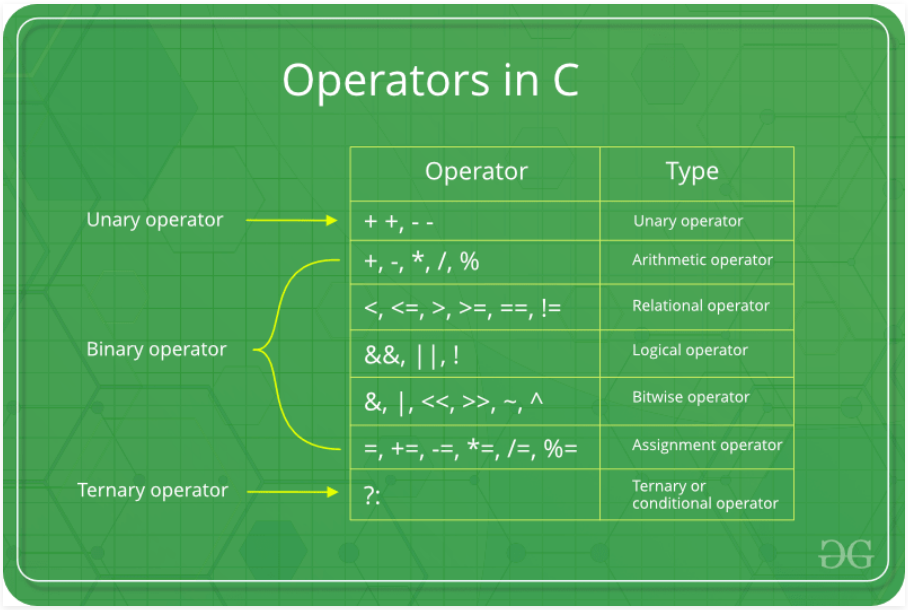
Operators in C | Set 1 (Arithmetic Operators)

Difficulty Level : Easy • Last Updated : 28 Jun, 2021



Operators are the foundation of any programming language. Thus the functionality of C language is incomplete without the use of operators. Operators allow us to perform different kinds of operations on operands. In C, operators in Can be categorized in following categories:

- **Arithmetic Operator**s (+, -, *, /, %, post-increment, pre-increment, post-decrement, pre-decrement)
- **Relational Operators** (==, !=, >, <, >= & <=) Logical Operators (&&, || and !)
- **Bitwise Operators** (&, |, ^, ~, >> and <<)
- **Assignment Operator**s (=, +=, -=, *=, etc)
- **Other Operators** (conditional, comma, sizeof, address, redirection)

- **Modulus:** The '%' operator returns the remainder when first operand is divided by the second. For example, **x%y**.

C

```c
// C program to demonstrate
// working of binary arithmetic
// operators
#include <stdio.h>

int main()
{
    int a = 10, b = 4, res;

    // printing a and b
    printf("a is %d and b is %d\n", a, b);

    res = a + b; // addition
    printf("a+b is %d\n", res);

    res = a - b; // subtraction
    printf("a-b is %d\n", res);

    res = a * b; // multiplication
    printf("a*b is %d\n", res);

    res = a / b; // division
    printf("a/b is %d\n", res);

    res = a % b; // modulus
    printf("a%%b is %d\n", res);

    return 0;
}
```

C++

```cpp
#include <iostream>
```

```
    // subtraction
    res = a - b;
    cout << "a-b is: "<< res << "\n";

    // multiplication
```



```
    // modulus
    res = a % b;
    cout << "a%b is: "<< res << "\n";

    return 0;
}
```

Output:

```
a is 10 and b is: 4
a+b is: 14
a-b is: 6
a*b is: 40
a/b is: 2
a%b is: 2
```

The ones falling into the category of unary arithmetic operators are:

- **Increment:** The **'++'** operator is used to increment the value of an integer. When placed before the variable name (also called pre-increment operator), its value is incremented instantly. For example, **++x**.
  And when it is placed after the variable name (also called post-increment operator), its value is preserved temporarily until the execution of this statement

C

```c
// C program to demonstrate working
// of Unary arithmetic
// operators
#include <stdio.h>

int main()
{
    int a = 10, b = 4, res;

    // post-increment example:
    // res is assigned 10 only, a is not updated yet
    res = a++;
    printf("a is %d and res is %d\n", a,
           res); // a becomes 11 now

    // post-decrement example:
    // res is assigned 11 only, a is not updated yet
    res = a--;
    printf("a is %d and res is %d\n", a,
           res); // a becomes 10 now

    // pre-increment example:
    // res is assigned 11 now since
    // a is updated here itself
    res = ++a;

    // a and res have same values = 11
    printf("a is %d and res is %d\n", a, res);

    // pre-decrement example:
    // res is assigned 10 only since a is updated here
    // itself
    res = --a;

    // a and res have same values = 10
    printf("a is %d and res is %d\n", a, res);

    return 0;
```

```
int main()
{
    int a = 10, b = 4, res;

    // post-increment example:
    // res is assigned 10 only,
    // a is not updated yet
    res = a++;
    // a becomes 11 now
    cout << "a is " << a
         << " and res is "
         << res << "\n";

    // post-decrement example:
    // res is assigned 11 only,
    // a is not updated yet
    res = a--;
    // a becomes 10 now
    cout << "a is " << a
         << " and res is "
         << res << "\n";

    // pre-increment example:
    // res is assigned 11 now
    // since a is updated here itself
    res = ++a;

    // a and res have same values = 11
    cout << "a is " << a
         << " and res is "
         << res << "\n";

    // pre-decrement example:
    // res is assigned 10 only
    // since a is updated here
    // itself
    res = --a;
    // a and res have same values = 10
    cout << "a is " << a
         << " and res is "
         << res << "\n";
```

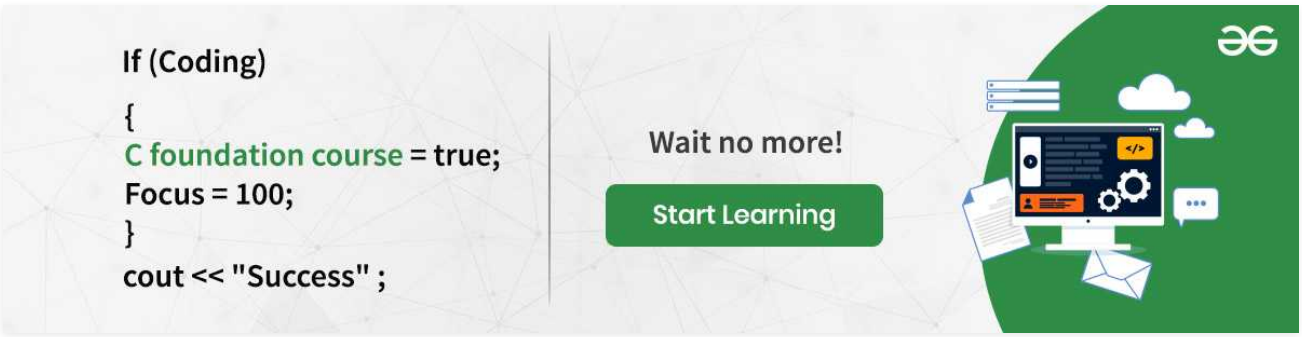
```
a is 10 and res is 10
```

We will soon be discussing other categories of operators in different posts.

To know about **Operator Precedence and Associativity**, refer this link:

Quiz on Operators in C

This article is contributed by Ayush Jaggi. Please write comments if you find anything incorrect, or you want to share more information about the topic discussed above



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