Java Operators Full Notes

1. Arithmetic Operators

Used for basic mathematical operations.

+ Addition   -> a + b

- Subtraction   -> a - b

* Multiplication   -> a * b

/ Division   -> a / b

% Modulus   -> a % b

Example:

int a = 10, b = 5;

System.out.println(a + b); // Output: 15

2. Relational Operators

Used to compare two values.

== Equal to   -> a == b

!= Not equal to   -> a != b

>   Greater than   -> a > b

<   Less than   -> a < b

>= Greater or equal -> a >= b

<= Less or equal   -> a <= b

3. Boolean Logical Operators

Used to combine multiple conditions.

&& Logical AND   -> (a > 5 && b < 10)

|| Logical OR   -> (a > 5 || b < 10)

!   Logical NOT   -> !(a > b)

4. Assignment Operators

Used to assign values to variables.

= Simple assignment -> a = b

+= Add and assign -> a += b

-= Subtract and assign -> a -= b

*= Multiply and assign -> a *= b

/= Divide and assign -> a /= b

%= Modulus and assign -> a %= b

5. Ternary Operator

Shorthand for if-else.

Syntax: condition ? value_if_true : value_if_false

Example:

int result = (a > b) ? a : b;

6. Bitwise Operators

Used for bit-level operations.

& Bitwise AND -> 5 & 3 = 1 (0101 & 0011 = 0001)

| Bitwise OR -> 5 | 3 = 7 (0101 | 0011 = 0111)

^ Bitwise XOR -> 5 ^ 3 = 6 (0101 ^ 0011 = 0110)

~ Bitwise Complement -> ~5 = -6 (inverts bits)

<< Left shift -> 5 << 1 = 10

>> Right shift -> 5 >> 1 = 2

7. Summary Table

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Operator Type     : Operators

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Arithmetic        : +, -, *, /, %

Relational        : ==, !=, >, <, >=, <=

Logical           : &&, ||, !

Assignment        : =, +=, -=, *=, /=, %=

Ternary           : ? :

Bitwise           : &, |, ^, ~, <<, >>




Arithmetic        : +, -, *, /, %

Relational        : ==, !=, >, <, >=, <=
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