Difference between Post Increment (n++) and Pre Increment (++n)

Post Increment (n++): It increases the value of variable by 1 after execution of the statement.

Pre Increment (++n): It increases the value of variable by 1 before execution of the statement.

Program	Output

```
class Demo
{
        public static void main(String args[])
        {
                int n=10;
                System.out.println(n);          10
                System.out.println(n++);        10
                System.out.println(n);          11
        }
}
```

Program	Output

```
class Demo
{
        public static void main(String args[])
        {
                int n=10;
                System.out.println(n);          10
                System.out.println(++n);        11
                System.out.println(n);          11
        }
}
```

Prime Number

Logic: Prime Number are divisible by itself only.

Not divisible by any Number	Divisible by 2 ...no need to check further	Divisible by 3 ...no need to check further
	8%2=0	9%2=1
7%2=1	8%3=	9%3=0
7%3=1	8%4=	9%4
7%4=3	8%5=	9%5
7%5=2	8%6=	9%6
7%6=1	8%7=	9%7
		9%8

Numbers are not divisible by more than half of the number

No need to check upto 6 check upto 3 only	No need to check upto 7 check upto 4 only	No need to check upto 8 check upto 4 only

Program

Output

```
//Note: Scanner class work with JDK1.5 or above
import java.util.*;
class Prime
{
        public static void main(String args[])
        {
                int n, i, res;
                boolean flag=true;
                Scanner scan= new Scanner(System.in);
                System.out.println("Please Enter a No.");
                n=scan.nextInt();
                for(i=2;i<=n/2;i++)
```

```
Please Enter a No.: 7
7 is Prime Number
```

```
                {
                        res=n%i;
                        if(res==0)
                        {
                                flag=false;
                                break;
                        }
                }
                if(flag)
                        System.out.println(n + " is Prime Number");
                else
                        System.out.println(n + " is not Prime Number");
        }
}
```

Fibonacci Series (1 1 2 3 5 8 13...)

Logic: Sum of previous two numbers will give us next number.

prev	next	sum
	shifted to **prev**	shifted to **next**
1	1	2
1	2	3
2	3	5
3	5	8
5	8	13
8	13	...
13	...	...

prev will give you fibonacci series

Program   **Output**

```
class Fibonacci                                                                 1
{                                                                               1
        public static void main(String args[])                                  2
        {                                                                       3
                int prev, next, sum, n;                                         5
                prev=next=1                                                     8
                for(n=1;n<=10;n++)                                              13
                {                                                               ...
                        System.out.println(prev);
                        sum=prev+next;
                        prev=next;
                        next=sum;
                }
        }
}
```

Sum of 1st 10 Natural Numbers

Logic: Sum of previous two numbers will give us next number.

sum	n	sum
sum+n		
0	1	1
1	2	3
3	3	6
6	4	10

10	5	15
15	6	21
21	7	28
28	8	36
36	9	45
45	10	55

Program   **Output**

```
class Sum10
{
        public static void main(String args[])
        {
                int n, sum=0;
                for(n=1;n<=10;n++)
                {
                        sum+=n;    //or sum=sum+n;
                }
                System.out.println(sum);
        }
}
```

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Sum of Square of 1st 10 Natural Numbers

Logic: Sum of previous two numbers will give us next number.

sum	n*n	sum
sum+n*n		
0	1*1	1
1	2*2	5
5	3*3	14
14	4*4	30
30	5*5	55
55	6*6	91
91	7*7	140
140	8*8	204
204	9*9	285
285	10*10	385

Program   **Output**

```
class SumSq10
{
        public static void main(String args[])
        {
                int n, sum=0;
                for(n=1;n<=10;n++)
                {
                        sum+=n;*n    //or sum=sum+n;*n
                }
                System.out.println(sum);
        }
}
```

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Factorial

Logic: Factorial of 5 = 5 x 4 x 3 x 2 x 1

prod	n	prod
	prod*n	
1	5	5
5	4	20
20	3	60
60	2	120
120	1	120

Program

```
//Note: Scanner class work with JDK1.5 or above
import java.util.*;
class Factorial
{
        public static void main(String args[])
        {
                int n, i, prod=1;
                Scanner scan= new Scanner(System.in);
                System.out.println("Please Enter a No.");
                n=scan.nextInt();
                for(i=n;i>=1;i--)
                {
                        prod*=i;          //prod=prod*i;
                }
                System.out.println("Factorial of " + n + " is  " + prod);
        }
}
```

Output

```
Please Enter a No.: 5
Factorial of 5 is 120
```

Biggest of 3 Numbers using Logical Operators

Program

```
//Note: Scanner class work with JDK1.5 or above
import java.util.*;
class Biggest3
{
        public static void main(String args[])
        {
                int n1, n2, n3, big;
                Scanner scan= new Scanner(System.in);
                System.out.println("Please Enter No 1: ");
                n1=scan.nextInt();
                System.out.println("Please Enter No 2: ");
                n2=scan.nextInt();
                System.out.println("Please Enter No 3: ");
                n3=scan.nextInt();
                if(n1>n2 && n1>n3)
                        big=n1;
                else if(n2>n1 && n2>n3)
                        big=n2;
                else
                        big=n3;
                System.out.println("Biggest No: " + big);
        }
}
```

Output

```
Please Enter No 1: 5
Please Enter No 2: 23
Please Enter No 3: 14
Biggest No: 23
```

Biggest of 3 Numbers using Nested If

Program

Output

```java
//Note: Scanner class work with JDK1.5 or above
import java.util.*;
class Biggest3
{
        public static void main(String args[])
        {
                int n1, n2, n3, big;
                Scanner scan= new Scanner(System.in);
                System.out.println("Please Enter No 1: ");
                n1=scan.nextInt();
                System.out.println("Please Enter No 2: ");
                n2=scan.nextInt();
                System.out.println("Please Enter No 3: ");
                n3=scan.nextInt();
                if(n1>n2)
                {
                        if(n1>n3)
                                big=n1;
                        else
                                big=n3;
                }
                else
                {
                        if(n2>n3)
                                big=n2;
                        else
                                big=n3;
                }
                System.out.println("Biggest No: " + big);
        }
}
```

```
Please Enter No 1: 5
Please Enter No 2: 23
Please Enter No 3: 14
Biggest No: 23
```

Swap 2 Numbers using 3rd Variable

Logic:

n1	n2	temp
5	23	0
5	23	5
23	23	5
23	5	5

Program

```java
//Note: Scanner class work with JDK1.5 or above
import java.util.*;
class Swap
{
        public static void main(String args[])
        {
                int n1, n2, temp;
                Scanner scan= new Scanner(System.in);
                System.out.println("Please Enter No 1: ");
                n1=scan.nextInt();
                System.out.println("Please Enter No 2: ");
                n2=scan.nextInt();
                temp=n1;
                n1=n2;
                n2=temp;
                System.out.println("First No: " + n1);
                System.out.println("Second No: " + n2);

        }
}
```

Output

```
Please Enter No 1: 5
Please Enter No 2: 23
First No: 23
Second No: 5
```

Swap 2 Numbers without using 3rd Variable

Logic:

n1	n2
10	5
15	5
15	10
5	10

Program

```
//Note: Scanner class work with JDK1.5 or above
import java.util.*;
class Swap
{
        public static void main(String args[])
        {
                int n1, n2, temp;
                Scanner scan= new Scanner(System.in);
                System.out.println("Please Enter No 1: ");
                n1=scan.nextInt();
                System.out.println("Please Enter No 2: ");
                n2=scan.nextInt();
                n1=n1+n2;
                n2=n1-n2;
                n1=n1-n2
                System.out.println("First No: " + n1);
                System.out.println("Second No: " + n2);

        }
}
```

Output

```
Please Enter No 1: 10
Please Enter No 2: 5
First No: 5
Second No: 10
```

Sum of Digits

Logic: 513 -> 5+1+3=9

n	res	n	sum
513			0
513%10	3		3
513/10		51	3
51%10	1		4
51/10		5	4
5%10	5		9
5/10		0	9

Program

```
//Note: Scanner class work with JDK1.5 or above
import java.util.*;
class SumDigits
{
        public static void main(String args[])
        {
                int n, res;
                Scanner scan= new Scanner(System.in);
```

Output

```
Please Enter No 1: 10
Please Enter No 2: 5
First No: 5
Second No: 10
```

```
        System.out.println("Please Enter No.: ");
        n1=scan.nextInt();
        while(n>0)
        {
                res=n%10;
                n=n/10;
                sum+=res;          //sum=sum+res;
        }
        System.out.println("Second No: " + n2);


    }
  }
```