

- 1) Write a program that will use bitwise & operator to perform bitwise AND operation, bitwise operator to perform bitwise inclusive OR operation and bitwise ^ operator to perform bitwise exclusive OR operation

Program:-

```
class bitwiseOps
```

```
{
```

```
    public static void main(String argv[])
```

```
    {
```

```
        int a=13,b=25;
```

```
        System.out.println("a = "+a);
```

```
        System.out.println("b = "+b);
```

```
        System.out.println("(a & b) = "+(a&b));
```

```
        System.out.println("(a | b) = "+(a|b));
```

```
        System.out.println("(a ^ b) = "+(a^b));
```

```
    }
```

```
}
```

Output:-



```
C:\Windows\system32\cmd.exe

C:\Basics>javac -Xlint bitwiseOps.java

C:\Basics>java bitwiseOps
a = 13
b = 25
(a & b) = 9
(a | b) = 29
(a ^ b) = 20
C:\Basics>
```

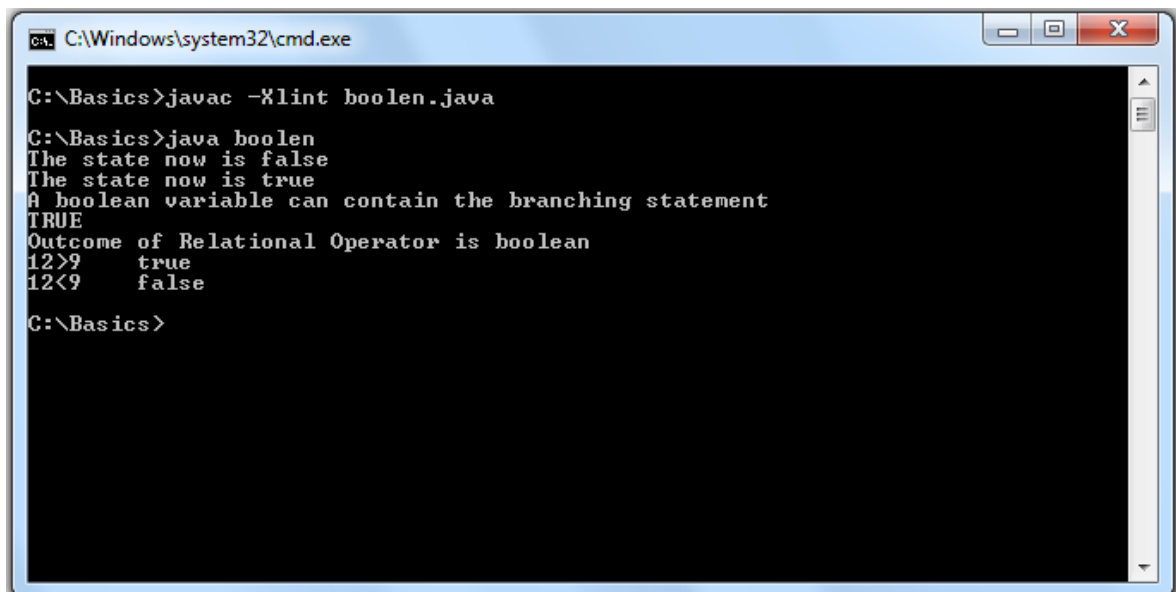
- 2) Write a program to demonstrate Boolean variable in JAVA and also show that they are compatible with relational operators

Program:-

class boolean

```
{  
  
    public static void main(String argv[])  
  
    {  
  
        boolean state;  
  
        state=false;  
  
        System.out.println("The state now is "+state);  
  
        state=true;  
  
        System.out.println("The state now is "+state);  
  
        System.out.println("A boolean variable can contain the branching  
statement");  
  
        if(state)  
  
            System.out.println("TRUE");  
  
        System.out.println("Outcome of Relational Operator is boolean");  
  
        System.out.println("12>9\t"+(12>9));  
  
        System.out.println("12<9\t"+(12<9));  
  
    }  
}
```

Output:-



```
C:\Windows\system32\cmd.exe  
  
C:\Basics>javac -Xlint boolean.java  
C:\Basics>java boolean  
The state now is false  
The state now is true  
A boolean variable can contain the branching statement  
TRUE  
Outcome of Relational Operator is boolean  
12>9      true  
12<9      false  
C:\Basics>
```

- 3) Write a program to demonstrate character variables in JAVA also show that in certain situations they behave like integers

Program:-

```
class chrctr
```

```
{
```

```
    public static void main(String argv[])
```

```
    {
```

```
        char a1='a',a2=65;
```

```
        System.out.println("The value of a1 is = "+a1);
```

```
        System.out.println("The value of a2 is = "+a2);
```

```
        System.out.println("Character variables sometimes behaves like Integers = ");
```

```
        a1++;
```

```
        a2++;
```


```
        System.out.println("The value of a1++ is = "+a1);
```

```
        System.out.println("The value of a2++ is = "+a2);
```

```
    }
```

```
}
```

Output:-



```
C:\Windows\system32\cmd.exe

C:\Basics>javac -Xlint chrctr.java

C:\Basics>java chrctr
The value of a1 is = a
The value of a2 is = A
Character variables sometimes behaves like Integers = 
The value of a1++ is = b
The value of a2++ is = B

C:\Basics>
```

- 4) Write a program to demonstrate comand line arguments

Program:-

```
class cmdLn
```

```
{
```

```
    public static void main(String argv[])
```

```
    {
```

```
        int n=0;
```

```
        if(argv.length == 0)
```

```
            System.out.println("No arguments passed");
```

```
        for(int i=0;i<argv.length;i++)
```

```
        {
```

```
            n=Integer.parseInt(argv[i]);
```

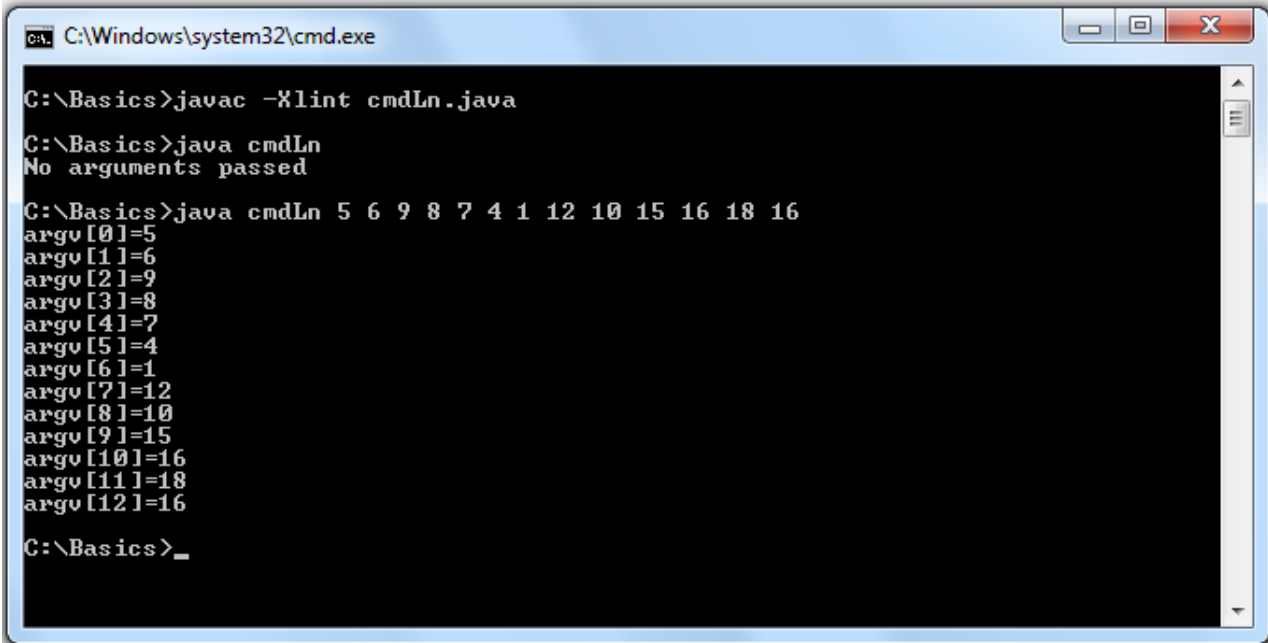
```
            System.out.println("argv["+i+"]="+n);
```

```
        }
```

```
    }
```

```
}
```

Output:-



```
C:\Windows\system32\cmd.exe

C:\Basics>javac -Xlint cmdLn.java
C:\Basics>java cmdLn
No arguments passed
C:\Basics>java cmdLn 5 6 9 8 7 4 1 12 10 15 16 18 16
argv[0]=5
argv[1]=6
argv[2]=9
argv[3]=8
argv[4]=7
argv[5]=4
argv[6]=1
argv[7]=12
argv[8]=10
argv[9]=15
argv[10]=16
argv[11]=18
argv[12]=16
C:\Basics>_
```

- 5) Write a program to demonstrate the working of conditional operators in JAVA

Program:-

```
class conditionalOp
{
    public static void main(String argv[])
    {
        int a,b;

        a=98786;

        b=756757;

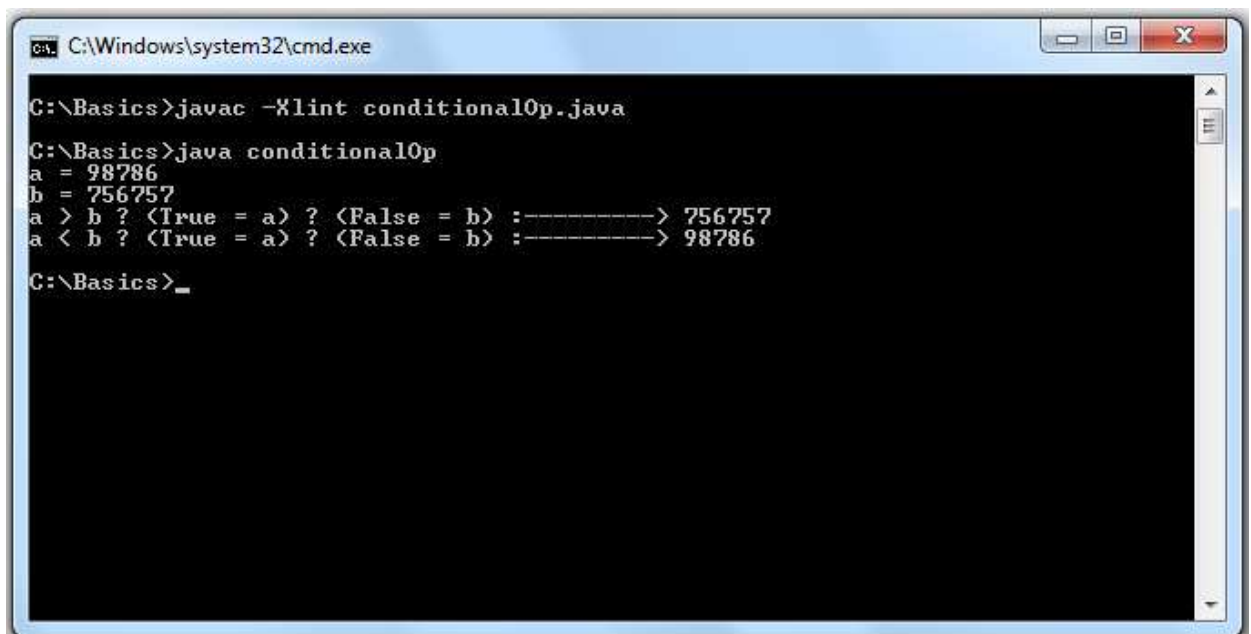
        System.out.println("a = "+a+"\nb = "+b);

        System.out.println("a > b ? (True = a) ? (False = b) :-----> "+(a>b?a:b));

        System.out.println("a < b ? (True = a) ? (False = b) :-----> "+(a<b?a:b));

    }
}
```

Output:-



```
C:\Windows\system32\cmd.exe

C:\Basics>javac -Xlint conditionalOp.java

C:\Basics>java conditionalOp
a = 98786
b = 756757
a > b ? (True = a) ? (False = b) :-----> 756757
a < b ? (True = a) ? (False = b) :-----> 98786
C:\Basics>_
```

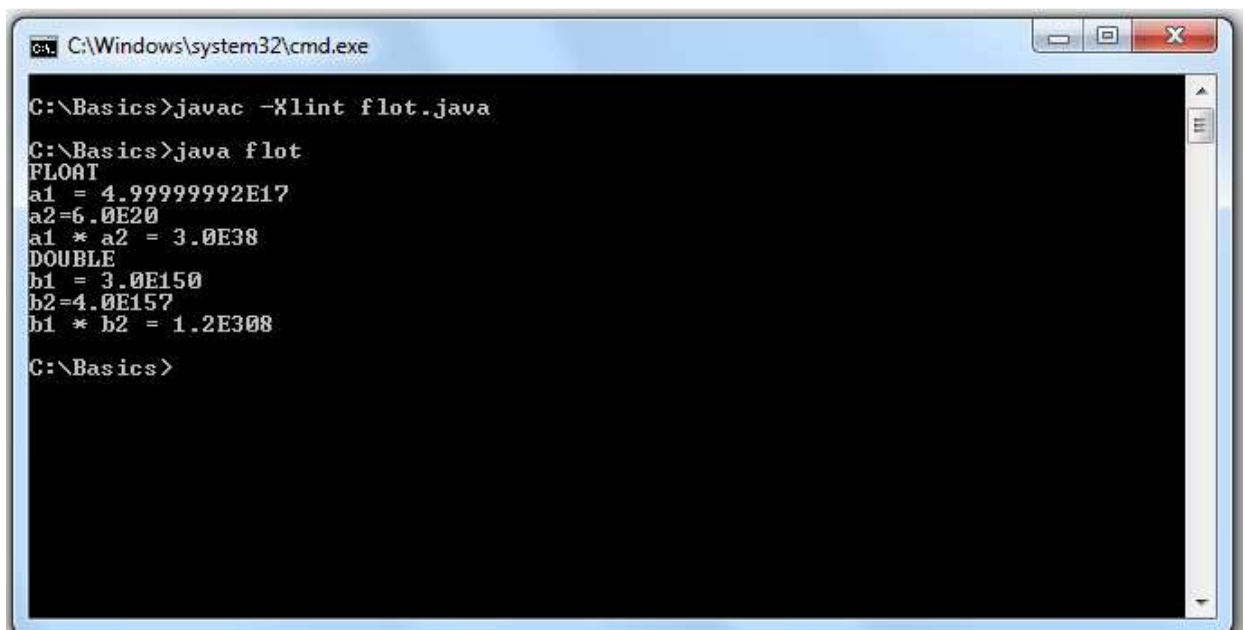
6) To demonstrate all the Float(float,double) types available in JAVA

Program:-

class flot

```
{  
  
    public static void main(String args[])  
  
    {  
  
        float a1,a2;  
  
        double b1,b2;  
  
        a1=5e+17f;  
  
        a2=6e+20f;  
  
        System.out.println("FLOAT\nna1 = "+a1+"\na2="+a2+"\na1 * a2 = "+a1*a2);  
  
        b1=3e+150;  
  
        b2=4e+157;  
  
        System.out.println("DOUBLE\nnb1 = "+b1+"\nb2="+b2+"\nb1 * b2 =  
"+b1*b2);  
  
    }  
}
```

Output:-



```
C:\Windows\system32\cmd.exe  
  
C:\Basics>javac -Xlint flot.java  
  
C:\Basics>java flot  
FLOAT  
a1 = 4.999999992E17  
a2=6.0E20  
a1 * a2 = 3.0E38  
DOUBLE  
b1 = 3.0E150  
b2=4.0E157  
b1 * b2 = 1.2E308  
C:\Basics>
```

- 7) Write a program to demonstrate the Float arithmetic operations performed in JAVA

Program:-

```
import java.util.Scanner;

class flotArth
{
    public static void main(String argv[])
    {
        Scanner in = new Scanner(System.in);

        float r=0.0f;

        double pi=3.142857142857,cir=0.0f,area=0.0f;

        System.out.print("Enter Radius of circle in float: ");

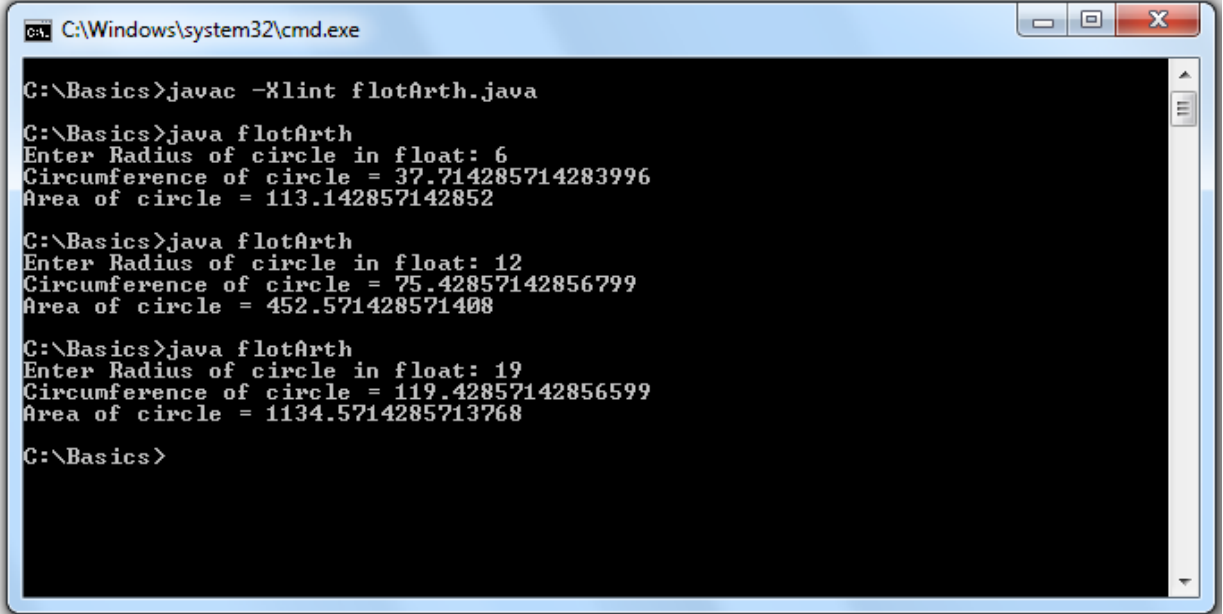
        r=in.nextFloat();

        cir=2*pi*r;

        area=pi*r*r;

        System.out.println("Circumference of circle = "+cir+"\nArea of circle = "+area);
    }
}
```

Output:-



```
C:\Windows\system32\cmd.exe

C:\Basics>javac -Xlint flotArth.java

C:\Basics>java flotArth
Enter Radius of circle in float: 6
Circumference of circle = 37.714285714283996
Area of circle = 113.142857142852

C:\Basics>java flotArth
Enter Radius of circle in float: 12
Circumference of circle = 75.42857142856799
Area of circle = 452.571428571408

C:\Basics>java flotArth
Enter Radius of circle in float: 19
Circumference of circle = 119.42857142856599
Area of circle = 1134.5714285713768

C:\Basics>
```

8) Write a program to demonstrate the Integer arithmetic operations performed in JAVA

Program:-

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

```
class intArth
```

```
{
```

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

```
    {
```

```
        Scanner in = new Scanner(System.in);
```

```
        int lengthr=0,breadthr=0,lengths=0,areas,arear,peris,perir;
```

```
        System.out.print("Enter length of square in integer: ");
```

```
        lengths=in.nextInt();
```

```
        System.out.print("Enter length of rectangle in integer: ");
```

```
        lengthr=in.nextInt();
```

```
        System.out.print("Enter breadth of rectangle in integer: ");
```

```
        breadthr=in.nextInt();
```

```
        areas=lengths*lengths;
```

```
        arear=lengthr*breadthr;
```

```
        peris=4*lengths;
```

```
        perir=2*(lengthr+breadthr);
```

```
        System.out.println("Square\nPerimeter = "+peris+"\nArea = "+areas);
```

```
        System.out.println("Rectangle\nPerimeter = "+perir+"\nArea = "+arear);
```

```
    }
```

```
}
```


Output:-



```
C:\Windows\system32\cmd.exe

C:\Basics>javac -Xlint intArth.java

C:\Basics>java intArth
Enter length of square in integer: 9
Enter length of rectangle in integer: 15
Enter breadth of rectangle in integer: 21
Square
Perimeter = 36
Area = 81
Rectangle
Perimeter = 72
Area = 315

C:\Basics>
```

9) To demonstrate all the Integer(short,int,long,byte) types available in JAVA

```
class integr
{
    public static void main(String args[])
    {
        int a1,a2;

        long b1,b2;

        short c1,c2;

        byte d1,d2;

        a1=46340;

        a2=46341;

        System.out.println("INT\na1 = "+a1+"\na2="+a2+"\na1 * a2 = "+a1*a2);

        b1=303700049;

        b2=303700050;

        System.out.println("LONG\nb1 = "+b1+"\nb2="+b2+"\nb1 * b2 = "+b1*b2);

        c1=181;

        c2=182;

        System.out.println("SHORT\nc1 = "+c1+"\nc2="+c2+"\nc1 * c2 = "+c1*c2);

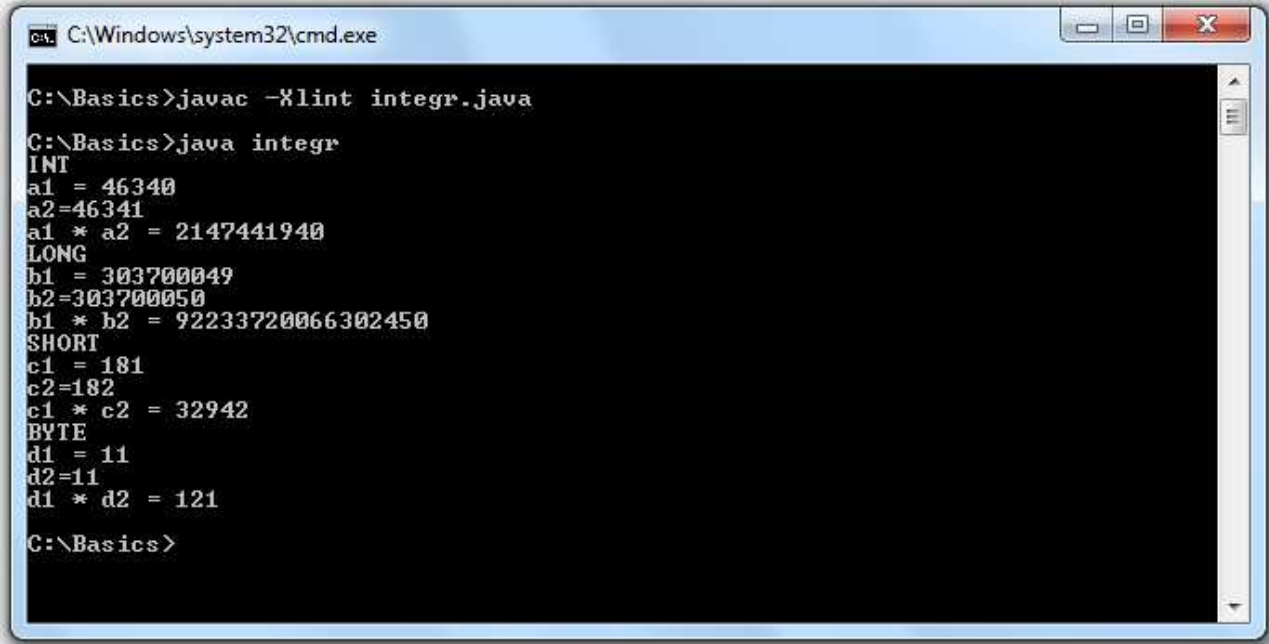
        d1=11;

        d2=11;

        System.out.println("BYTE\nd1 = "+d1+"\nd2="+d2+"\nd1 * d2 = "+d1*d2);

    }
}
```

Output:-



```
C:\Windows\system32\cmd.exe

C:\Basics>javac -Xlint integr.java
C:\Basics>java integr
INT
a1 = 46340
a2=46341
a1 * a2 = 2147441940
LONG
b1 = 303700049
b2=303700050
b1 * b2 = 92233720066302450
SHORT
c1 = 181
c2=182
c1 * c2 = 32942
BYTE
d1 = 11
d2=11
d1 * d2 = 121

C:\Basics>
```

10) Write a program that will take int,float and double values given by user and display them

Program:-

```
import java.util.Scanner;

class intfltdbl
{
    public static void main(String argv[])
    {
        Scanner in = new Scanner(System.in);

        int intNumber=0;

        float floatNumber=0.0f;

        double doubleNumber=0.0;

        System.out.print("Enter Integer Value: ");

        intNumber=in.nextInt();

        System.out.print("Enter Float Value: ");

        floatNumber=in.nextFloat();

        System.out.print("Enter Double Value: ");

        doubleNumber=in.nextDouble();

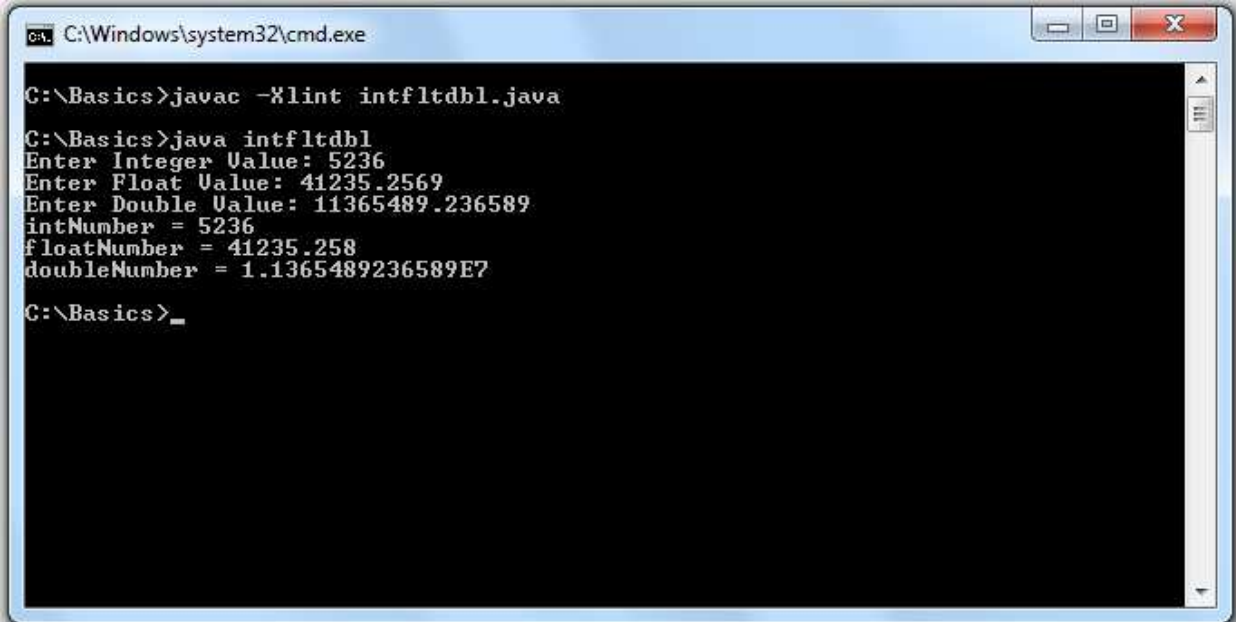
        System.out.println("intNumber = "+intNumber);

        System.out.println("floatNumber = "+floatNumber);

        System.out.println("doubleNumber = "+doubleNumber);

    }
}
```

Output:-



```
C:\Windows\system32\cmd.exe

C:\Basics>javac -Xlint intfltdbl.java

C:\Basics>java intfltdbl
Enter Integer Value: 5236
Enter Float Value: 41235.2569
Enter Double Value: 11365489.236589
intNumber = 5236
floatNumber = 41235.258
doubleNumber = 1.1365489236589E7

C:\Basics>_
```

The image shows a Windows command prompt window titled "C:\Windows\system32\cmd.exe". The user has navigated to the "C:\Basics" directory. They have compiled a Java file named "intfltdbl.java" using the command "javac -Xlint intfltdbl.java". Then, they have run the program using "java intfltdbl". The program prompts the user for three values: an integer, a float, and a double. The user enters "5236" for the integer, "41235.2569" for the float, and "11365489.236589" for the double. The program then outputs the values stored in variables: "intNumber = 5236", "floatNumber = 41235.258", and "doubleNumber = 1.1365489236589E7". The prompt "C:\Basics>_" is visible at the bottom, indicating the program has finished execution.

- 11) Write a program that will demonstrate arithmetic operations performed with int, float and double values given by user

Program:-

```
import java.util.Scanner;

class intfltdblArth
{
    public static void main(String argv[])
    {
        Scanner in = new Scanner(System.in);

        int resulti=0,intNumber1=0,intNumber2=0;

        float resultf=0.0f,floatNumber1=0.0f,floatNumber2=0.0f;

        double resultd=0.0,doubleNumber1=0.0,doubleNumber2=0.0;

        System.out.print("Integer\nEnter Number 1: ");

        intNumber1=in.nextInt();

        System.out.print("Enter Number 2: ");

        intNumber2=in.nextInt();

        System.out.print("Float\nEnter Number 1: ");

        floatNumber1=in.nextFloat();

        System.out.print("Enter Number 2: ");

        floatNumber2=in.nextFloat();

        System.out.print("Double\nEnter Number 1: ");

        doubleNumber1=in.nextDouble();

        System.out.print("Enter Number 2: ");

        doubleNumber2=in.nextDouble();


        resulti=intNumber1+intNumber2;

        System.out.println("Integer-----\n"+intNumber1+" + "+intNumber2+" = "+resulti);

        resulti=intNumber1-intNumber2;

        System.out.println(intNumber1+" - "+intNumber2+" = "+resulti);

        resulti=intNumber1*intNumber2;
```

```
System.out.println(intNumber1+" * "+intNumber2+" = "+resulti);
```

```
resulti=intNumber1/intNumber2;
```

```
System.out.println(intNumber1+" / "+intNumber2+" = "+resulti);
```

```
resultf=floatNumber1+floatNumber2;
```

```
System.out.println("Float-----\n"+floatNumber1+" + "+floatNumber2+" = "+resultf);
```

```
resultf=floatNumber1-floatNumber2;
```

```
System.out.println(floatNumber1+" - "+floatNumber2+" = "+resultf);
```

```
resultf=floatNumber1*floatNumber2;
```

```
System.out.println(floatNumber1+" * "+floatNumber2+" = "+resultf);
```

```
resultf=floatNumber1/floatNumber2;
```

```
System.out.println(floatNumber1+" / "+floatNumber2+" = "+resultf);
```

```
resultd=doubleNumber1+doubleNumber2;
```

```
System.out.println("Double-----\n"+doubleNumber1+" + "+doubleNumber2+" = "+resultd);
```

```
resultd=doubleNumber1-doubleNumber2;
```

```
System.out.println(doubleNumber1+" - "+doubleNumber2+" = "+resultd);
```

```
resultd=doubleNumber1*doubleNumber2;
```

```
System.out.println(doubleNumber1+" * "+doubleNumber2+" = "+resultd);
```

```
resultd=doubleNumber1/doubleNumber2;
```

```
System.out.println(doubleNumber1+" / "+doubleNumber2+" = "+resultd);
```

```
}
```

```
}
```

Output:-

```
C:\Windows\system32\cmd.exe

C:\Basics>javac -Xlint intfltdblArth.java

C:\Basics>java intfltdblArth
Integer
Enter Number 1: 9658
Enter Number 2: 32684
Float
Enter Number 1: 1364978.2648
Enter Number 2: 136549.2156
Double
Enter Number 1: 1.33469793.2544
Enter Number 2: 1.24674952346.35465
Integer-----
9658 + 32684 = 42342
9658 - 32684 = -23026
9658 * 32684 = 315662072
9658 / 32684 = 0
Float-----
1364978.2 + 136549.22 = 1501527.5
1364978.2 - 136549.22 = 1228429.0
1364978.2 * 136549.22 = 1.86386711E11
1364978.2 / 136549.22 = 9.996236
Double-----
1.334697932544E8 + 1.2467495234635464E11 = 1.2480842213960904E11
1.334697932544E8 - 1.2467495234635464E11 = -1.2454148255310025E11
1.334697932544E8 * 1.2467495234635464E11 = 1.6640340113670128E19
1.334697932544E8 / 1.2467495234635464E11 = 0.0010705421637829285

C:\Basics>_
```


12) Write a program to demonstrate the Mixed mode arithmetic operation performed in JAVA

Program:-

```
import java.util.Scanner;

class mixdArth
{
    public static void main(String argv[])
    {
        Scanner in = new Scanner(System.in);

        int intNumber=0;

        float floatNumber=0.0f;

        System.out.print("Enter Integer Value: ");

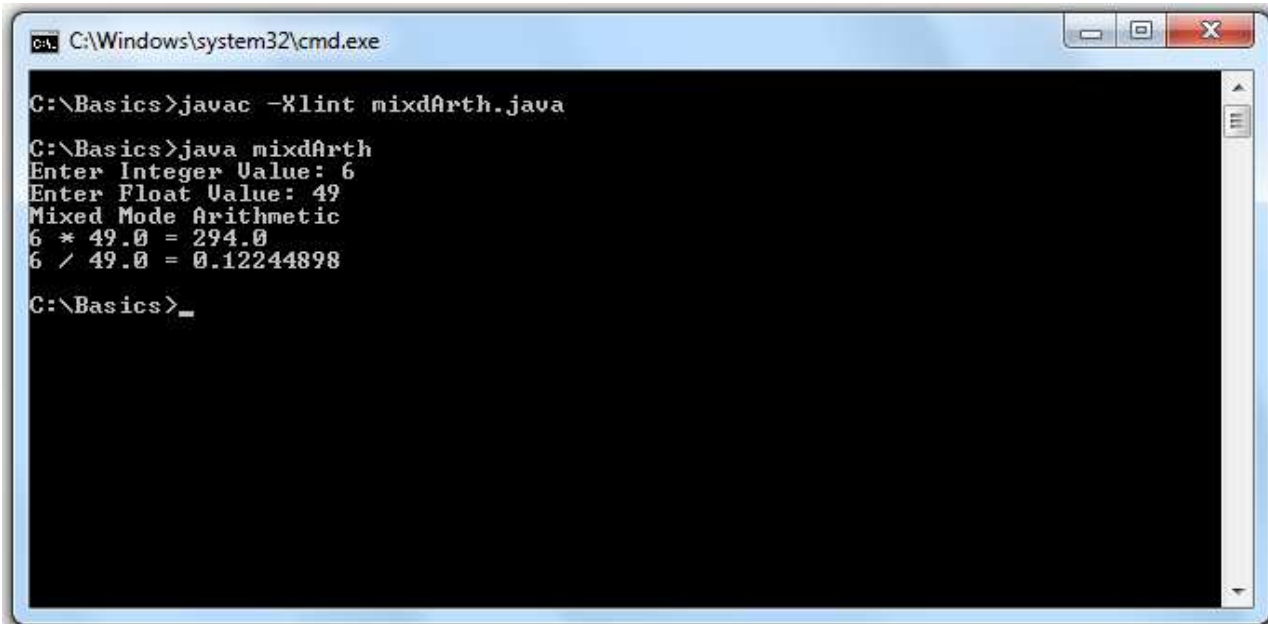
        intNumber=in.nextInt();

        System.out.print("Enter Float Value: ");

        floatNumber=in.nextFloat();

        System.out.println("Mixed Mode Arithmetic\n"+intNumber+" *
"+floatNumber+" = "+(intNumber*floatNumber)+"\n"+intNumber+" /
"+floatNumber+" = "+(intNumber/floatNumber));
    }
}
```

Output:-



```
C:\Windows\system32\cmd.exe

C:\Basics>javac -Xlint mixdArth.java

C:\Basics>java mixdArth
Enter Integer Value: 6
Enter Float Value: 49
Mixed Mode Arithmetic
6 * 49.0 = 294.0
6 / 49.0 = 0.12244898

C:\Basics>_
```

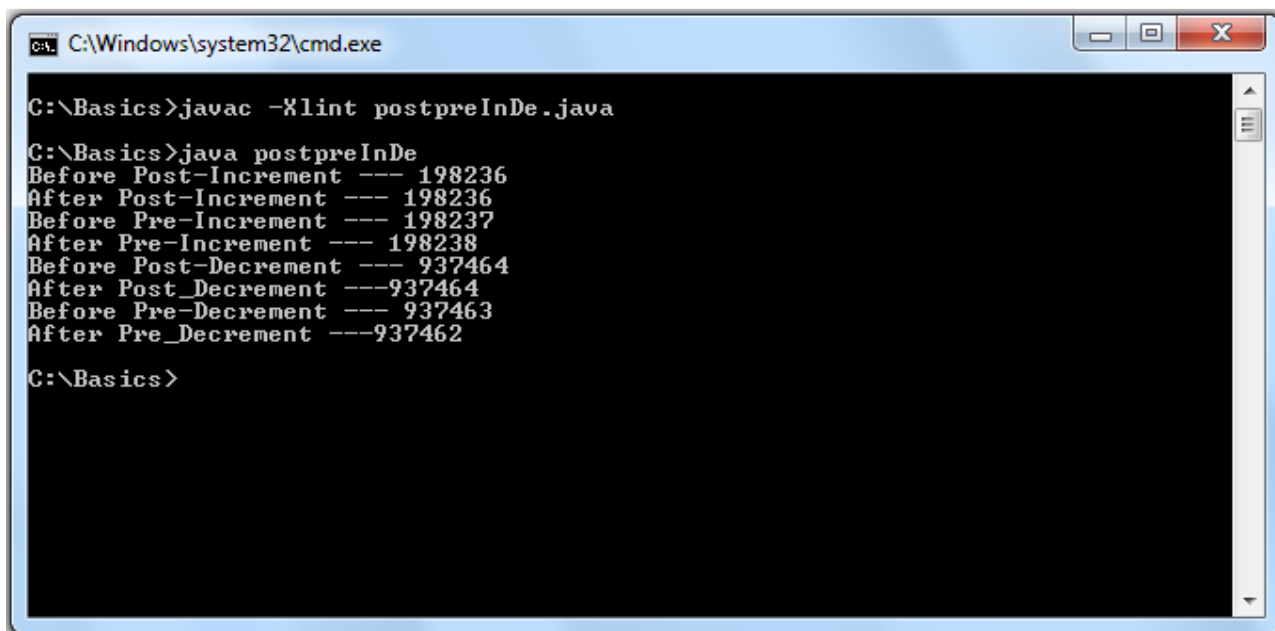
- 13) Write a program to demonstrate pre-increment and post-increment operation with an integer. Also perform decrement operation in the same way

Program:-

```
class postpreInDe
```

```
{  
  
    public static void main(String argv[])  
  
    {  
  
        int intNumber;  
  
        intNumber=198236;  
  
        System.out.println("Before Post-Increment --- "+intNumber+"\nAfter Post-  
Increment --- "+(intNumber++));  
  
        System.out.println("Before Pre-Increment --- "+intNumber+"\nAfter Pre-  
Increment --- "+(++intNumber));  
  
        intNumber=937464;  
  
        System.out.println("Before Post-Decrement --- "+intNumber+"\nAfter  
Post_Decrement --- "+(intNumber--));  
  
        System.out.println("Before Pre-Decrement --- "+intNumber+"\nAfter  
Pre_Decrement --- "+(--intNumber));  
  
    }  
}
```

Output:-



```
C:\Windows\system32\cmd.exe  
  
C:\Basics>javac -Xlint postpreInDe.java  
  
C:\Basics>java postpreInDe  
Before Post-Increment --- 198236  
After Post-Increment --- 198236  
Before Pre-Increment --- 198237  
After Pre-Increment --- 198238  
Before Post-Decrement --- 937464  
After Post_Decrement ---937464  
Before Pre-Decrement --- 937463  
After Pre_Decrement ---937462  
  
C:\Basics>
```

- 14) Write a program to demonstrate the printing facility provided by JAVA(use of print,printf,println)

Program:-

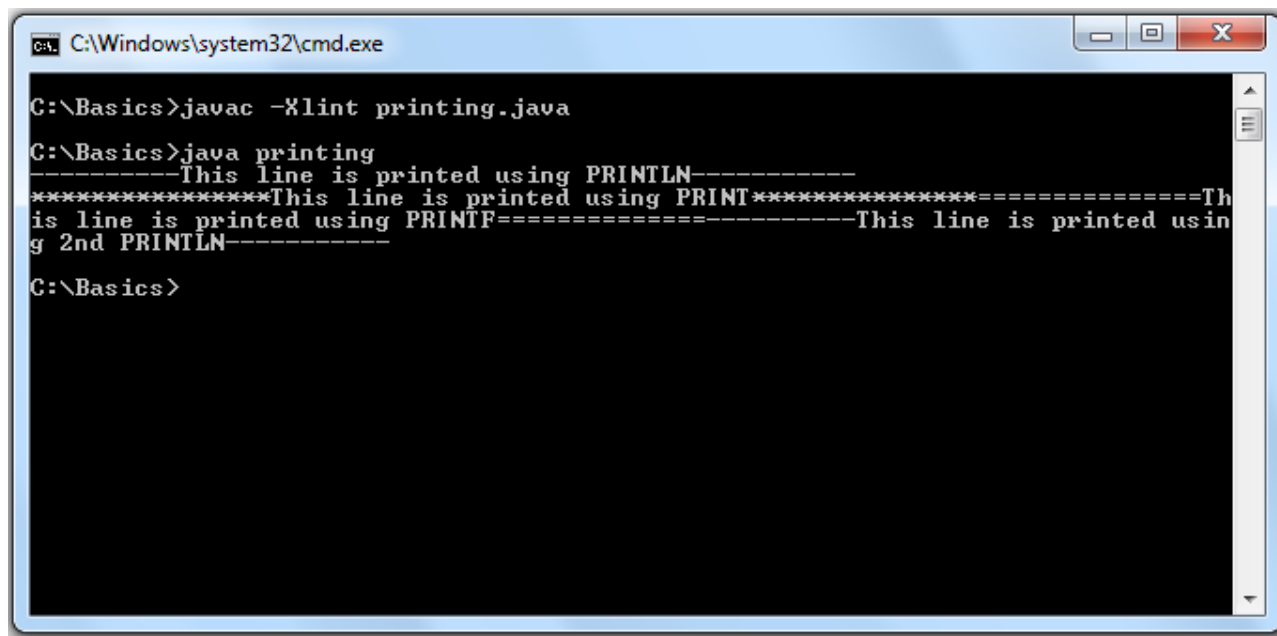
```
class printing
{
    public static void main(String args[])
    {
        System.out.println("-----This line is printed using PRINTLN-----");

        System.out.print("*****This line is printed using PRINT*****");

        System.out.printf("=====This line is printed using PRINTF=====");

        System.out.println("-----This line is printed using 2nd PRINTLN-----");
    }
}
```

Output:-



```
C:\Windows\system32\cmd.exe

C:\Basics>javac -Xlint printing.java

C:\Basics>java printing
-----This line is printed using PRINTLN-----
*****This line is printed using PRINT*****
=====This line is printed using PRINTF=====
-----This line is printed using 2nd PRINTLN-----

C:\Basics>
```

- 15) Write a program to demonstrate the working of relational operators and their evaluation as Boolean in JAVA

Program:-

```
class relationalOp
{
    public static void main(String args[])
    {
        double a=19e199,b=48e150,c=19e199;

        System.out.println("a = "+a+"\nb = "+b+"\nc = "+c);

        System.out.println("a < b = "+(a<b));

        System.out.println("c > b = "+(c>b));

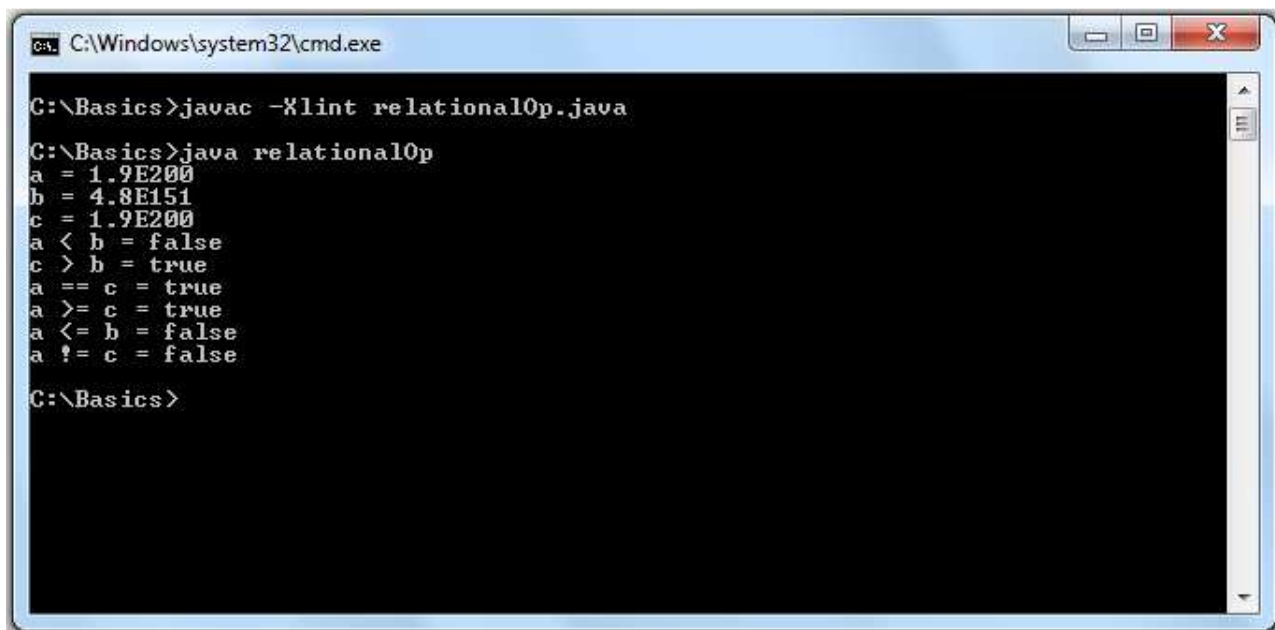
        System.out.println("a == c = "+(a==c));

        System.out.println("a >= c = "+(a>=c));

        System.out.println("a <= b = "+(a<=b));

        System.out.println("a != c = "+(a!=c));
    }
}
```

Output:-



```
C:\Windows\system32\cmd.exe

C:\Basics>javac -Xlint relationalOp.java

C:\Basics>java relationalOp
a = 1.9E200
b = 4.8E151
c = 1.9E200
a < b = false
c > b = true
a == c = true
a >= c = true
a <= b = false
a != c = false

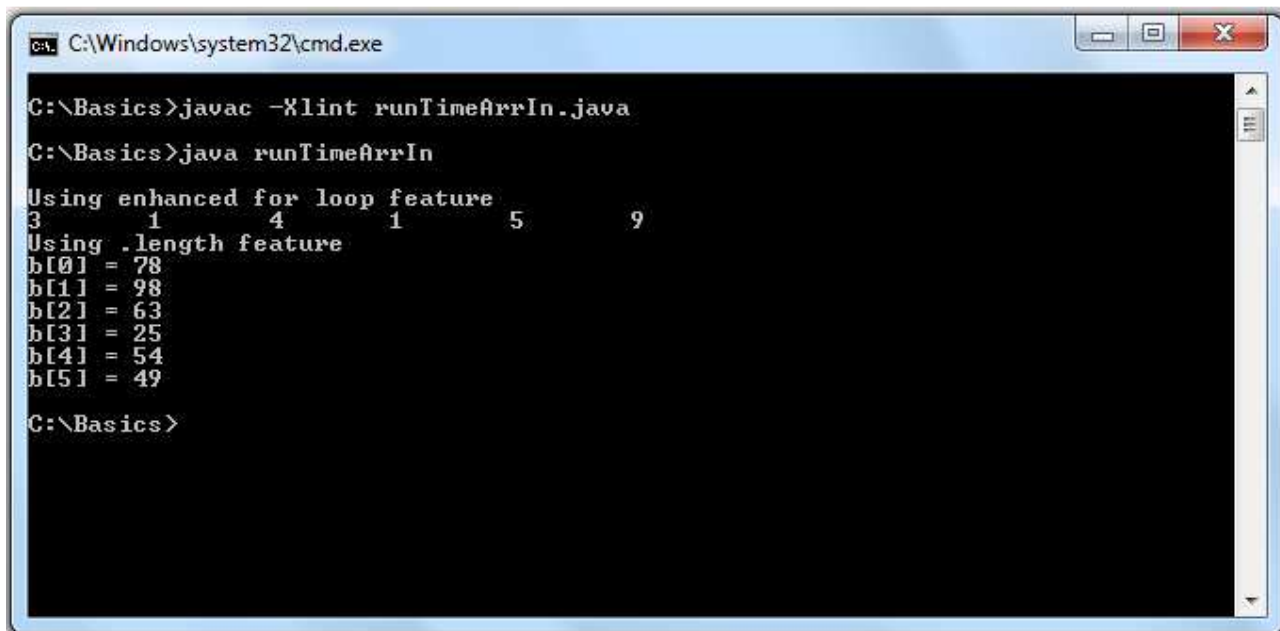
C:\Basics>
```

- 16) Write a program that will declare an integer type of array and display its values initialized at compiled time individually

Program:-

```
class runTimeArrIn
{
    public static void main(String argv[])
    {
        int []a = {3,1,4,1,5,9};
        int b[] = {78,98,63,25,54,49};
        System.out.println("\nUsing enhanced for loop feature");
        for(int i:a)
            System.out.print(i+"\t");
        System.out.println("\nUsing .length feature");
        for(int i=0;i<b.length;i++)
            System.out.println("b["+i+"] = "+b[i]);
    }
}
```

Output:-



```
C:\Windows\system32\cmd.exe

C:\Basics>javac -Xlint runTimeArrIn.java
C:\Basics>java runTimeArrIn
Using enhanced for loop feature
3      1      4      1      5      9
Using .length feature
b[0] = 78
b[1] = 98
b[2] = 63
b[3] = 25
b[4] = 54
b[5] = 49
C:\Basics>
```

17) Write a program that will perform concatenation of two strings

Program:-

```
import java.io.DataInputStream;

class strCat
{
    public static void main(String argv[])
    {
        DataInputStream in = new DataInputStream(System.in);

        String str1="",str2="";

        try
        {
            System.out.print("Enter a string1 : ");

            str1=in.readLine();

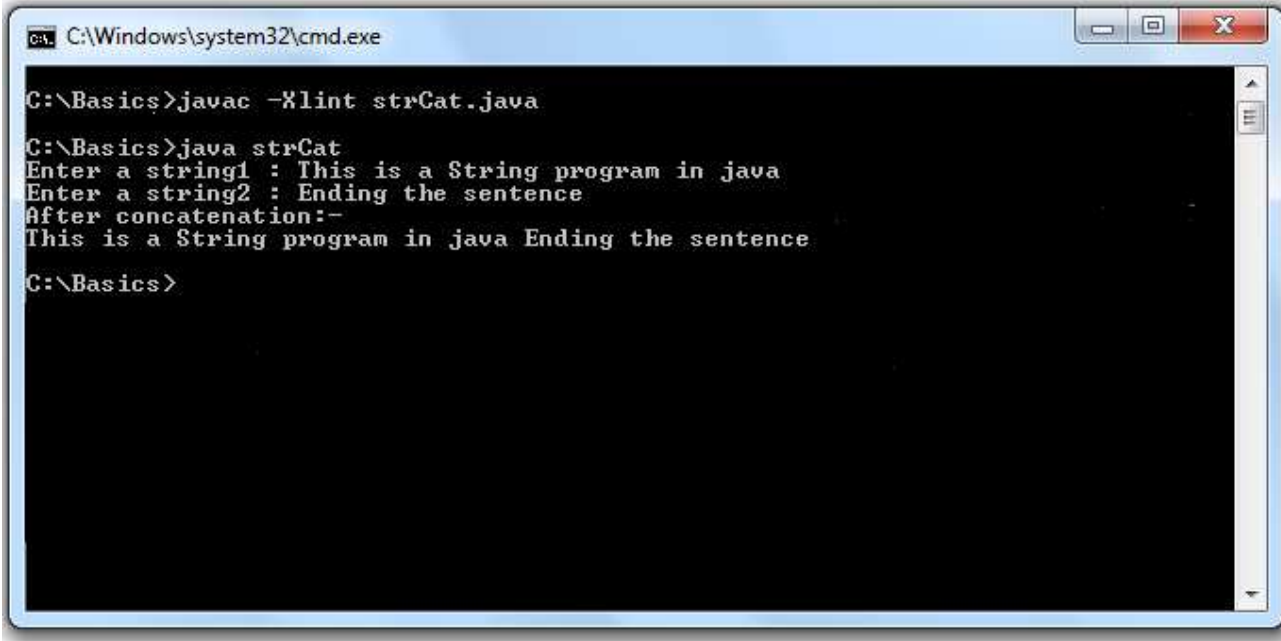
            System.out.print("Enter a string2 : ");

            str2=in.readLine();

        }
        catch(Exception E)
        {
        }

        System.out.println("After concatenation:-\n"+str1+" "+str2);
    }
}
```

Output:-



```
C:\Windows\system32\cmd.exe

C:\Basics>javac -Xlint strCat.java

C:\Basics>java strCat
Enter a string1 : This is a String program in java
Enter a string2 : Ending the sentence
After concatenation:-
This is a String program in java Ending the sentence

C:\Basics>
```

18) Write a program that will demonstrate initialization of string by user input

Program:-

```
import java.io.DataInputStream;

class strUserIn
{
    public static void main(String argv[])
    {
        DataInputStream in = new DataInputStream(System.in);

        String str="";

        try
        {
            System.out.println("Enter a string: ");
            str=in.readLine();

        }
        catch(Exception E)
        {
        }

        System.out.println("Read string = "+str);
    }
}
```

Output:-

A screenshot of a Windows command prompt window titled "C:\Windows\system32\cmd.exe". The window has a black background with white text. The text shows the following sequence of commands and output:
C:\Basics>javac -Xlint strUserIn.java
C:\Basics>java strUserIn
Enter a string:
Hi 1st string program
Read string = Hi 1st string program
C:\Basics>
The window includes standard Windows window controls (minimize, maximize, close) in the top right corner and a vertical scrollbar on the right side.

19) Write a program that will take two numbers from the user and check whether they are Amicable numbers or not

Program:-

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

```
class amicablNo
```

```
{
```

```
    public static void main(String argv[])
```

```
    {
```

```
        Scanner in = new Scanner(System.in);
```

```
        int intNumber1=0,intNumber2=0,div1=0,div2=0,n=0;
```

```
        System.out.print("Enter Number 1: ");
```

```
        intNumber1=in.nextInt();
```

```
        System.out.print("Enter Number 2: ");
```

```
        intNumber2=in.nextInt();
```

```
        n=intNumber1;
```

```
        for(int i=1;i<=n/2;i++)
```

```
        {
```

```
            if(n % i == 0)
```

```
                div1=div1+i;
```

```
        }
```

```
        n=intNumber2;
```

```
        for(int i=1;i<=n/2;i++)
```

```
        {
```

```
            if(n % i == 0)
```

```
                div2=div2+i;
```

```
        }
```

```
        if(intNumber1 == div2 && intNumber2 == div1)
```

```
            System.out.println(intNumber1+" and "+intNumber2+" are  
            Amicable Numbers");
```

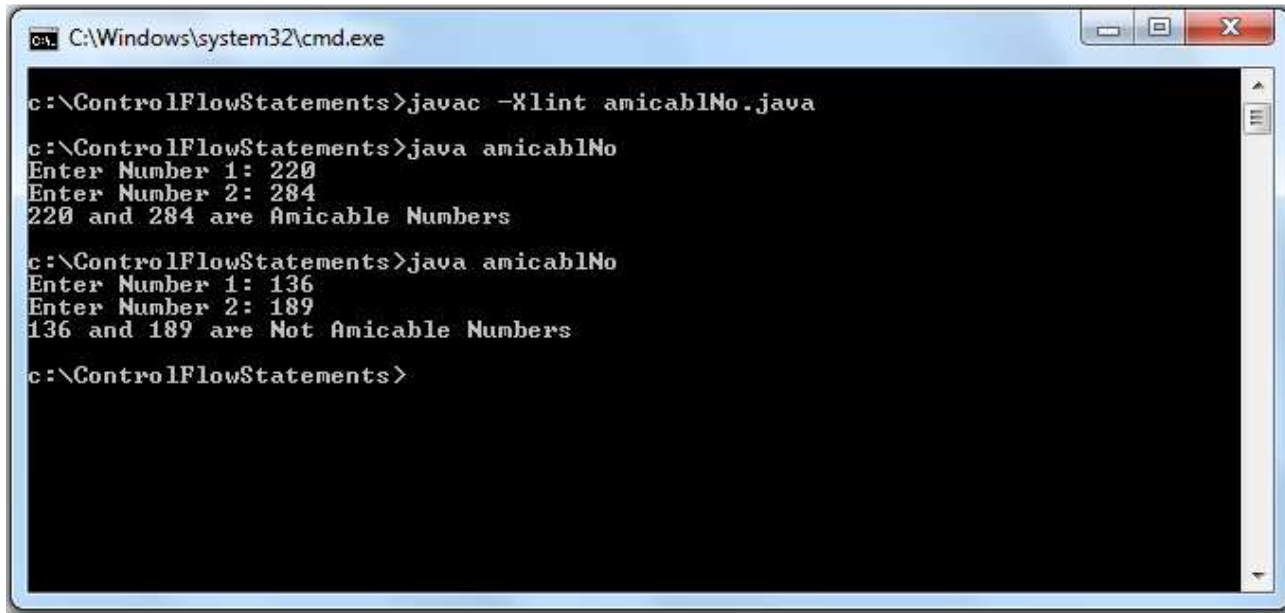
```
        else
```

```
System.out.println(intNumber1+" and "+intNumber2+" are Not  
Amicable Numbers");
```

```
}
```

```
}
```

OutPut:-



```
C:\Windows\system32\cmd.exe

c:\ControlFlowStatements>javac -Xlint amicablNo.java

c:\ControlFlowStatements>java amicablNo
Enter Number 1: 220
Enter Number 2: 284
220 and 284 are Amicable Numbers

c:\ControlFlowStatements>java amicablNo
Enter Number 1: 136
Enter Number 2: 189
136 and 189 are Not Amicable Numbers

c:\ControlFlowStatements>
```

20) Write a program that will check whether a number is Armstrong number or not

Program:-

```
import java.util.Scanner;

class armstrng
{
    public static void main(String argv[])
    {
        Scanner in = new Scanner(System.in);

        int s=0,intNumber=0,n,b=0,x=0,a=1;

        System.out.print("Enter Integer Value: ");

        intNumber=in.nextInt();

        n=intNumber;

        while(n >= 1)
        {
            n=n/10;

            x++;
        }

        n=intNumber;

        while(n >= 1)
        {
            b=n%10;

            n=n/10;

            a=1;

            for(int i=1;i<=x;i++)

                a=a*b;

            s=s+a;
        }

        if(s == intNumber)

            System.out.println(intNumber+" is an Armstrong Number");

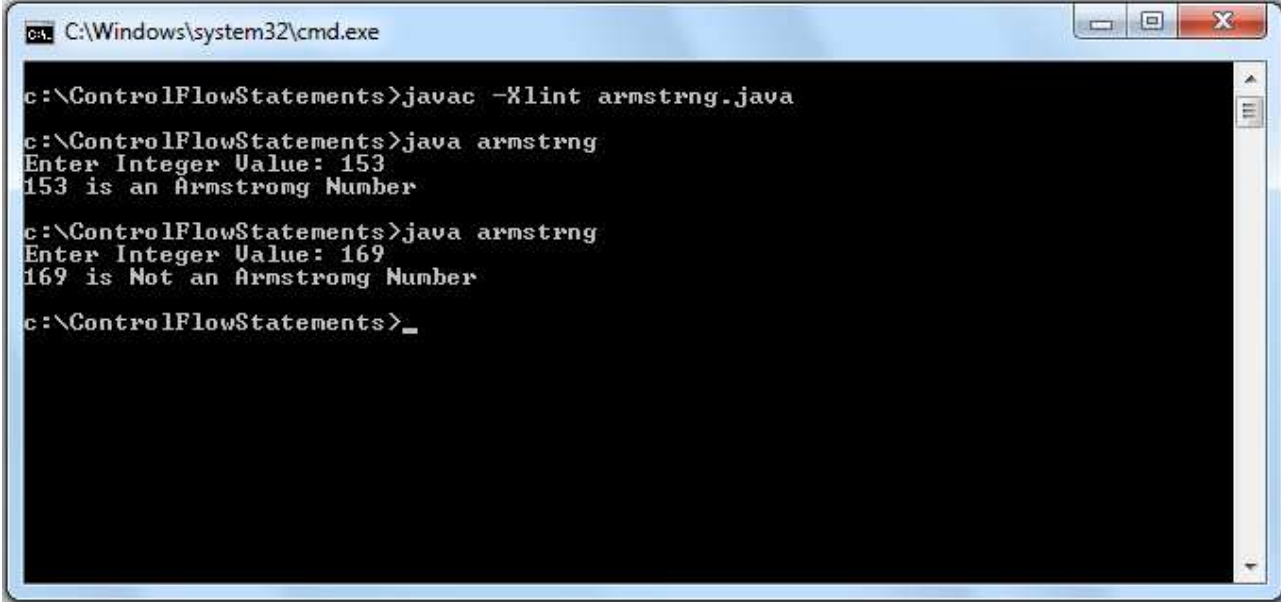
        else
```

```
System.out.println(intNumber+" is Not an Armstrong Number");
```

```
}
```

```
}
```

Output:-



```
C:\Windows\system32\cmd.exe

c:\ControlFlowStatements>javac -Xlint armstrng.java
c:\ControlFlowStatements>java armstrng
Enter Integer Value: 153
153 is an Armstrong Number

c:\ControlFlowStatements>java armstrng
Enter Integer Value: 169
169 is Not an Armstrong Number

c:\ControlFlowStatements>_
```

21) Write a program to demonstrate the Enhanced For Loop in JAVA

Program:-

```
class enForLoop
```

```
{
```

```
    public static void main(String argv[])
```

```
    {
```

```
        int x=0;
```

```
        int arr[]={49,93,85,73,82,8,27};
```

```
        System.out.println("Displaying Array elements using Enhanced For Loop:-----  
        ---");
```

```
        for(int i:arr)
```

```
        {
```

```
            ++x;
```

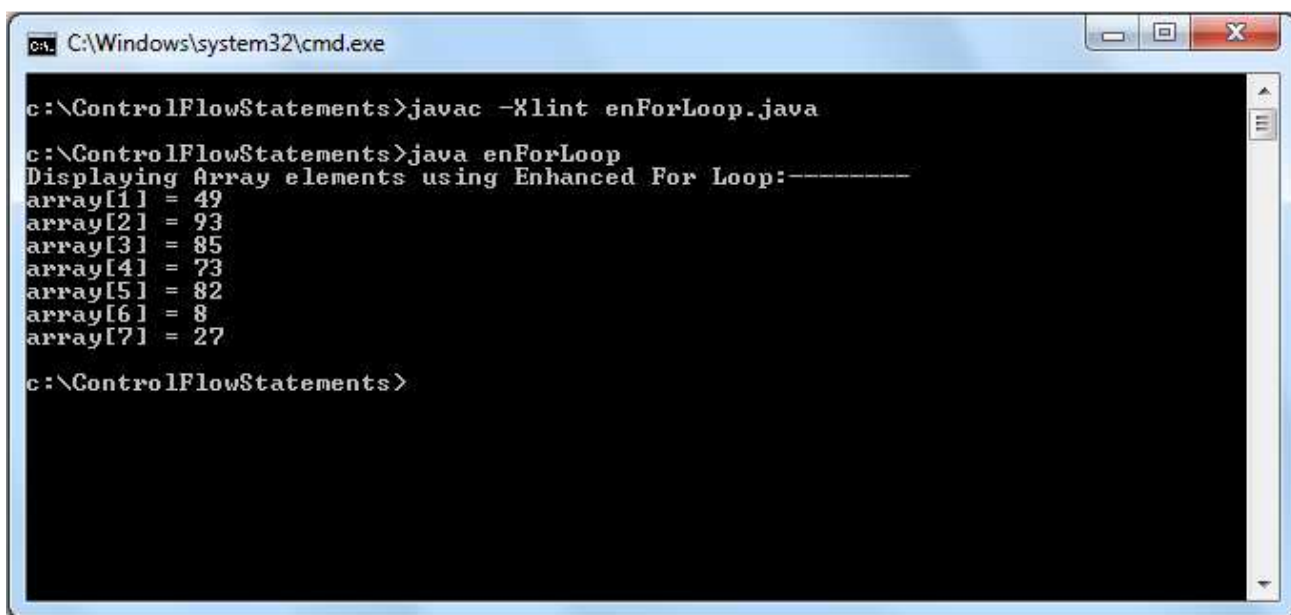
```
            System.out.println("array["+x+"] = "+i);
```

```
        }
```

```
    }
```

```
}
```

Output:-



```
C:\Windows\system32\cmd.exe

c:\ControlFlowStatements>javac -Xlint enForLoop.java

c:\ControlFlowStatements>java enForLoop
Displaying Array elements using Enhanced For Loop:-----
array[1] = 49
array[2] = 93
array[3] = 85
array[4] = 73
array[5] = 82
array[6] = 8
array[7] = 27

c:\ControlFlowStatements>
```

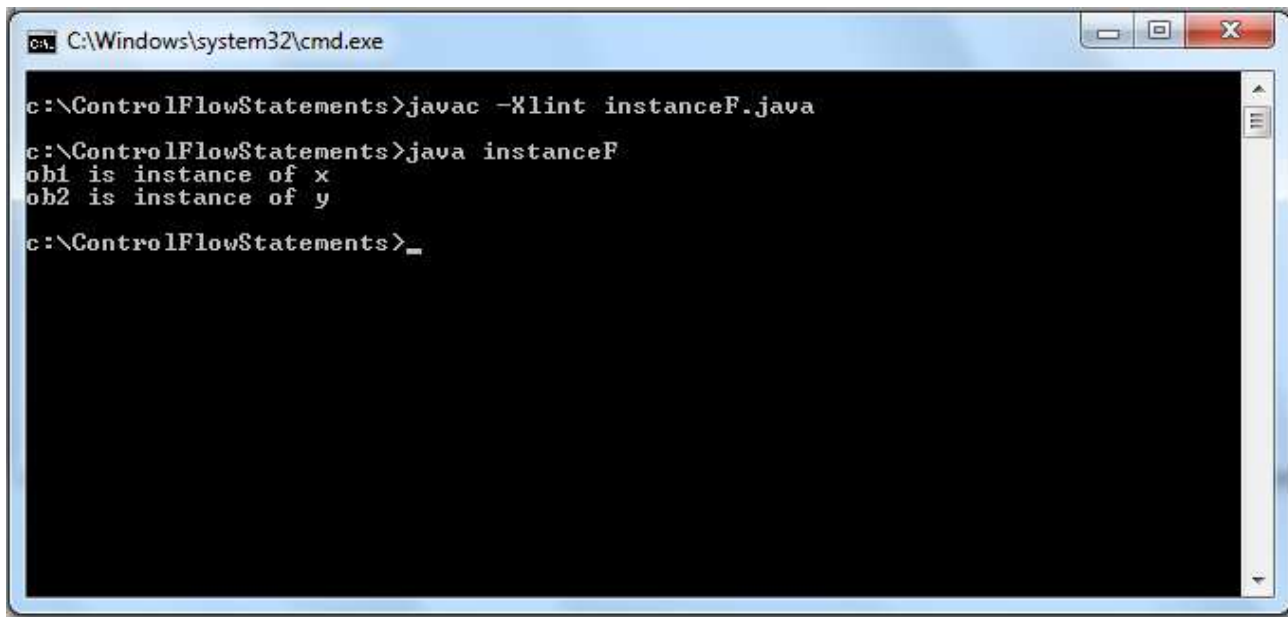
22) Write a program that will demonstrate instanceof operator in JAVA

```
class x
{
    x()
    {
    }
}

class y
{
    y()
    {
    }
}

class instanceF
{
    public static void main(String argv[])
    {
        x ob1 = new x();
        y ob2 = new y();
        if( ob1 instanceof x)
            System.out.println("ob1 is instance of x ");
        if( ob2 instanceof y)
            System.out.println("ob2 is instance of y ");
    }
}
```

Output:-



```
C:\Windows\system32\cmd.exe

c:\ControlFlowStatements>javac -Xlint instanceF.java
c:\ControlFlowStatements>java instanceF
ob1 is instance of x
ob2 is instance of y
c:\ControlFlowStatements>_
```

The image shows a Windows command prompt window with a blue title bar. The title bar text is "C:\Windows\system32\cmd.exe". The window contains the following text: "c:\ControlFlowStatements>javac -Xlint instanceF.java", "c:\ControlFlowStatements>java instanceF", "ob1 is instance of x", "ob2 is instance of y", and "c:\ControlFlowStatements>_". The window has standard Windows window controls (minimize, maximize, close) in the top right corner.

23) Write a program that will find sum of all the positive integers upto a specified range

Program:-

```
import java.util.Scanner;

class intRange
{
    public static void main(String argv[])
    {
        Scanner in = new Scanner(System.in);

        int i=0,n=0,s=0;

        do
        {
            System.out.print("Enter Range(Positive Integer): ");

            n=in.nextInt();

        }while(n <= 0);

        System.out.println("Intergers upto "+n+" are:-");

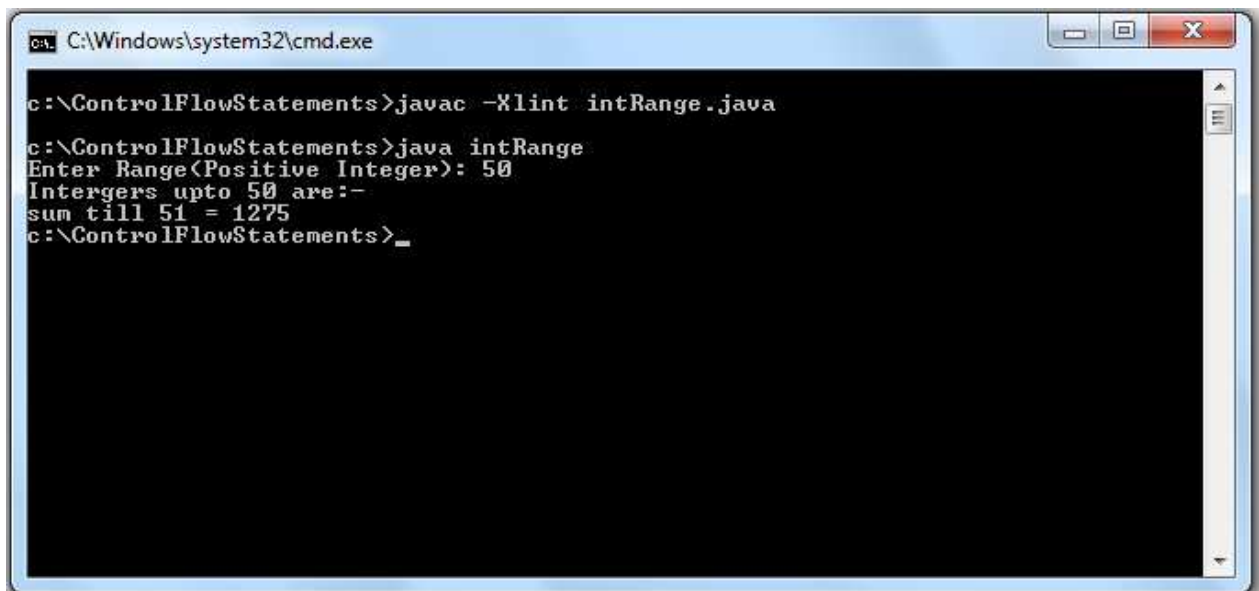
        for(i=1;i<=n;i++)

            s=s+i;

        System.out.print("sum till "+i+" = "+s);

    }
}
```

Output:-



```
C:\Windows\system32\cmd.exe

c:\ControlFlowStatements>javac -Xlint intRange.java

c:\ControlFlowStatements>java intRange
Enter Range(Positive Integer): 50
Intergers upto 50 are:-
sum till 51 = 1275
c:\ControlFlowStatements>_
```


24) Write a program that will generate Lucas sequence up to certain range specified by user

Program:-

```
import java.util.Scanner;

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

        int range=0,a=2,b=1,c=0;

        System.out.print("Enter the range:- ");

        range=in.nextInt();

        System.out.println("The sequence is as follows : ");

        System.out.print(a+"\t"+b);

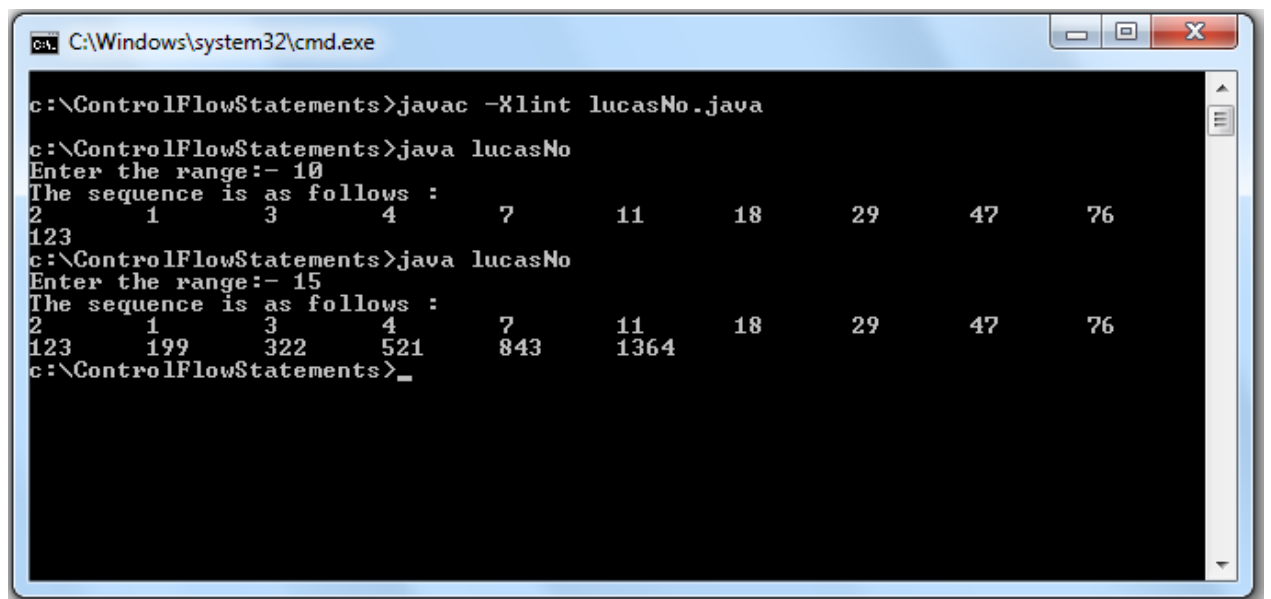
        for(int i=2;i<=range;i++)
        {
            c=a+b;

            System.out.print("\t"+c);

            a=b;

            b=c;
        }
    }
}
```

Output:-



```
C:\Windows\system32\cmd.exe

c:\ControlFlowStatements>javac -Xlint lucasNo.java
c:\ControlFlowStatements>java lucasNo
Enter the range:- 10
The sequence is as follows :
2      1      3      4      7      11      18      29      47      76
123
c:\ControlFlowStatements>java lucasNo
Enter the range:- 15
The sequence is as follows :
2      1      3      4      7      11      18      29      47      76
123      199      322      521      843      1364
c:\ControlFlowStatements>_
```

25) Write a program that will generate all prime numbers with in Fibonacci series up to certain range

Program:-

```
import java.util.Scanner;

class primeFibo
{
    public static void main(String argv[])
    {
        Scanner in = new Scanner(System.in);

        int a=0,b=1,c=0,n=0,x=0;

        System.out.print("Enter Range: ");

        n=in.nextInt();

        System.out.print("All prime numbers that are also fibonacci
numbers:\n1\t");

        for(int i=2;i<n;i++)
        {
            x=0;

            c=a+b;

            a=b;

            b=c;

            for(int j=1;j <= c/2;j++)
            {
                if(c % j == 0)

                    x++;

            }

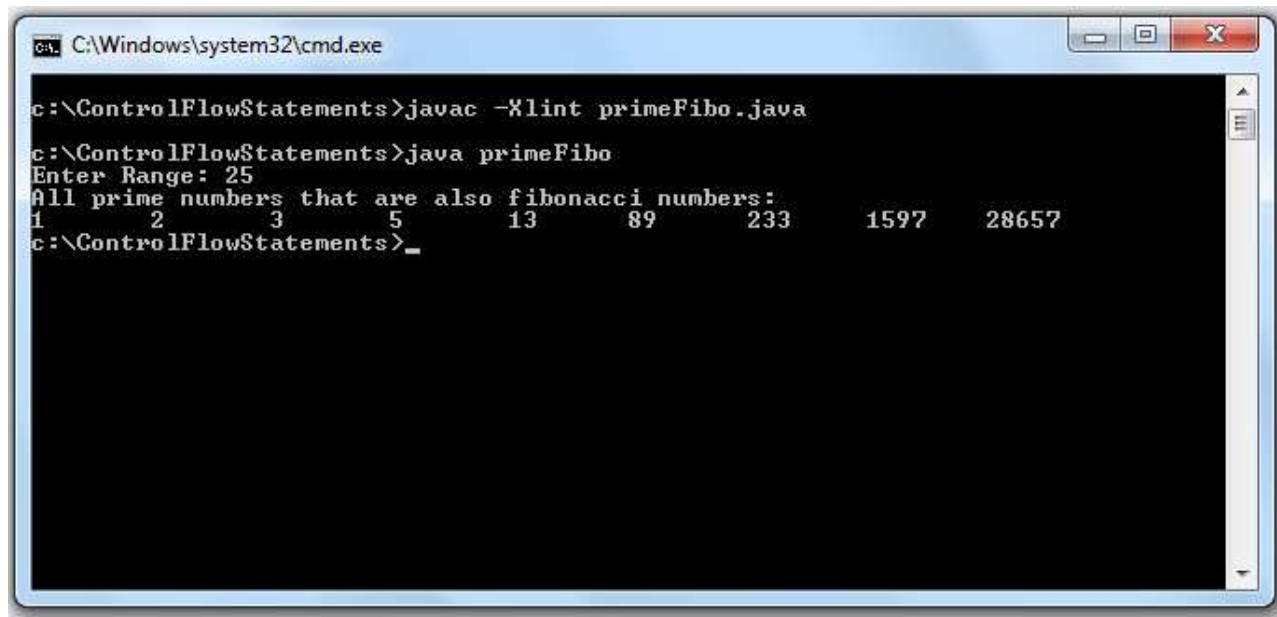
            if(x == 1)

                System.out.print(c+"\t");

        }

    }
}
```

Output:-



```
C:\Windows\system32\cmd.exe

c:\ControlFlowStatements>javac -Xlint primeFibo.java

c:\ControlFlowStatements>java primeFibo
Enter Range: 25
All prime numbers that are also fibonacci numbers:
1      2      3      5      13      89      233      1597      28657

c:\ControlFlowStatements>_
```

26) Write a program that will take an integer from the user and check whether it is perfect number or not

Program:-

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

```
class perfectNo
```

```
{
```

```
    public static void main(String argv[])
```

```
    {
```

```
        Scanner in = new Scanner(System.in);
```

```
        int intNumber=0,n=0,s=0,j;
```

```
        System.out.print("Enter Number: ");
```

```
        intNumber=in.nextInt();
```

```
        n=intNumber;
```

```
        for(int i=1;i<=n/2;i++)
```

```
        {
```

```
            if(n % i == 0)
```

```
                s=s+i;
```

```
        }
```

```
        if(s == intNumber)
```

```
            System.out.println(intNumber+" is a Perfect Number");
```

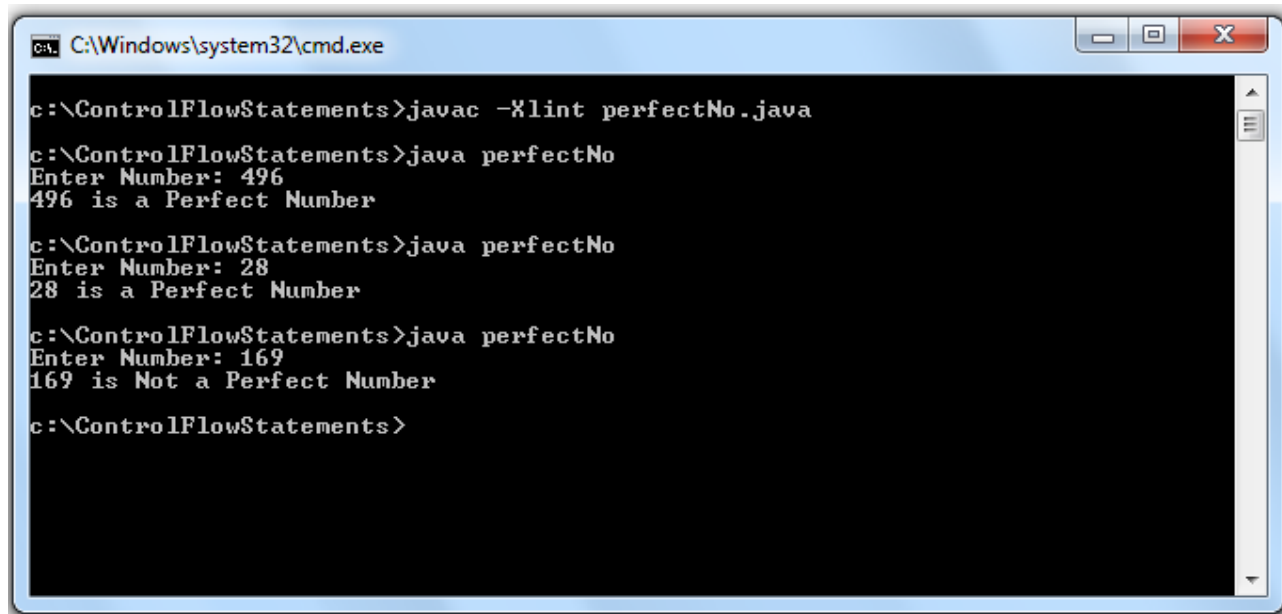
```
        else
```

```
            System.out.println(intNumber+" is Not a Perfect Number");
```

```
    }
```

```
}
```

Output:-



```
C:\Windows\system32\cmd.exe

c:\ControlFlowStatements>javac -Xlint perfectNo.java

c:\ControlFlowStatements>java perfectNo
Enter Number: 496
496 is a Perfect Number

c:\ControlFlowStatements>java perfectNo
Enter Number: 28
28 is a Perfect Number

c:\ControlFlowStatements>java perfectNo
Enter Number: 169
169 is Not a Perfect Number

c:\ControlFlowStatements>
```

27) Write a program to check whether a number is even or odd. Put proper restrictions on the values given by the user

Program:-

```
import java.util.Scanner;

class oddOReven

{

    public static void main(String argv[])

    {

        Scanner in = new Scanner(System.in);

        int intNumber=0,f=1;

        do

        {

            if(f == 0)

                System.out.println("Wrong Entry:-ReEnter ");

            System.out.print("Enter a Positive Number: ");

            intNumber=in.nextInt();

            f=0;

        }while(intNumber <= 0);

        if(intNumber % 2 == 0)

            System.out.println(intNumber+" is Even");

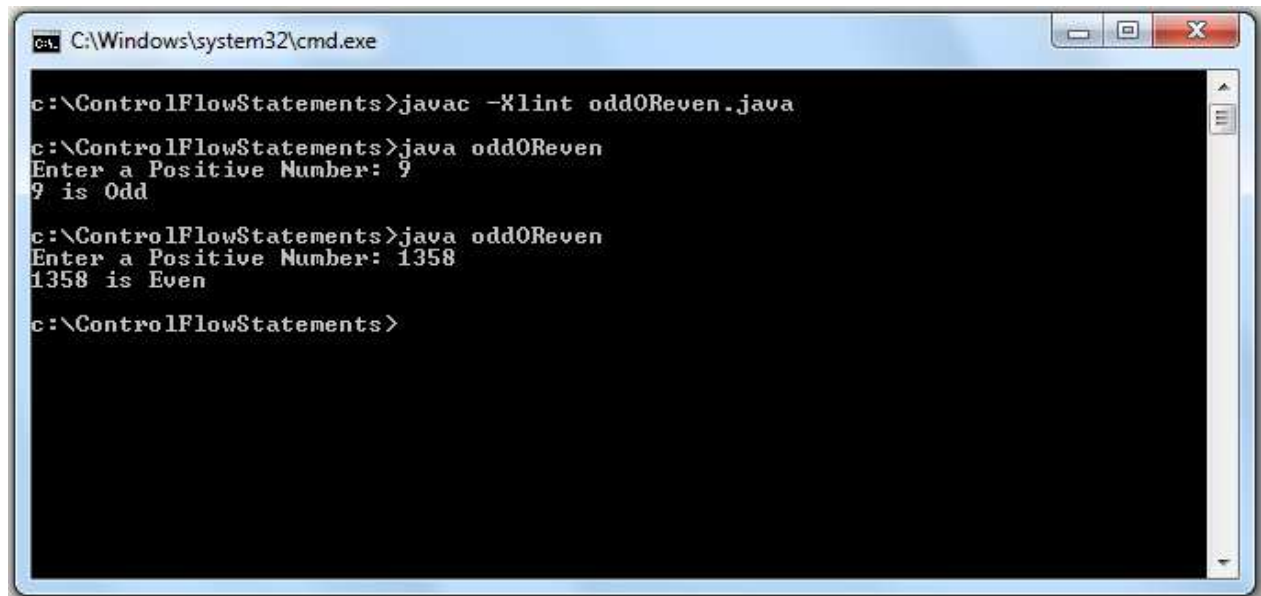
        else

            System.out.println(intNumber+" is Odd");

    }

}
```

Output:-



```
C:\Windows\system32\cmd.exe

c:\ControlFlowStatements>javac -Xlint oddOReven.java
c:\ControlFlowStatements>java oddOReven
Enter a Positive Number: 9
9 is Odd

c:\ControlFlowStatements>java oddOReven
Enter a Positive Number: 1358
1358 is Even

c:\ControlFlowStatements>
```


28) Write a program that will display modulo value ($|x|$) of a number taken from the user

Program:-

```
import java.util.Scanner;

class modulo
{
    public static void main(String argv[])
    {
        Scanner in = new Scanner(System.in);

        int intNumber=0;

        System.out.print("Enter a Number: ");

        intNumber=in.nextInt();

        System.out.print("| "+intNumber+" | = ");

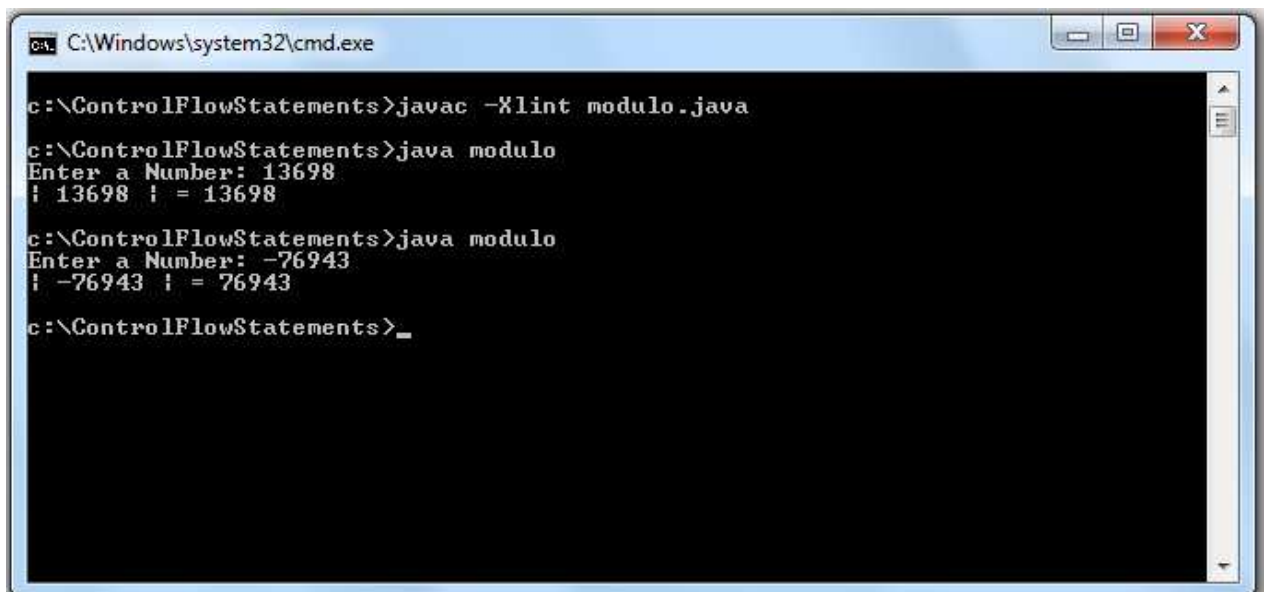
        if(intNumber < 0)

            intNumber*=(-1);

        System.out.println(intNumber);

    }
}
```

Output:-



```
C:\Windows\system32\cmd.exe

c:\ControlFlowStatements>javac -Xlint modulo.java
c:\ControlFlowStatements>java modulo
Enter a Number: 13698
| 13698 | = 13698

c:\ControlFlowStatements>java modulo
Enter a Number: -76943
| -76943 | = 76943

c:\ControlFlowStatements>_
```

29) Write a menu driven program that will perform arithmetic operation on two numbers

Program:-

```
import java.util.Scanner;

class menu
{
    public static void main(String argv[])
    {
        Scanner in = new Scanner(System.in);

        int resulti=0,intNumber1=0,intNumber2=0,c=0,cc=0;

        float resultf=0,floatNumber1=0.0f,floatNumber2=0.0f;

        System.out.println("\tMENU");

        System.out.println("1.Integer");

        System.out.println("2.Float");

        System.out.print("Enter Choice :- ");

        c=in.nextInt();

        switch(c)
        {
            case 1:

                System.out.print("Enter Number 1: ");

                intNumber1=in.nextInt();

                System.out.print("Enter Number 2: ");

                intNumber2=in.nextInt();

                System.out.println("\tINTEGER-MENU");

                System.out.println("1.ADDITION");

                System.out.println("2.SUBTRACTION");

                System.out.println("3.MULTIPLICATION");

                System.out.println("4.DIVISION");

                System.out.print("Enter Choice :- ");

                cc=in.nextInt();

                switch(cc)
```

```

{

    case 1:

        resulti=intNumber1+intNumber2;

        System.out.println("ADDITION:----
        \n"+intNumber1+" + "+intNumber2+" =
        "+resulti);

        break;

    case 2:

        resulti=intNumber1-intNumber2;

        System.out.println("SUBTRACTION:----
        \n"+intNumber1+" - "+intNumber2+" =
        "+resulti);

        break;

    case 3:

        resulti=intNumber1*intNumber2;

        System.out.println("MULTIPLITION:----
        \n"+intNumber1+" * "+intNumber2+" =
        "+resulti);

        break;

    case 4:

        resulti=intNumber1/intNumber2;

        System.out.println("DIVISION:----
        \n"+intNumber1+" / "+intNumber2+" =
        "+resulti);

        break;

    default:

        System.out.println("Wrong Input Int");

        break;

}

break;

case 2:

    System.out.print("Enter Number 1: ");

    floatNumber1=in.nextFloat();

```

```
System.out.print("Enter Number 2: ");

floatNumber2=in.nextFloat();

System.out.println("\tFLOAT-MENU");

System.out.println("1.ADDITION");

System.out.println("2.SUBTRACTION");

System.out.println("3.MULTIPLICATION");

System.out.println("4.DIVISION");

System.out.print("Enter Choice :- ");

cc=in.nextInt();

switch(cc)
{

    case 1:

        resultf=floatNumber1+floatNumber2;

        System.out.println("ADDITION:----
        \n"+floatNumber1+" + "+floatNumber2+" =
        "+resultf);

        break;

    case 2:

        resultf=floatNumber1-floatNumber2;

        System.out.println("SUBTRACTION:----
        \n"+floatNumber1+" - "+floatNumber2+" =
        "+resultf);

        break;

    case 3:

        resultf=floatNumber1*floatNumber2;

        System.out.println("MULTIPLITION:----
        \n"+floatNumber1+" * "+floatNumber2+" =
        "+resultf);

        break;

    case 4:

        resultf=floatNumber1/floatNumber2;
```

```
System.out.println("DIVISION:----  
\\n"+floatNumber1+" / "+floatNumber2+" =  
"+resultf);
```

```
break;
```

```
default:
```

```
System.out.println("Wrong Input Float");
```

```
break;
```

```
}
```

```
break;
```

```
default:
```

```
System.out.println("Wrong Input");
```

```
break;
```

```
}
```

```
}
```

```
}
```

Output:-

```
C:\Windows\system32\cmd.exe

c:\ControlFlowStatements>javac -Xlint menu.java

c:\ControlFlowStatements>java menu
    MENU
    1.Integer
    2.Float
    Enter Choice :- 1
    Enter Number 1: 9
    Enter Number 2: 6
        INTEGER-MENU
        1.ADDITION
        2.SUBTRACTION
        3.MULTIPLICATION
        4.DIVISION
        Enter Choice :- 1
        ADDITION:-----
        9 + 6 = 15

c:\ControlFlowStatements>java menu
    MENU
    1.Integer
    2.Float
    Enter Choice :- 1
    Enter Number 1: 8
    Enter Number 2: 9
        INTEGER-MENU
        1.ADDITION
        2.SUBTRACTION
        3.MULTIPLICATION
        4.DIVISION
        Enter Choice :- 2
        SUBTRACTION:-----
        8 - 9 = -1

c:\ControlFlowStatements>java menu
    MENU
    1.Integer
    2.Float
    Enter Choice :- 1
    Enter Number 1: 7
    Enter Number 2: 9
        INTEGER-MENU
        1.ADDITION
        2.SUBTRACTION
        3.MULTIPLICATION
        4.DIVISION
        Enter Choice :- 3
        MULTIPLICATION:-----
        7 * 9 = 63

c:\ControlFlowStatements>java menu
    MENU
    1.Integer
    2.Float
    Enter Choice :- 1
    Enter Number 1: 3
    Enter Number 2: 7
        INTEGER-MENU
        1.ADDITION
        2.SUBTRACTION
        3.MULTIPLICATION
        4.DIVISION
        Enter Choice :- 4
        DIVISION:-----
        3 / 7 = 0

c:\ControlFlowStatements>
```

C:\Windows\system32\cmd.exe

```
c:\ControlFlowStatements>javac -Xlint menu.java
```

```
c:\ControlFlowStatements>java menu
```

MENU

1.Integer

2.Float

Enter Choice :- 2

Enter Number 1: 56.213

Enter Number 2: 49.89

 FLOAT-MENU

1.ADDITION

2.SUBTRACTION

3.MULTIPLICATION

4.DIVISION

Enter Choice :- 1

ADDITION:-----

56.213 + 49.89 = 106.103

```
c:\ControlFlowStatements>java menu
```

MENU

1.Integer

2.Float

Enter Choice :- 2

Enter Number 1: 6987.647

Enter Number 2: 139.434

 FLOAT-MENU

1.ADDITION

2.SUBTRACTION

3.MULTIPLICATION

4.DIVISION

Enter Choice :- 2

SUBTRACTION:-----

6987.647 - 139.434 = 6848.213

```
c:\ControlFlowStatements>java menu
```

MENU

1.Integer

2.Float

Enter Choice :- 2

Enter Number 1: 324899.16

Enter Number 2: 4696.146

 FLOAT-MENU

1.ADDITION

2.SUBTRACTION

3.MULTIPLICATION

4.DIVISION

Enter Choice :- 3

MULTIPLICATION:-----

324899.16 * 4696.146 = 1.52577382E9

```
c:\ControlFlowStatements>java menu
```

MENU

1.Integer

2.Float

Enter Choice :- 2

Enter Number 1: 979863.14654

Enter Number 2: 5646.13

 FLOAT-MENU

1.ADDITION

2.SUBTRACTION

3.MULTIPLICATION

4.DIVISION

Enter Choice :- 4

DIVISION:-----

979863.1 / 5646.13 = 173.54597

```
c:\ControlFlowStatements>
```