

Java operators

Java operators allow literals and variables to perform mathematical calculations, comparisons, and logical evaluations. They are grouped into several categories based on their functionality.

The main types of operators in Java are:

- **Arithmetic Operators:** Used for basic mathematical operations.
 - + (Addition)
 - - (Subtraction)
 - * (Multiplication)
 - / (Division)
 - % (Modulus, which returns the remainder of a division)
- **Assignment Operators:** Used to assign values to variables.
 - = (Simple assignment)
 - +=, -=, *=, /=, %=, &=, ^=, |=, <<=, >>=, >>>= (Compound assignment operators, e.g., a += 5 is equivalent to a = a + 5)
- **Unary Operators:** Operations that require only one operand.
 - + (Unary plus, indicates positive value)
 - - (Unary minus, negates an expression)
 - ++ (Increment, increases value by 1)
 - -- (Decrement, decreases value by 1)
 - ! (Logical complement, inverts the boolean value)
- **Relational (Comparison) Operators:** Used to compare two values and return a boolean result (true or false).
 - == (Equal to)
 - != (Not equal to)
 - > (Greater than)
 - < (Less than)
 - >= (Greater than or equal to)
 - <= (Less than or equal to)
- **Logical Operators:** Used to combine boolean expressions.
 - && (Logical AND, true if both conditions are true)
 - || (Logical OR, true if at least one condition is true)
 - ! (Logical NOT, reverses the boolean result)

Bitwise and Bit Shift Operators: Perform operations directly on the individual bits of integer data types.

- & (Bitwise AND)
- | (Bitwise inclusive OR)
- ^ (Bitwise exclusive OR, XOR)
- ~ (Bitwise complement)
- << (Signed left shift)
- >> (Signed right shift)
- >>> (Unsigned right shift)

- **Ternary Operator:** A conditional operator that acts as a shorthand for an if-else statement.
 - ? : (Syntax: condition ? expression1 : expression2)

- **Other Special Operators:**

- . (Dot operator, used to access members of a class)
- new (Used to create new instances of objects)
- [] (Array subscript operator, used to access array elements)
- instanceof (Used to test whether an object is an instance of a specific class or interface)
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The order in which operations are performed in an expression is determined by [operator precedence and associativity](#).