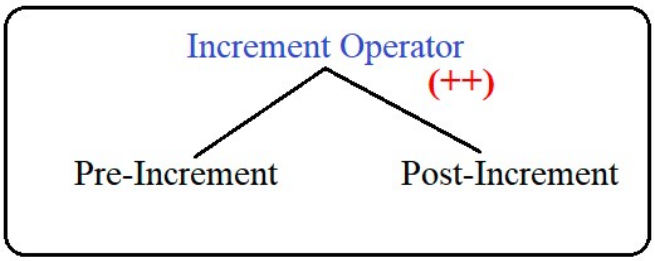
Operators:

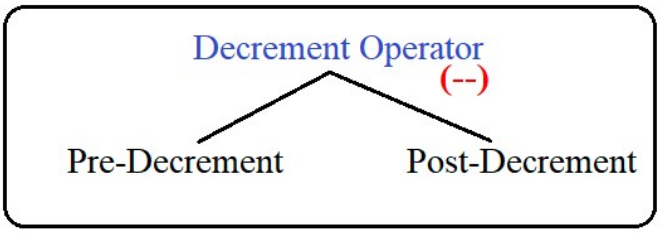
1) Increment / Decrement Operators

2) Arithematic Operators

3) Relational Operators

4) Logical Operators





Understanding Operators:

- In java there are mainly '4' types of operators. They are
  - ➢Increment & Decrement Operators
  - ➢Arithmetic Operators
  - ➢Relational Operators
  - ➢Logical Operators

Increment & Decrement operators (2)

- ++ is used as Increment operator (increases value by 1)
- -- is used as Decrement operator (decreases by 1)
- Both Increment & Decrement operators are classified in to 2 types.


```java
package com.pack1 ;

public class ClassA
{
    void meth1()
    {
        System.out.println("IMplementing Increment & Decrement Operator

        int i=10;
        System.out.println(i);
        i++;
        System.out.println(i);
        i--;
        System.out.println(i);
    }
    public static void main(String[] args)
    {
        ClassA aobj=new ClassA();
        aobj.meth1();
    }

```

```
<terminated> ClassA [Java Application] C:\Program Files\Java\jdk-17\
IMplementing Increment & Decrem

10
11
10
```

```
3  public class ClassA
4  {
5      void meth1()
6      {
7          System.out.println("Implementing Increment & Decrement Operators\n");
8
9          int i=10;
10         System.out.println(i);//10     i=10
11         i++;
12         System.out.println(i);//11     i=11
13         i--;
14         System.out.println(i+"\n");//10     i=10
15
16         System.out.println(i++);//10        i=11  POST-Increment
17         System.out.println(i);//1  1        i=11
18         System.out.println(++i);//12        i=12  PRE-Increment
19
20         System.out.println("------------");
21
22         System.out.println(i--);//12        i=11  POST-Decrement
23         System.out.println(i);//11          i=11
24         System.out.println(--i);//10        i=10  PRE-Decrement
25         System.out.println(i);//10          i=10
26     }
27     void meth2()
28     {
29         System.out.println("meth2() called");
30         int x=100;
31         System.out.println(x++);//100   x=101
32         System.out.println(x++);//101   x=102
33         System.out.println(x++);//102   x=103
34         ++x;//x=104
35         System.out.println(x--);//104   x=103
36         System.out.println(--x);//102   x=102
37         x--;//x=101
38         System.out.println(x++);//101   x=102
39         System.out.println(++x);//103   x=103
40         --x;//x=102
41         System.out.println(x--);//102   x=101
42         x++;//x=102
43         System.out.println(x--);//102   x=101
44         System.out.println(x);//101     x=101
45     }
```

```
46      public static void main(String[] args)
47      {
48          ClassA aobj=new ClassA();
49          //aobj.meth1();
50          aobj.meth2();
51      }
52  }
```

```
25          System.out.println(i);//10          i=10
26      }
27      void meth2()
28      {
29          System.out.println("meth2() called");
30          int x=100;
31          System.out.println(x++);//100   x=101
32          System.out.println(x++);//101   x=102
33          System.out.println(x++);//102   x=103
34          ++x;//x=104
35          System.out.println(x--);//104   x=103
36          System.out.println(--x);//102   x=102
37          x--;//x=101
38          System.out.println(x++);//101   x=102
39          System.out.println(++x);//103   x=103
40          --x;//x=102
41          System.out.println(x--);//102   x=101
42          x++;//x=102
43          System.out.println(x--);//102   x=101
44          System.out.println(x);//101     x=101
45      }
46      public static void main(String[] args)
47      {
```

```
meth2() called
100
101
102
104
102
101
103
102
102
101
```

```
a = 2
b = 3
c = 4
d = 1
```

```java
public class ClassA
{
    void meth1()
    {
            int a = 1;
            int b = 2;
            int c;
            int d;
            c = ++b; //c=3     b=3
            d = a++; //d=1     a=2
            c++; // c=4
            System.out.println("a = " + a);
            System.out.println("b = " + b);
            System.out.println("c = " + c);
            System.out.println("d = " + d);
    }
    public static void main(String[] args)
    {
        ClassA aobj=new ClassA();
        aobj.meth1();
    }
}
```

```java
public class ClassA
{
    void meth1()
    {
        int x=10;
        System.out.println("Before x: "+x);
        x=x++;
        System.out.println("After x: "+x+"\n");

        int y=20;
        System.out.println("Before y: "+y);
        int z=y++;
        System.out.println("After y: "+y);
        System.out.println("z value: "+z+"\n");

        int i=50;
        System.out.println("Before i: "+i);
        i=i++ + ++i;
        System.out.println("After i: "+i+"\n");

        int k=100;
        System.out.println("Before k: "+k);
        k=k++ +10;
```

```
        System.out.println("After k: "+k+"\n");

        int m=100;
        System.out.println("Before m: "+m);
        m=++m +10;
        System.out.println("After m: "+m+"\n");

        System.out.println("sum : "+(x+y+z+i+k+m));
    }
    public static void main(String[] args)
    {
        ClassA aobj=new ClassA();
        aobj.meth1();
    }
}
```

```
package com.pack1 ;

public class ClassA
{
    void meth1()
    {
        int x=10;
        System.out.println("Before x: "+x); //10  x=10
        x=x++;
        System.out.println("After x: "+x+"\n"); //10  x=10
```

```
Before x: 10
After x: 10
```

```
    void meth1()
    {
        int x=10;
        System.out.println("Before x: "+x); //10  x=10
        x=x++;
        System.out.println("After x: "+x+"\n"); //10  x=10

        int y=20;
        System.out.println("Before y: "+y);//20  y=20
        int z=y++;// z=20    y=21
        System.out.println("After y: "+y);//21
        System.out.println("z value: "+z+"\n");//20
        /*
```

```
Before x: 10
After x: 10

Before y: 20
After y: 21
z value: 20
```

```
        int x=10;
        System.out.println("Before x: "+x); //10  x=10
        x=x++;
        System.out.println("After x: "+x+"\n"); //10  x=10

        int y=20;
        System.out.println("Before y: "+y);//20  y=20
        int z=y++;// z=20    y=21
        System.out.println("After y: "+y);//21
        System.out.println("z value: "+z+"\n");//20

        int i=50;
        System.out.println("Before i: "+i);//50
        i=i++ + ++i; // i=50+52=102
        System.out.println("After i: "+i+"\n");
```

```
Before x: 10
After x: 10

Before y: 20
After y: 21
z value: 20

Before i: 50
After i: 102
```

```
        int z=y++;// z=20    y=21
        System.out.println("After y: "+y);//21
        System.out.println("z value: "+z+"\n");//20

        int i=50;
        System.out.println("Before i: "+i);//50
        i=i++ + ++i; // i=50+52=102
        System.out.println("After i: "+i+"\n");

        int k=100;
        System.out.println("Before k: "+k);//100
        k=k++ +10;// k=100+10=110
        System.out.println("After k: "+k+"\n");//110
        /*
```

```
Before x: 10
After x: 10

Before y: 20
After y: 21
z value: 20

Before i: 50
After i: 102

Before k: 100
After k: 110
```

```
        i=i++ + ++i; // i=50+52=102
        System.out.println("After i: "+i+"\n");

        int k=100;
        System.out.println("Before k: "+k);//100
        k=k++ +10;// k=100+10=110
        System.out.println("After k: "+k+"\n");//110

        int m=100;
        System.out.println("Before m: "+m);
        m=++m +10;  // m=101+10
        System.out.println("After m: "+m+"\n"); //111

        System.out.println("sum : "+(x+y+z+i+k+m));

    }
    public static void main(String[] args)
    {
        ClassA aobj=new ClassA();
        aobj.meth1();
    }
}
```

```
Before x: 10
After x: 10

Before y: 20
After y: 21
z value: 20

Before i: 50
After i: 102

Before k: 100
After k: 110

Before m: 100
After m: 111

sum : 374
```

```java
package com.pack1;

public class ClassB
{
    public static void main(String[] args)
    {
        int i=10;
        i=i++ + i++ + i++; // i=10+11+12
        System.out.println(i);

        int x=10;
        x=x++ + ++x + x++ + ++x;// x=10+12+12+14=48
        System.out.println(x);
    }
}
```

33
48

Home work

```java

public class ClassA
{
    int meth1()
    {
        int a=10;
        a++;
        System.out.println(a++);
        a++;
        System.out.println(++a);
        System.out.println(a++);
        System.out.println(a++);
        a--;
        System.out.println(--a);
        a=a++ +3;
        System.out.println("a vlaue===>"+a);

        System.out.println(a++);
        --a;
        System.out.println(--a);
        System.out.println(a--);
        a=a-- +3;
        return a++ + ++a;
    }
```

```
    }
    void meth2()
    {
        int a=10;
        int x=new ClassA().meth1()+ a++;
        System.out.println(x++ + a++);
        System.out.println(a++);
        System.out.println(a);
        System.out.println(x);
    }
    public static void main(String[] args)
    {
        System.out.println("Start");
        new ClassA().meth2();
        System.out.println("Java is awesome");
    }
}
```

```
package com.pack1;

public class ClassB
{
    void meth1()
    {
        int a = 34;
        int b = 21;
        int c = a++  +  ++b;
        int d = --a + --b + c--;
        int e = a + +b + +c + d--;
        int f = -a + b-- + -c - d++;
        int sum = a + b + c + d + e + f;
        System.out.println("sum = " + sum);
    }
    public static void main(String[] args)
    {
        new ClassB().meth1();
    }
}
```