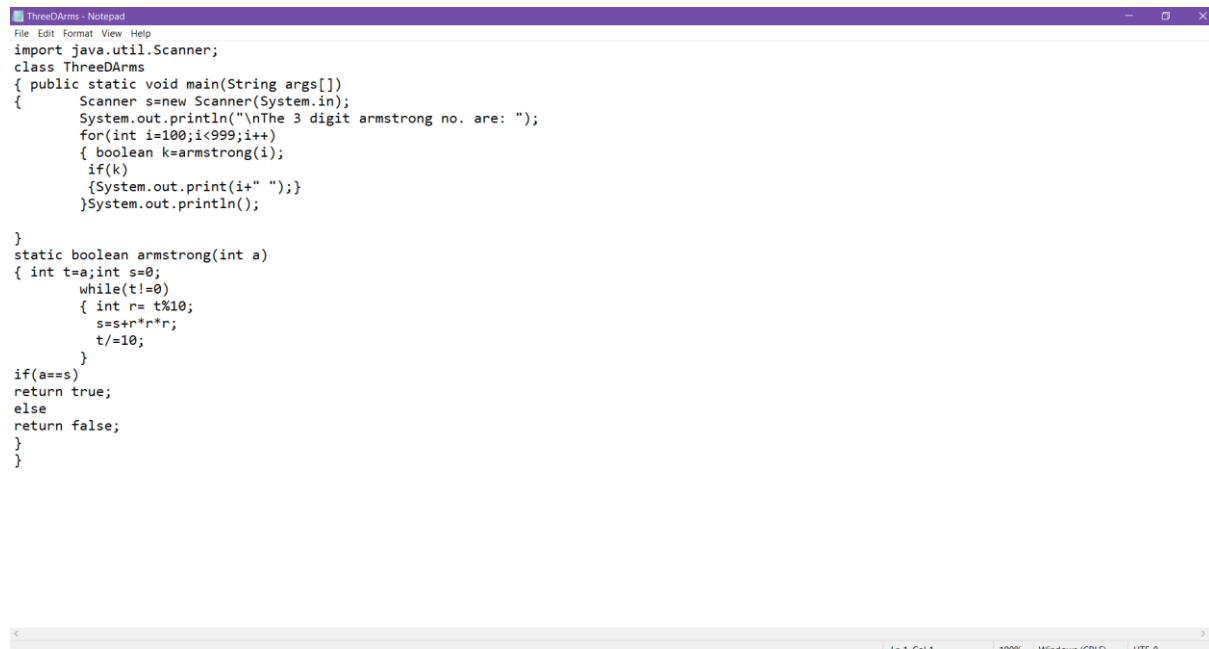


```
C:\Windows\System32\cmd.exe
C:\Users\user\Desktop\SHREYAS\Java Programs\LAB 02>javac Sign.java
C:\Users\user\Desktop\SHREYAS\Java Programs\LAB 02>java Sign
Enter a number:
56
Positive
C:\Users\user\Desktop\SHREYAS\Java Programs\LAB 02>java Sign
Enter a number:
0
Zero
C:\Users\user\Desktop\SHREYAS\Java Programs\LAB 02>java Sign
Enter a number:
-96
Negative
C:\Users\user\Desktop\SHREYAS\Java Programs\LAB 02>
```

Looping

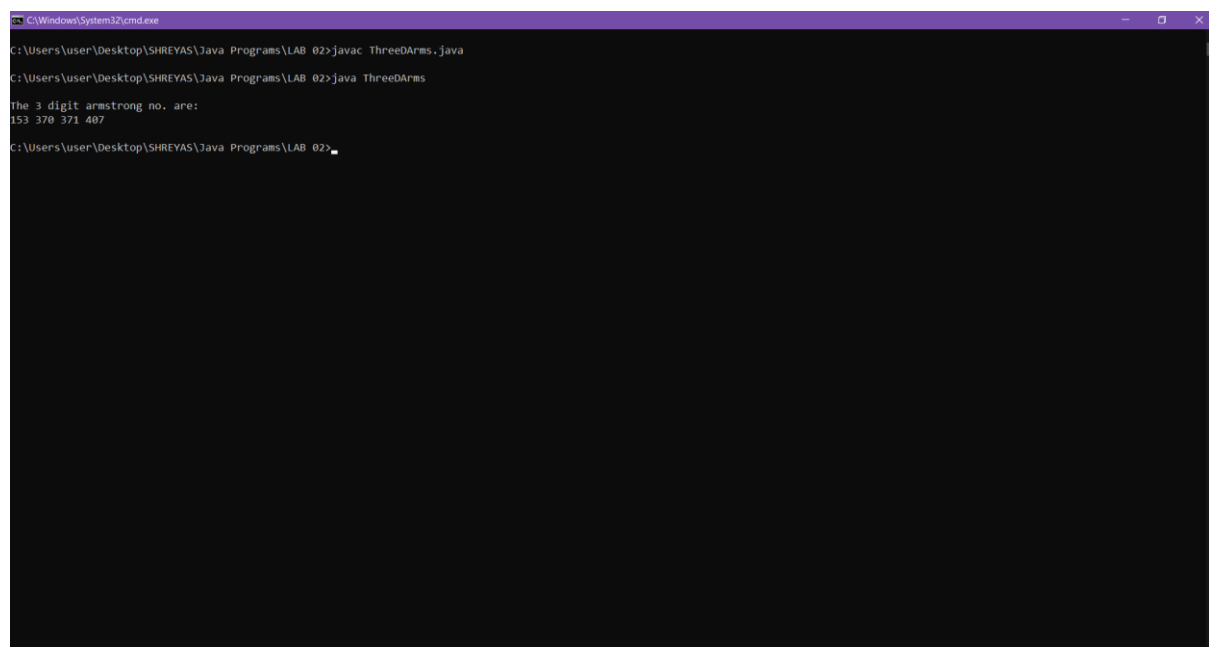
Q.1 Write a Program print all 3 digits Armstrong nos.

CODE:



```
ThreeDArms - Notepad
File Edit Format View Help
import java.util.Scanner;
class ThreeDArms
{ public static void main(String args[])
{ Scanner s=new Scanner(System.in);
  System.out.println("\n3 digit armstrong no. are: ");
  for(int i=100;i<999;i++)
  { boolean k=armstrong(i);
    if(k)
    {System.out.print(i+" ");}
  }System.out.println();
}
static boolean armstrong(int a)
{ int t=a;int s=0;
  while(t!=0)
  { int r= t%10;
    s=s+r*r*r;
    t=t/10;
  }
  if(a==s)
  return true;
  else
  return false;
}
}
```

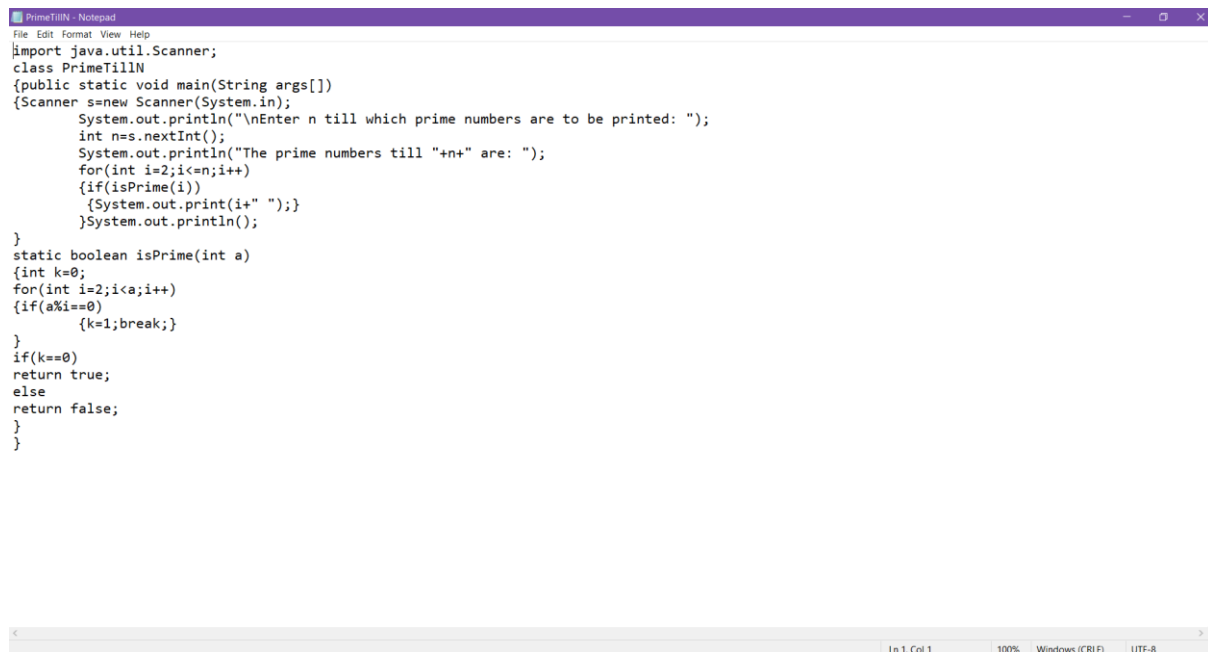
OUTPUT:



```
C:\Windows\System32\cmd.exe
C:\Users\User\Desktop\SHREYAS\Java Programs\LAB 02>javac ThreeDArms.java
C:\Users\User\Desktop\SHREYAS\Java Programs\LAB 02>java ThreeDArms
The 3 digit armstrong no. are:
153 370 371 407
C:\Users\User\Desktop\SHREYAS\Java Programs\LAB 02>
```

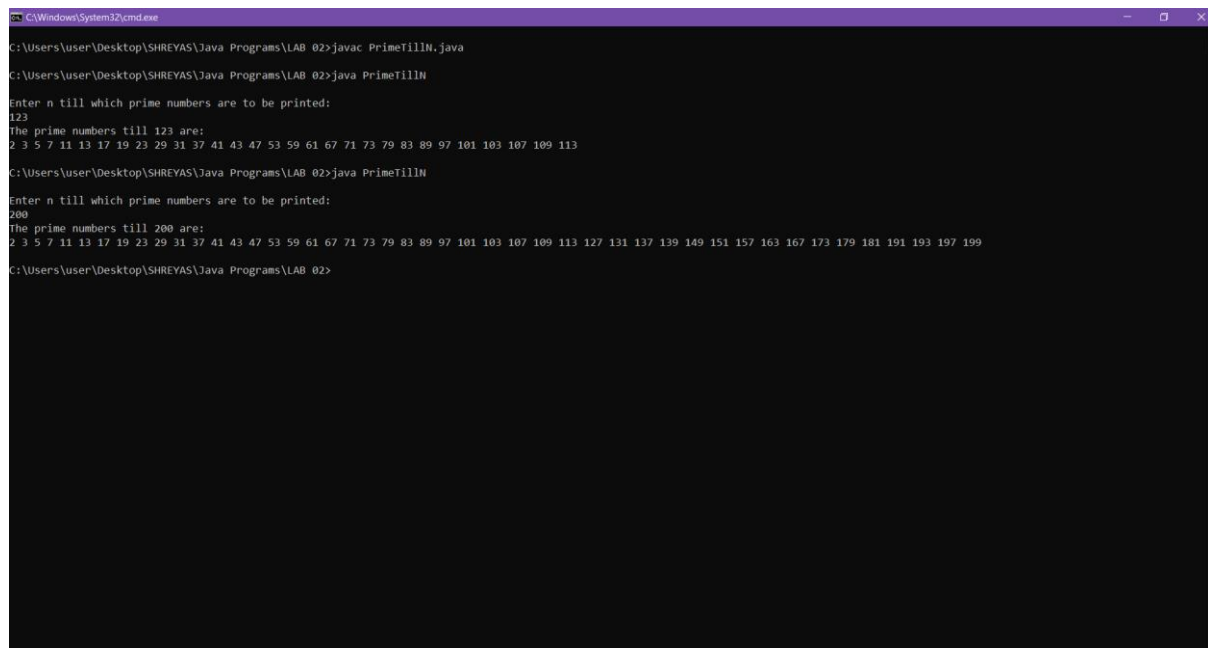
Q.2 Write a Program print first n prime numbers.

CODE:



```
PrimeTillN - Notepad
File Edit Format View Help
import java.util.Scanner;
class PrimeTillN
{
    public static void main(String args[])
    {
        Scanner s=new Scanner(System.in);
        System.out.println("\nEnter n till which prime numbers are to be printed: ");
        int n=s.nextInt();
        System.out.println("The prime numbers till "+n+" are: ");
        for(int i=2;i<=n;i++)
        {
            if(isPrime(i))
            {
                System.out.print(i+" ");
            }
        }
        System.out.println();
    }
    static boolean isPrime(int a)
    {
        int k=0;
        for(int i=2;i<a;i++)
        {
            if(a%i==0)
            {
                k=1;
                break;
            }
        }
        if(k==0)
        {
            return true;
        }
        else
        {
            return false;
        }
    }
}
```

OUTPUT:



```
C:\Windows\System32\cmd.exe
C:\Users\User\Desktop\SHREYAS\Java Programs\LAB 02>javac PrimeTillN.java
C:\Users\User\Desktop\SHREYAS\Java Programs\LAB 02>java PrimeTillN
Enter n till which prime numbers are to be printed:
123
The prime numbers till 123 are:
2 3 5 7 11 13 17 19 23 29 31 37 41 43 47 53 59 61 67 71 73 79 83 89 97 101 103 107 109 113
C:\Users\User\Desktop\SHREYAS\Java Programs\LAB 02>java PrimeTillN
Enter n till which prime numbers are to be printed:
200
The prime numbers till 200 are:
2 3 5 7 11 13 17 19 23 29 31 37 41 43 47 53 59 61 67 71 73 79 83 89 97 101 103 107 109 113 127 131 137 139 149 151 157 163 167 173 179 181 191 193 197 199
C:\Users\User\Desktop\SHREYAS\Java Programs\LAB 02>
```

Q.3 Write a Program to simulate a simple calculator using switch case and do-while loop.

CODE:

```
Calculator - Notepad
File Edit Format View Help
import java.util.Scanner;
class Calculator
{
    public static void main(String args[])
    {
        Scanner s=new Scanner(System.in);char ch;
        do{System.out.println("\nEnter two numbers on which the operations are to be performed: ");
            double a=s.nextDouble();
            double b=s.nextDouble();
            System.out.println("\n1.Addition\n2.Subtraction\n3.Multiplication\n4.Division ");
            System.out.println("Enter choice that is to be performed on the numbers from above list from the list: ");
            int c=s.nextInt();
            switch(c)
            {
                case 1:
                    {System.out.println("\n"+a+" + "+b+" = " +a+b);
                        break;}

                case 2:
                    {System.out.println("\n"+a+" - "+b+" = " +(a-b));
                        break;}

                case 3:
                    {System.out.println("\n"+a+" * "+b+" = " +a*b);
                        break;}

                case 4:
                    {
                        //System.out.println(a+" / "+b);
                        System.out.println("\nQuotient= "+a/b);
                        System.out.println("Remainder= "+a%b);
                        break;}

                default:
                    System.out.println("Invalid Choice");
            }
            System.out.println("Enter y to continue: ");
            ch=s.next().charAt(0);
        }while(ch=='y');
    }
}
```

OUTPUT:

```
Select C:\Windows\System32\cmd.exe
C:\Users\user\Desktop\SHREYAS\Java Programs\LAB 02>javac Calculator.java
C:\Users\user\Desktop\SHREYAS\Java Programs\LAB 02>java Calculator
Enter two numbers on which the operations are to be performed:
36
45
1.Addition
2.Subtraction
3.Multiplication
4.Division
Enter choice that is to be performed on the numbers from above list from the list:
4
Quotient= 1.2444444444444445
Remainder= 11.0
Enter y to continue:
y
Enter two numbers on which the operations are to be performed:
23
12
1.Addition
2.Subtraction
3.Multiplication
4.Division
Enter choice that is to be performed on the numbers from above list from the list:
3
23.0 * 12.0 = 276.0
Enter y to continue:
y
Enter two numbers on which the operations are to be performed:
78.23
96.53
1.Addition
2.Subtraction
3.Multiplication
4.Division
Enter choice that is to be performed on the numbers from above list from the list:
2
78.23 + 96.53 = 78.2396.53
Enter y to continue:
n
```