Day 1: Arithmetic Operators



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Arithmetic Operators

Operator Types
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Arithmetic Operators

A unary operator requires a single operand, either before or after the operator, following

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OK

operand operator operator operator

For example, in the expression a++, ++ is a unary operator.

Binary

A *binary* operator requires two operands, one before the operator and one after the operator, following this format:

operand1 operator operand2

For example, in the expression a + b = c, + is a binary operator.

Ternary

There is one *ternary* operator, the conditional operator. For example, in the expression a ? b : c, the use of ? and : in this manner constitutes the ternary operator. We'll discuss this operator more in the *Conditional Statements* tutorial.

Arithmetic Operators

An arithmetic operator takes numeric values (either literals or variables) as its operands and returns a single numeric value. The standard arithmetic operators are addition (+), subtraction (-), multiplication (*), and division (/). Other arithmetic operators are



1. Addition (+)

We use this operator in the form operand1 + operand_2. For example:

```
2 + 3 // evaluates to 5
4 + 10 // evaluates to 14
```

2. Subtraction (–)

We use this operator in the form operand 1 - operand 2. For example:

```
3 - 2 // evaluates to 1
4 - 10 // evaluates to -6
```

3. Multiplication (*)

We use this operator in the form operand1 * operand2. For example:

```
3 * 2 // evaluates to 6
4 * 10 // evaluates to 40
```

4. Division (/)

We use this operator in the form operand1 / operand2. For example:

```
6 / 3 // evaluates to 2
```

5. Remainder (%)

We use this operator in the form operand1 % operand2. For example:

```
6 % 3 // evaluates to 0
3 % 2 // evaluates to 1
4 % 10 // evaluates to 4
```

6. Exponentiation (**)

We use this operator in the form operand1 ** operand2. This operator is a part of ECMAScript2016 feature set. For example:

```
2 ** 3 // evaluates to 8
3 ** 2 // evaluates to 9
5 ** 4 // evaluates to 625
```

7. Unary Negation (-)

We use this operator in the form -operand. For example:

```
-4 // evaluates to -4
-(-5) // evaluates to 5 (not --5)
```

8. Unary Plus (+)

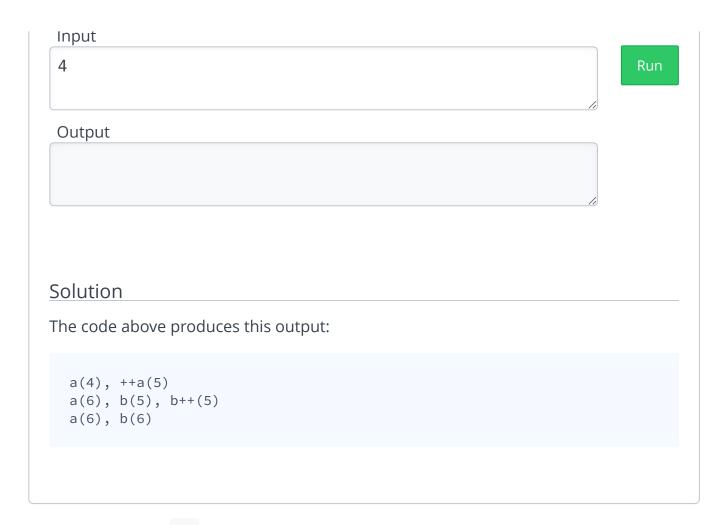
We use this operator in the form +operand. For example:

```
+4 // evaluates to 4
+(-4) // evaluates to -4
```

9. Increment (++)

We use this operator in the prefix and postfix forms, forms ++ operand and operand++. The prefix form, ++ operand, increments the operand by $\mathbf{1}$ and then returns the value of the operand. The postfix form, operand++, returns the value of the operand and *then* increments the operand's value by $\mathbf{1}$. For example:

```
EXAMPLE
process.stdin.on('data', function (data) {
   main(+(data));
});
/**** Ignore above this line. ****/
function main(input) {
   var a = input;
   // Print the value of 'a' and the preincremented value of 'a':
   console.log("a(" + a + "), ++a(" + ++a + ")");
   // Assign the current value of 'a' to 'b' and then postincrement
 'a':
    var b = a++:
   // Print the values of 'a' once and 'b' twice, then postincrement
 the 2nd 'b':
   console.log("a(" + a + "), b(" + b + "), b++(" + b++ + ")");
   // Print the final values of 'a' and 'b':
    console.log("a(" + a + "), b(" + b + ")");
```



10. Decrement (--)

We use this operator in the prefix and postfix forms, forms -- operand and operand--. The prefix form, -- operand, decrements the operand by $\mathbf{1}$ and then returns the value of the operand. The postfix form, operand--, returns the value of the operand and *then* decrements the operand's value by $\mathbf{1}$. For example:

```
EXAMPLE
 process.stdin.on('data', function (data) {
     main(+(data));
 });
 /**** Ignore above this line. ****/
 function main(input) {
     var a = input;
     // Print the value of 'a' and the predecremented value of 'a':
     console.log("a(" + a + "), --a(" + --a + ")");
     // Assign the current value of 'a' to 'b' and then postdecrement
  'a':
     var b = a--;
     // Print the values of 'a' once and 'b' twice, then postdecrement
  the 2nd 'b':
     console.log("a(" + a + "), b(" + b + "), b--(" + b-- + ")");
     // Print the final values of 'a' and 'b':
     console.log("a(" + a + "), b(" + b + ")");
Input
4
Output
```

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The code above produces this output:

```
a(4), --a(3)
a(2), b(3), b--(3)
a(2), b(2)
```

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