

# OPERATORS AND ASSIGNMENTS

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# Operators and Assignments

- ◉ Arithmetic
- ◉ Increment/Decrement
- ◉ Concatenation
- ◉ Relational
- ◉ Equality
- ◉ Assignment
- ◉ Bitwise
- ◉ Short-circuit
- ◉ Conditional
- ◉ new
- ◉ [] operator

# Arithmetic Operators

## ⦿ Operator symbols are as below

- + : Addition
- - : Subtraction
- \* : Multiplication
- / : Divide
- % : Modulo
  - **Ex:**
  - **$10/3 = 3$**
  - **$10\%3 = 1$  --- it gives remainder**

# Increment/Decrement Operators

- ⦿ It is going to increase or decrease the variable by 1.
- ⦿ It is only applicable on variables.
- ⦿ It is of two types:
  - increment (++)
    - Ex : `int a = 1;`
    - `a++` means `a = a + 1`
  - decrement (--)
    - Ex : `int b = 10;`
    - `b--` means `b = b - 1`

# Concatenation Operator

- ⦿ The only overloaded method in Java is +.
- ⦿ Sometimes acts as arithmetic addition and sometimes acts as String concatenation.
- ⦿ Given `int a=10, b=20, c=30; String d = "Ram"`.
  - `a+b+c+d = 60Ram`
  - `a+b+d+c = 30Ram30`
  - `d+a+b+c = Ram102030`
  - `a+d+b+c = 10Ram2030`

# Relational Operators

- ⦿ These are
  - $>$  : greater than
  - $<$  : less than
  - $>=$  : greater than or equals to
  - $<=$  : less than or equals to
- ⦿ They can be applied for every primitive datatype except boolean
- ⦿ They can't be applied on object.

# Equality And Assignment Operators

- Equality are

- `==` : equals to
- `!=` : not equals to

- We can apply for all primitive

- We can apply on objects references :

- For two object references `r1` and `r2`, `r1 == r2` returns true if they pointing to same object.

- Assignment is `=`

- It is the only operator which is applicable from right to left.
  - Ex: `int x = 10;`

# Bitwise and Short circuit Operators

## ● Bitwise are

- **&** : AND – if any operand is false, result false.
- **|** : OR – if any operand is true, result true.
- **!** : Negation – reverses the truth value for boolean.

A	B	&	
false	false	<input type="checkbox"/>	<input type="checkbox"/>
false	true	<input type="checkbox"/>	<input type="checkbox"/>
true	false	<input type="checkbox"/>	<input type="checkbox"/>
true	true	<input type="checkbox"/>	<input type="checkbox"/>

A	!
false	<input type="checkbox"/>
true	<input type="checkbox"/>

## ● Short circuit are

- **&&** : Double AND – 2<sup>nd</sup> operand is evaluated if 1<sup>st</sup> is true.
- **||** : Double OR – 2<sup>nd</sup> operand is evaluated if 1<sup>st</sup> is false.



# Conditional, new and [] Operators

- Conditional is represented by (?:).
- The only ternary operator in Java.
  - Example:
  - `int a=10, b=20;`
  - `int x = (a>b)?40:50;`
- We use new operator for creation of objects.
  - `String s = new String("Saturday");`
- We use [] operator for declaring and creating arrays.
  - `int arr[] = new arr[5];`