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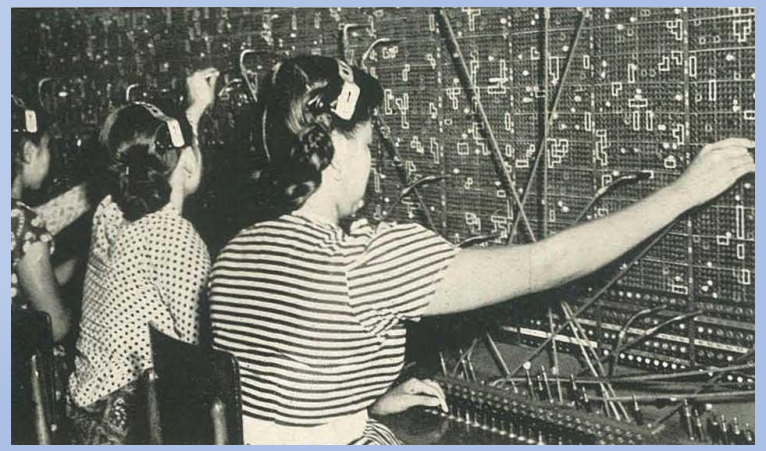
Module 2: Binary Operators



Binary Operators [+ , - , * , /]

- The operators which require only two operands to work upon are called unary operators.
- Types of Binary Operators:-

1. Arithmetic Operators
2. Relational Operators (Comparison)
3. Logical Operators
4. Assignment / Short hand / Compound Assignment Operators
5. Shift Operators
6. Bitwise Operators

Operator	Category	Precedence
Unary Operator	postfix	expression++ expression--
	prefix	++expression --expression +expression -expression ~!
Arithmetic Operator	multiplication	* / %
	addition	+ -
Shift Operator	shift	<< >> >>>
Relational Operator	comparison	< > <= >= instanceof
	equality	== !=
Bitwise Operator	bitwise AND	&
	bitwise exclusive OR	^
	bitwise inclusive OR	|
Logical Operator	logical AND	&&
	logical OR	||
Ternary Operator	ternary	? :
Assignment Operator	assignment	= += -= *= /= %= &= ^= |= <<= >>= >>>=

Arithmetic Operators

- The operators which perform mathematical operations are called arithmetic operators.

Arithmetic Operators

Operators	Meaning	Example	Result
+	Addition	4+2	6
-	Subtraction	4-2	2
*	Multiplication	4*2	8
/	Division	4/2	2
%	Modulus operator to get remainder in integer division	5%2	1

Relational Operators

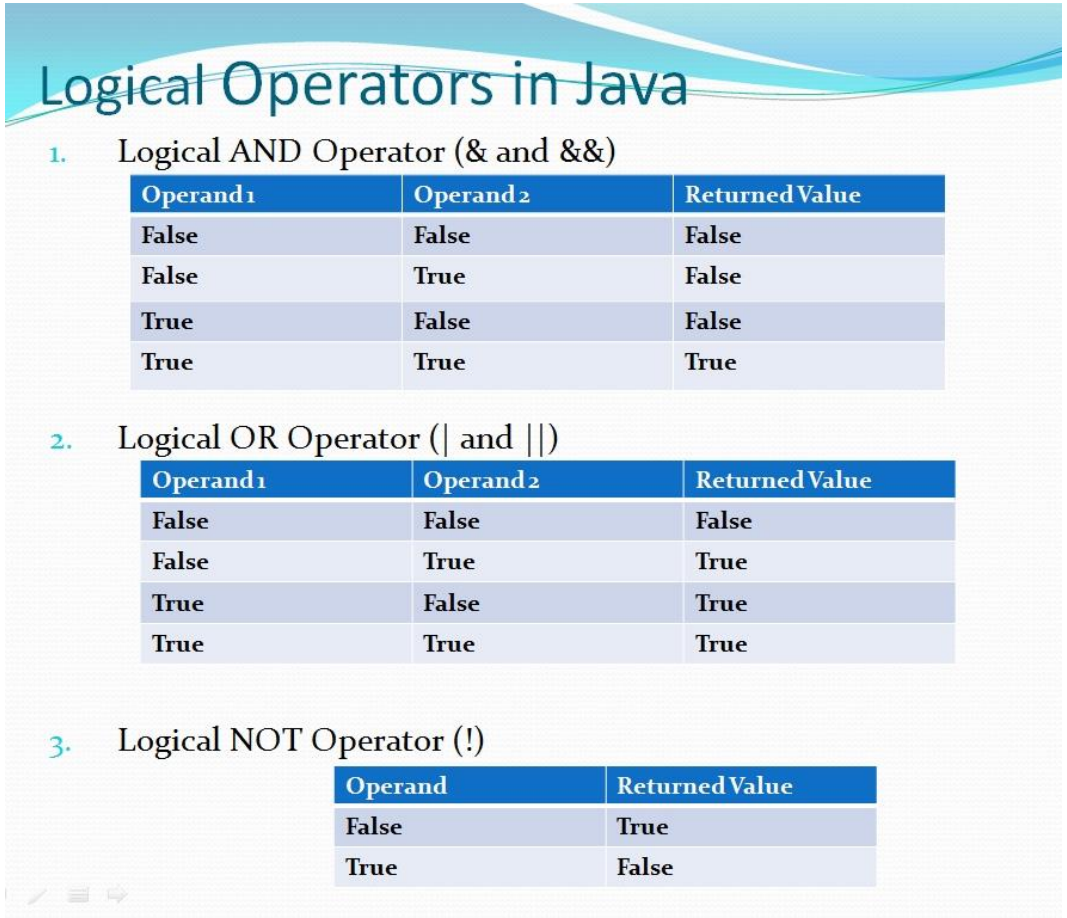
- **Relational Operators:** The operators which are used to compare two operands are called relational operators or comparison operators.

- They are always binary operators.
- They always return Boolean values.
- They are generally used with if-else.
- *Types:* >, <, >=, <=, ==, ! =
- *Example:* x=5, y=10
- Sopln(x>y) → false
- Sopln(x!=y) → true

Relational Operators

Operators	Meaning	Example	Result
<	Less than	5<2	False
>	Greater than	5>2	True
<=	Less than or equal to	5<=2	False
>=	Greater than or equal to	5>=2	True
==	Equal to	5==2	False
!=	Not equal to	5!=2	True

Logical Operators



Logical Operators in Java

1. Logical AND Operator (& and &&)

Operand1	Operand2	Returned Value
False	False	False
False	True	False
True	False	False
True	True	True

2. Logical OR Operator (| and ||)

Operand1	Operand2	Returned Value
False	False	False
False	True	True
True	False	True
True	True	True

3. Logical NOT Operator (!)

Operand	Returned Value
False	True
True	False

Logical Operators: The operators which are used to combine more than one condition are called logical operators.

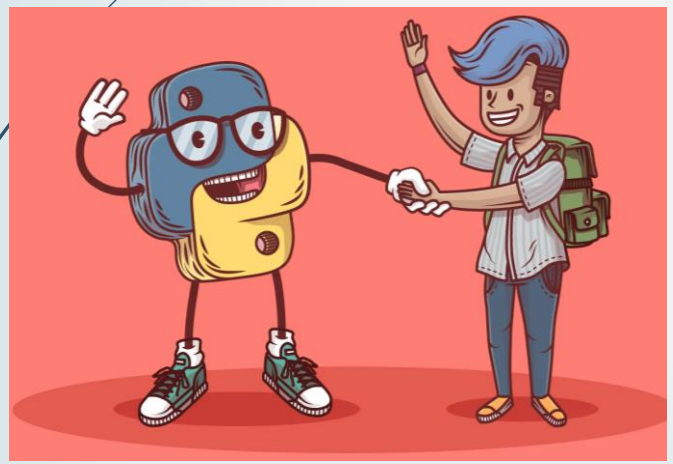
- *Types:* i) && (logical AND)
  ii) || (logical OR)
  iii) ! (logical NOT)
- (!) Not operator prints the opposite output.
- E.g. If the condition evaluates to true, the output will be false.

Assignment / Short Hand / Compound Operators

- The operators which are used to assign the value to the operands are called assignment operators.
- *Types*: $=, +=, -=, *=, /=, \% =$
- $a \mathrel{+}= 5$ → $a = a + 5$
- $b \mathrel{-}= 5$ → $b = b - 5$
- $c \mathrel{*}= 2$ → $c = c * 2$
- $c \mathrel{/}= 2$ → $c = c/2$
- $c \mathrel{\%} = 2$ → $c = c \% 2$

Operator	Meaning
=	a=b
a+=b	a=a+b
a-=b	a=a-b
a*=b	a=a*b
a/=b	a=a/b

Happy Learning!!



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