

# C++ Programming

## Assignment Operator

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# Assignment operator =

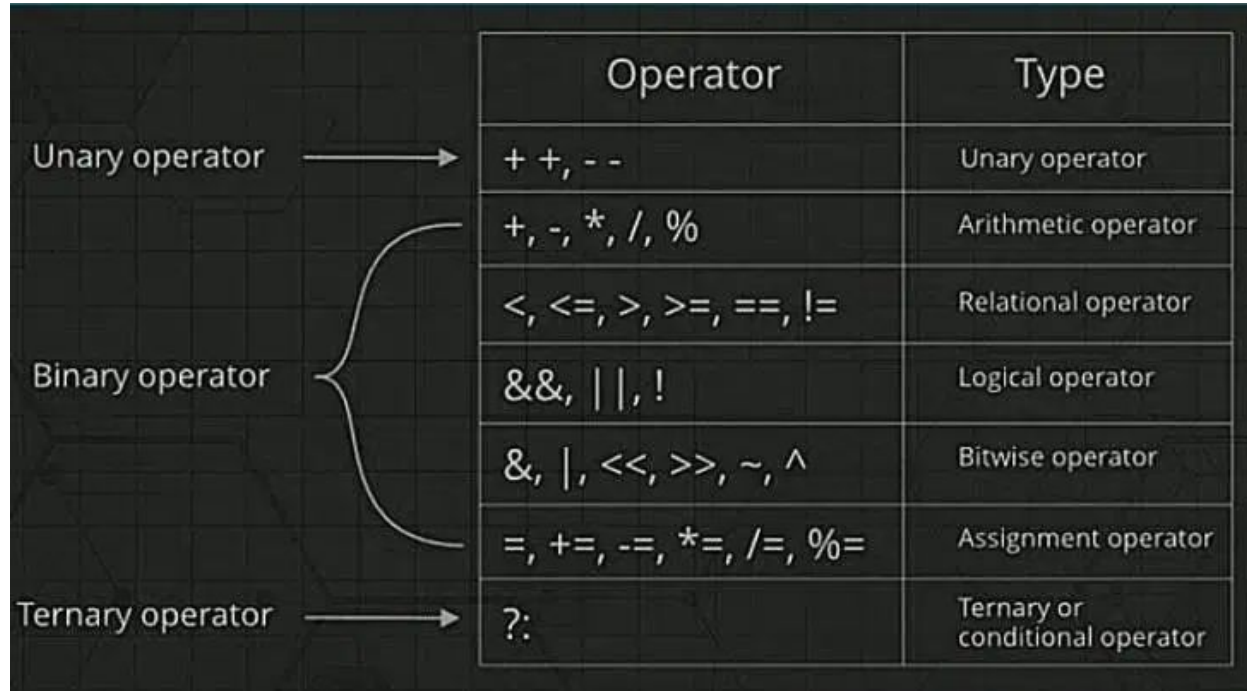
- We met this operator a lot.
- `Int x = 2 * y + 1;`
  - Lhs = RhS (left hand side = right hand side)
  - RhS is an expression (12, 10+2, 2 \* y + 1, etc)
  - It is evaluated, then assigned to lhs
  - RHS here is a number, so assignable as int. If it is e.g. string, CE (compiler error)
- We can assign several variables
  - `x = 2*y, y = 10+2, z = x + y`
  - , here is the [comma](#) operator
    - evaluates from **left to right**, return the **last after-comma** result
    - `cout<<(10, x=1, y=3+1, x = x+2*y+1, 40);`  $\Rightarrow$  40

# Assignment operators: += -= \*= /=

```
4 int main() {  
5     int num = 5;  
6  
7     num = num + 1;  
8     cout<<"num1 "<<num<<"\n";    // 6  
9  
10    num += 1;    // same as num = num+1  
11    cout<<"num1 "<<num<<"\n";    // 7  
12  
13    num *= 2;    // same as num = num * 2  
14    cout<<"num1 "<<num<<"\n";    // 14  
15  
16    num = num - (-2);  
17    cout<<"num1 "<<num<<"\n";    // 16  
18  
19    num -= 10;    // num = num - 10  
20    num /= 2;    // num = num / 2  
21  
22    return 0;  
}
```

- Num = num + 1
  - Compute expression: num+1
  - Set value in num
  - Same as Num += num
- For convenient use
- Aka Compound assignment
  - combine = with a binary operator

# Operators: Big Picture



The diagram illustrates the classification of operators into unary, binary, and ternary categories. On the left, three labels are listed: 'Unary operator', 'Binary operator', and 'Ternary operator'. 'Unary operator' has a single arrow pointing to the first row of the table. 'Binary operator' has a large curly bracket on its right side, with five arrows pointing to the next five rows of the table. 'Ternary operator' has a single arrow pointing to the last row of the table. The table itself has two columns: 'Operator' and 'Type'.

	Operator	Type
Unary operator	<code>++</code> , <code>--</code>	Unary operator
Binary operator	<code>+</code> , <code>-</code> , <code>*</code> , <code>/</code> , <code>%</code>	Arithmetic operator
	<code>&lt;</code> , <code>&lt;=</code> , <code>&gt;</code> , <code>&gt;=</code> , <code>==</code> , <code>!=</code>	Relational operator
	<code>&amp;&amp;</code> , <code>  </code> , <code>!</code>	Logical operator
	<code>&amp;</code> , <code> </code> , <code>&lt;&lt;</code> , <code>&gt;&gt;</code> , <code>~</code> , <code>^</code>	Bitwise operator
	<code>=</code> , <code>+=</code> , <code>-=</code> , <code>*=</code> , <code>/=</code> , <code>%=</code>	Assignment operator
Ternary operator	<code>?:</code>	Ternary or conditional operator

*“Acquire knowledge and impart it to the people.”*

*“Seek knowledge from the Cradle to the Grave.”*