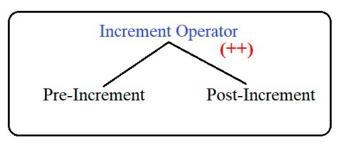
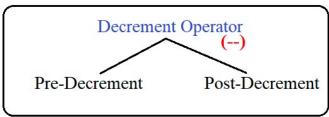
Operators:

- 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.



```
<terminated> ClassA [Java Application] C:\program Files\Java\jdk-17\
1 package com.pack1;
                                                                                       IMplementing Increment & Decrem
3 public class ClassA
4 {
 59
       void meth1()
 6
            System.out.println("IMplementing Increment & Decrement Operator
 7
 8
9
            int i=10;
            System.out.println(i);
10
11
12
            System.out.println(i);
13
            System.out.println(i);
14
15
       public static void main(String[] args)
168
17
            ClassA aobj=new ClassA();
18
            aobj.meth1();
19
20
       }
```

```
3 public class ClassA
4 {
58
      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
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
                                         i=12 PRE-Increment
         System.out.println(++i);//12
19
20
         System.out.println("----");
21
22
         System.out.println(i--);//12
                                         i=11 POST-Decrement
23
         System.out.println(i);//11
                                         i=11
            System.out.println(--i);//10
24
                                                    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
        }
```

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

{
    ClassA aobj=new ClassA();
    //aobj.meth1();
    aobj.meth2();
}
```

```
meth2() called
           System.out.println(i);//10
                                                 i=10
                                                                    100
26
       }
                                                                    101
279
       void meth2()
                                                                    102
28
                                                                    104
29
           System.out.println("meth2() called");
                                                                    102
30
           int x=100;
                                                                    101
31
           System.out.println(x++);//100
                                             x=101
                                                                    103
32
           System.out.println(x++);//101
                                             x=102
                                                                    102
33
           System.out.println(x++);//102
                                             x = 103
                                                                    102
34
           ++x;//x=104
                                                                    101
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
           --x;//x=102
40
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
```

```
2
                                                                     a = 2
3 public class ClassA
                                                                     b = 3
                                                                     c = 4
59
       void meth1()
                                                                     d = 1
 6
 7
               int a = 1;
 8
               int b = 2;
9
               int c;
               int d;
10
               c = ++b; //c=3
11
                                  b=3
12
               d = a++; //d=1
                                  a=2
               c++; // c=4
13
               System.out.println("a = " + a);
14
               System.out.println("b = " + b);
15
               System.out.println("c = " + c);
16
               System.out.println("d = " + d);
17
18
198
       public static void main(String[] args)
20
           ClassA aobj=new ClassA();
21
22
           aobj.meth1();
23
24 }
```

```
3 public class ClassA
 4 {
 50
       void meth1()
       {
 6
 7
           int x=10;
 8
           System.out.println("Before x: "+x);
 9
           x=x++;
10
           System.out.println("After x: "+x+"\n");
11
12
           int y=20;
13
           System.out.println("Before y: "+y);
14
           int z=y++;
15
           System.out.println("After y: "+y);
16
           System.out.println("z value: "+z+"\n");
17
18
           int i=50;
19
           System.out.println("Before i: "+i);
20
           i=i++ + ++i;
           System.out.println("After i: "+i+"\n");
21
22
23
           int k=100;
24
           System.out.println("Before k: "+k);
25
           k=k+++10;
```

```
26
            System.out.println("After k: "+k+"\n");
27
28
           int m=100;
29
            System.out.println("Before m: "+m);
30
            m=++m +10;
31
            System.out.println("After m: "+m+"\n");
32
33
            System.out.println("sum : "+(x+y+z+i+k+m));
34
35e
       public static void main(String[] args)
36
       {
            ClassA aobj=new ClassA();
37
            aobj.meth1();
38
39
       }
40 }
```

```
Before x: 10
 1 package com.pack1;
                                                                   After x: 10
 3 public class ClassA
 4 {
 50
       void meth1()
 6
 7
           int x=10;
 8
           System.out.println("Before x: "+x); //10 x=10
 9
           System.out.println("After x: "+x+"\n"); //10 x=10
10
4
                                                                  Before x: 10
       void meth1()
 59
                                                                  After x: 10
 6
       {
 7
           int x=10;
                                                                  Before y: 20
           System.out.println("Before x: "+x); //10 x=10
 8
                                                                  After y: 21
 9
                                                                  z value: 20
           System.out.println("After x: "+x+"\n"); //10 x=10
10
11
12
           int y=20;
13
           System.out.println("Before y: "+y);//20 y=20
14
           int z=y++;// z=20
                                y=21
15
           System.out.println("After y: "+y);//21
16
           System.out.println("z value: "+z+"\n");//20
17
```

```
Before x: 10
            int x=10;
                                                                   After x: 10
 8
           System.out.println("Before x: "+x); //10 x=10
 9
                                                                   Before y: 20
10
           System.out.println("After x: "+x+"\n"); //10 x=10
                                                                   After y: 21
11
                                                                   z value: 20
12
           int y=20;
13
           System.out.println("Before y: "+y);//20 y=20
                                                                   Before i: 50
14
           int z=y++;// z=20
                                 y = 21
                                                                   After i: 102
15
           System.out.println("After y: "+y);//21
16
           System.out.println("z value: "+z+"\n");//20
17
18
           int i=50;
19
           System.out.println("Before i: "+i);//50
20
           i=i++ + ++i; // i=50+52=102
           System.out.println("After i: "+i+"\n");
21
22
           int z=y++;// z=20
                                 y=21
14
                                                                    Before x: 10
15
           System.out.println("After y: "+y);//21
                                                                    After x: 10
16
           System.out.println("z value: "+z+"\n");//20
17
                                                                    Before y: 20
18
           int i=50;
                                                                    After y: 21
19
           System.out.println("Before i: "+i);//50
                                                                    z value: 20
20
           i=i++ + ++i; // i=50+52=102
21
           System.out.println("After i: "+i+"\n");
                                                                    Before i: 50
22
                                                                    After i: 102
23
           int k=100;
           System.out.println("Before k: "+k);//100
24
                                                                    Before k: 100
25
           k=k++ +10;// k=100+10=110
                                                                    After k: 110
           System.out.println("After k: "+k+"\n");//110
26
27
           1*
                                                                   Before x: 10
20
           i=i++ + ++i; // i=50+52=102
                                                                   After x: 10
21
           System.out.println("After i: "+i+"\n");
22
                                                                   Before y: 20
23
           int k=100;
                                                                   After y: 21
           System.out.println("Before k: "+k);//100
24
                                                                   z value: 20
25
           k=k++ +10;// k=100+10=110
26
           System.out.println("After k: "+k+"\n");//110
                                                                   Before i: 50
27
                                                                   After i: 102
28
           int m=100:
29
           System.out.println("Before m: "+m);
                                                                   Before k: 100
30
           m=++m +10; // m=101+10
                                                                   After k: 110
31
           System.out.println("After m: "+m+"\n"); //111
32
                                                                   Before m: 100
33
           System.out.println("sum : "+(x+y+z+i+k+m));
                                                                   After m: 111
34
35
                                                                  sum : 374
369
       public static void main(String[] args)
37
38
           ClassA aobj=new ClassA();
39
           aobj.meth1();
40
       }
41 }
```

```
1 package com.pack1;
                                                                     48
 2
 3 public class ClassB
 4 {
 5⊕
       public static void main(String[] args)
 6
 7
           int i=10;
 8
           i=i++ + i++ + i++; // i=10+11+12
 9
           System.out.println(i);
10
11
           int x=10;
12
           x=x++ + ++x + x++ + ++x; // x=10+12+12+14=48
13
           System.out.println(x);
14
       }
15 }
16
```

Home work

```
3 public class ClassA
4 {
5=
       int meth1()
 6
7
           int a=10;
 8
           a++;
 9
           System.out.println(a++);
10
           a++;
11
           System.out.println(++a);
12
           System.out.println(a++);
13
           System.out.println(a++);
14
           a--;
15
           System.out.println(--a);
16
           a=a++ +3;
17
           System.out.println("a vlaue===>"+a);
18
19
           System.out.println(a++);
20
           --a;
21
           System.out.println(--a);
22
           System.out.println(a--);
23
           a=a-- +3;
24
           return a++ + ++a;
25
```

```
25
       void meth2()
268
27
28
           int a=10;
                                                                        1
29
           int x=new ClassA().meth1()+ a++;
30
           System.out.println(x++ + a++);
31
           System.out.println(a++);
32
           System.out.println(a);
33
           System.out.println(x);
34
35⊜
       public static void main(String[] args)
36
37
           System.out.println("Start");
38
           new ClassA().meth2();
39
           System.out.println("Java is awesome");
40
41 }
```

```
1 package com.pack1;
 3 public class ClassB
 4 {
 58
       void meth1()
 6
 7
           int a = 34;
 8
           int b = 21;
 9
           int c = a++
10
           int d = --a + --b + c--;
11
           int e = a + +b + +c + d--;
12
           int f = -a + b-- + -c - d++;
13
           int sum = a + b + c + d + e + f;
14
           System.out.println("sum = " + sum);
15
       public static void main(String[] args)
168
17
           new ClassB().meth1();
18
19
20 }
```