**Operators**

**1) Arithmetic Operators**

+,-,\*,/,%

**2) Assignment Operators**

=,+=,-=,\*=,/=,%=

**Example:**

a \*= b; is same as a = a\* b;

**3) Unary Operators**

Unary minus(-) - Used to show if a number is negative

Increment(++) - Increment an integer variable value by 1

Decrement(- -) - Decrement an integer variable value by 1

NOT(!) - Reverses Logic. Example: if ‘boolean x = true’ then ‘!x == false’

Bitwise Complement(~) - 2 decimal is 10. So, ~2 = 01 = 1.

**4) Logical Operators**

A&&B – A AND B

A||B – A OR B

!A – NOT A (Also a Unary Operator)

**5) Relational operators**

Checks logic

== - equal to

> - greater than

< - lesser than

>= - greater than or equal to

<= - lesser than or equal to

**6) Bitwise Operators**

& - Bitwise AND

| - Bitwise OR

^ - Bitwise XOR

~ - Bitwise Complement

<< - Shift Left

>> - Shift Right

**Example of shift operators:**

**Example 1:**

int a = 33;

System.out.println(a<<2);

33 << 2

= 0000 0000 0000 0000 0000 0000 0010 0001 << 2

= 0000 0000 0000 0000 0000 0000 1000 0100 = 132

**Example2:**

int a = 42;

System.out.println(a>>2);

42 >> 2

= 0000 0000 0000 0000 0000 0000 0010 1010 >> 2

= 0000 0000 0000 0000 0000 0000 0000 1010 = 10, So, 42>>2 = 10

**7) Ternary Operator**

If-else in short

variable = Condition ? Expression1: Expression2

**Example:**

int x = (5<2) ? 3:4;

Expression reads if 5<2 is true, then x = 3 or else x = 4. So, the value of x assigned is 4, since, 2 is not greater than 5.

**8) Shift Operators**

<< - Signed Left Shift

>> - Signed Right Shift

>>> - Unsigned Right Shift

**Example:**

**Example 1:**

int a = -8;

System.out.println(a >> 2);

First of all:

8 = 0000 0000 0000 0000 0000 0000 0000 1000

-8 = 1111 1111 1111 1111 1111 1111 1111 1000

So,

-8 >> 2

= 1111 1111 1111 1111 1111 1111 1111 1000 >> 2

= 1111 1111 1111 1111 1111 1111 1111 1110 = -2

But, **Example 2:**

int a = -8;

System.out.println(a >>> 2);

-8 >>> 2

= 1111 1111 1111 1111 1111 1111 1111 1000 >>> 2

= 0011 1111 1111 1111 1111 1111 1111 1110 = 1073741822