Unary Operators

WE'LL COVER THE FOLLOWING

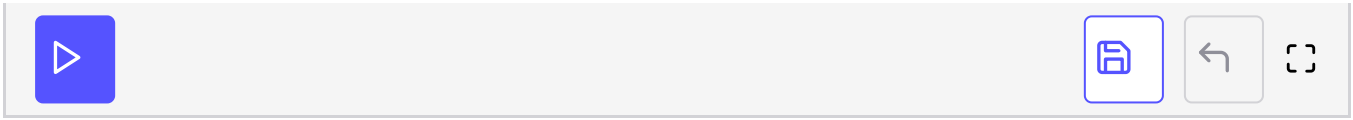
In the previous lesson we discussed the basic operators used in C#. One of the types listed was the **unary** operators. Let's learn about them now.

Unary Operators Example

Take a look at the example below which uses the **unary** operators.

```
using System;

class UnaryOps
{
    public static void Main()
    {
        int unOps = 5;
        int preIncrement;
        int preDecrement;
        int postIncrement;
        int postDecrement;
        int positive;
        int negative;
        bool temp;

        preIncrement = ++unOps;
        Console.WriteLine("pre-Increment: {0}", preIncrement);

        preDecrement = --unOps;
        Console.WriteLine("pre-Decrement: {0}", preDecrement);

        postDecrement = unOps--;
        Console.WriteLine("Post-Decrement: {0}", postDecrement);

        postIncrement = unOps++;
        Console.WriteLine("Post-Increment: {0}", postIncrement);

        Console.WriteLine("Final Value of unOps is: {0}", unOps);
```

```
        positive = +postIncrement;
        Console.WriteLine("Positive: {0}", positive);


        negative = -postIncrement;
        Console.WriteLine("Negative: {0}", negative);

        temp = false;
        temp = !temp;
        Console.WriteLine("Logical Not: {0}", temp);
    }
}
```



Code Explanation

When evaluating expressions:

- `postIncrement` (`x++`) and `postDecrement` (`x--`) operators return their **current** value and then apply the *operators*.
- `preIncrement` (`++x`) and `preDecrement` (`--x`) operators apply the *operators* to the variable **prior** to returning the *final* value.

In the code above:

- In line **7** the `unOps` variable is *initialized* to **5**.
- When the `preIncrement` (`++x`) operator is used in line **16**, `unOps` is *incremented* to **6** and the value **6** is assigned to the `preIncrement` variable.
- The `preDecrement` (`--x`) operator in line **19** turns `unOps` back to **5** and then assigns the value to the `preDecrement` variable.
- When the `postDecrement` (`x--`) operator in line **22** is used, the value of `unOps`, **5**, is placed into the `postDecrement` variable and then `unOps` is decremented to **4**.
- Next, in line **25** the `postIncrement` (`x++`) operator moves the **current value** of `unOps`, **4**, to the `postIncrement` variable and then increments `unOps` to **5**.
- In line **30** the variable `positive` is set equal to `postIncrement` variable which is equal to **4**.
    - The **plus** operator (`+`) in front doesn't affect the value of a number,

assigning `positive` with the same value as `postIncrement`, **4**.

- In line **33** the variable `negative` is also set equal to `postIncrement` variable which is equal to **4**.
- Applying the **minus** (`-`) operator to a *positive* number results in a *negative* number.
    - Hence, in line **33** `negative` will equal **-4**, instead of **4**.

> **Note:** The minus operator (`-`), which is not the same as the `preDecrement` operator (`--`), doesn't change the value of `postIncrement` – it just applies a sign **negation**.

The *logical* **negation** operator (`!`) is a logical operator that works on **bool** values, changing `true` to `false` or `false` to `true`.

In the case of the `temp` variable above

- In line **36** the value is *initialized* to `false`
- The next line **37** applies the *logical* **negation** operator, (`!`), which **returns** `true` and reassigns the new value, `true`, to `temp`. Essentially, it is toggling the value of the bool variable, `temp`.

Now that you've understood **unary** *operators* lets take a look at the example for **binary** *operators* in the next lesson.