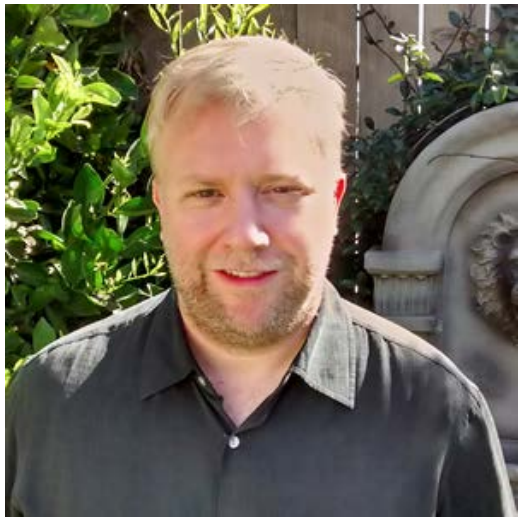
Operators



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Module Overview

+ - * / %

Unary

Bitwise

Boolean

Equality

Relational

Addition

```
var total = 5 + 3;
console.log(total);
```

Question

What shows in the console?

Answer

8

```
var total = 5.1 + 3.3;
console.log(total);
```

Question

What shows in the console?

Answer

```
8.399999999999999
```

```
var total = 5.1 + 3.3;
console.log(total.toFixed(2));
```

Question

What shows in the console?

Answer

8.40

```
var id = "PRD" + "X99";
console.log(id);
```

Question

What shows in the console?

Answer

PRDX99

```
var id = "PRD" + 2000;
console.log(id);
```

Question

What shows in the console?

Answer

PRD2000

```
var id = 2000 + "PRD";
console.log(id);
```

Question

What shows in the console?

Answer

2000PRD

```
var id = "2000" + "500";
console.log(id);
```

Question

What shows in the console?

Answer

2000500

```
var id = 2000 + "500";
console.log(id);
```

Question

What shows in the console?

Answer

2000500

```
var id = 2000 + undefined;
console.log(id);
```

Question

What shows in the console?

Answer

NaN

```
var id = "PRD" + undefined;
console.log(id);
```

Question

What shows in the console?

Answer

`PRDundefined`

```
var id = 2000 + null;
console.log(id);
```

Question

What shows in the console?

Answer

2000

```
var id = "PRD" + null;
console.log(id);
```

Question

What shows in the console?

Answer

`PRDnull`

```
var id = 2000 + NaN;
console.log(id);
```

Question

What shows in the console?

Answer

NaN

```
var id = "PRD" + NaN;
console.log(id);
```

Question

What shows in the console?

Answer

PRDNaN

Subtraction

```
var total = 30 - 20;
console.log(total);
```

Question

What shows in the console?

Answer

10

```
var total = 3.8 - 2.1;
console.log(total);
```

Question

What shows in the console?

Answer

```
1.6999999999999997
```

```
var total = 3.8 - 2.1;
console.log(total.toFixed(3));
```

Question

What shows in the console?

Answer

1.700

```
var total = "300" - "200";
console.log(total);
```

Question

What shows in the console?

Answer

100

```
var total = "PRD300" - "ITEM200";
console.log(total);
```

Question

What shows in the console?

Answer

NaN

```
var total = 300 - undefined;
console.log(total);
```

Question

What shows in the console?

Answer

NaN

```
var total = 300 - null;
console.log(total);
```

Question

What shows in the console?

Answer

300

```
var obj = {
    valueOf: function () { return 100; }
};
var total = 300 - obj;
console.log(total);
```

Question

What shows in the console?

Answer

200

```
var total = 300 - NaN;
console.log(total);
```

Question

What shows in the console?

Answer

NaN

```
var total = 300 - "";
console.log(total);
```

Question

What shows in the console?

Answer

300

Multiplication, Division and Modulus

```
var total = 9 * 3;
console.log(total);
```

Question

What shows in the console?

Answer

27

```
var total = 1.1 * 1.1;
console.log(total);
```

Question

What shows in the console?

Answer

1.2100000000000002

```
var total = 1.1 * 1.1;
console.log(total);
if (total != 1.21)
    console.log('Big Problem!');
```

Question

What shows in the console?

Answer

```
1.2100000000000002
Big Problem!
```

```
var total = 1.1 * 1.1;
console.log(total);
if (total.toFixed(2) == 1.21)
    console.log('Fixed!');
```

Question

What shows in the console?

Answer

```
1.2100000000000002
Fixed!
```

```
var total = 20 * NaN;
console.log(total);
```

Question

What shows in the console?

Answer

NaN

```
var total = 20 * undefined;
console.log(total);
```

Question

What shows in the console?

Answer

NaN

```
var total = 20 * null;
console.log(total);
```

Question

What shows in the console?

Answer

0

```
var obj = {
    valueOf: function () { return 100; }
};
var total = 4 * obj;
console.log(total);
```

Question

What shows in the console?

Answer

400

```
var total = 4 * Infinity;
console.log(total);
```

Question

What shows in the console?

Answer

`Infinity`

```
var total = -4 * Infinity;
console.log(total);
```

Question

What shows in the console?

Answer

```
-Infinity
```

```
var total = 4 * "XYZ";
console.log(total);
```

Question

What shows in the console?

Answer

NaN

```
var total = 9 / 0;
console.log(total);
```

Question

What shows in the console?

Answer

`Infinity`

```
var total = -9 / 0;
console.log(total);
```

Question

What shows in the console?

Answer

```
-Infinity
```

```
var total = 9 / "3";
console.log(total);
```

Question

What shows in the console?

Answer

3

```
var total = 9 % 4;
console.log(total);
```

Question

What shows in the console?

Answer

1

```
var total = 9 % "    4    ";
console.log(total);
```

Question

What shows in the console?

Answer

1

Unary Operators

++ -- +value -value

```
var level = 5;
++level;
console.log(level);
```

Question

What shows in the console?

Answer

6

```
var level = 5;
level++;
console.log(level);
```

Question

What shows in the console?

Answer

6

```
var level = 5;
var nextLevel = ++level;
console.log(nextLevel);
```

Question

What shows in the console?

Answer

6

```
var level = 5;
var nextLevel = level++;
console.log(nextLevel);
```

Question

What shows in the console?

Answer

5

```
var level = 5;
var nextLevel = --level;
console.log(nextLevel);
```

Question

What shows in the console?

Answer

4

```
var level = 5;
var base = 10;
var nextLevel = level-- * base;
console.log(nextLevel);
```

Question

What shows in the console?

Answer

50

```
var level = 5;
var base = 10;
var nextLevel = --level * base;
console.log(nextLevel);
```

Question

What shows in the console?

Answer

40

```
var level;
console.log(++level);
```

Question

What shows in the console?

Answer

NaN

```
var level = null;
console.log(++level);
```

Question

What shows in the console?

Answer

1

```
var value = 9;
value = +value;
console.log(value);
```

Question

What shows in the console?

Answer

9

```
var value = -9;
value = +value;
console.log(value);
```

Question

What shows in the console?

Answer

-9

```
var value = 'calc';
value = +value;
console.log(value);
```

Question

What shows in the console?

Answer

NaN

```
var value = 42;
value = -value;
console.log(value);
```

Question

What shows in the console?

Answer

-42

```
var value = -42;
value = -value;
console.log(value);
```

Question

What shows in the console?

Answer

42

```
var value = 'calc';
value = -value;
console.log(value);
```

Question

What shows in the console?

Answer

NaN

Bitwise Operators

```
var num1 = parseInt('1010', 2);
var num2 = parseInt('0110', 2);
var total = num1 & num2;
console.log(total.toString(2));
```

Question

What shows in the console?

Answer

10

```
var num1 = parseInt('1010', 2);
var num2 = parseInt('0110', 2);
var total = num1 | num2;
console.log(total.toString(2));
```

Question

What shows in the console?

Answer

1110

```
var num1 = parseInt('1010', 2);
var num2 = parseInt('0110', 2);
var total = num1 ^ num2;
console.log(total.toString(2));
```

Question

What shows in the console?

Answer

1100

```
var num1 = parseInt('0001', 2);
num1 = num1 << 2;
console.log(num1.toString(2));
```

Question

What shows in the console?

Answer

100

```
var num1 = parseInt('1000', 2);
num1 = num1 >> 3;
console.log(num1.toString(2));
```

Question

What shows in the console?

Answer

1

```
var num1 = -parseInt('1000', 2);
num1 = num1 >> 3;
console.log(num1.toString(2));
```

Question

What shows in the console?

Answer

-1

```
var num1 = parseInt('1000', 2);
num1 = num1 >>> 1;
console.log(num1.toString(2));
```

Question

What shows in the console?

Answer

100

```
var num1 = -parseInt('1000', 2);
num1 = num1 >>> 1;
console.log(num1.toString(2));
```

Question

What shows in the console?

Answer

```
11111111111111111111111
11111100
```

Boolean Operators

```
var value = !true;
console.log(value);
```

Question

What shows in the console?

Answer

`false`

```
var value = !false;
console.log(value);
```

Question

What shows in the console?

Answer

`true`

```
var value = !99;
console.log(value);
```

Question

What shows in the console?

Answer

`false`

```
var value = !0;
console.log(value);
```

Question

What shows in the console?

Answer

`true`

```
var value = !"";
console.log(value);
```

Question

What shows in the console?

Answer

`true`

```
var value = !"A";
console.log(value);
```

Question

What shows in the console?

Answer

`false`

```
var value = !" ";
console.log(value);
```

Question

What shows in the console?

Answer

`false`

```
var value = !new Object();
console.log(value);
```

Question

What shows in the console?

Answer

`false`

```
var value = !null;
console.log(value);
```

Question

What shows in the console?

Answer

`true`

```
var value = !undefined;
console.log(value);
```

Question

What shows in the console?

Answer

`true`

```
var value = !NaN;
console.log(value);
```

Question

What shows in the console?

Answer

`true`

```
var value = !!false;
console.log(value);
```

Question

What shows in the console?

Answer

`false`

```
var value = true && true;
console.log(value);
```

Question

What shows in the console?

Answer

`true`

```
var value = true && false;
console.log(value);
```

Question

What shows in the console?

Answer

`false`

```
var value = false && true;
console.log(value);
```

Question

What shows in the console?

Answer

`false`

```
var value = false && false;
console.log(value);
```

Question

What shows in the console?

Answer

`false`

```
var obj = {
    calc: 'Logical AND'
};
var value = obj && 99;
console.log(value);
```

Question

What shows in the console?

Answer

99

```
var obj = {
    calc: 'Logical AND'
};
var value = obj && 0;
console.log(value);
```

Question

What shows in the console?

Answer

0

```
var obj = {
    calc: 'Logical AND'
};
var value = obj && obj;
console.log(value);
```

Question

What shows in the console?

Answer

```
Object {calc: "Logical AND"}
```

```
var obj = {
    calc: 'Logical AND'
};
var value = true && obj;
console.log(value);
```

Question

What shows in the console?

Answer

```
Object {calc: "Logical AND"}
```

```
var value = null && 99;
console.log(value);
```

Question

What shows in the console?

Answer

`null`

```
var value = "Z" && null;
console.log(value);
```

Question

What shows in the console?

Answer

`null`

```
var value = "Z" && undefined;
console.log(value);
```

Question

What shows in the console?

Answer

`undefined`

```
var value = "Z" && NaN;
console.log(value);
```

Question

What shows in the console?

Answer

NaN

```
var value = false && productId;
console.log(value);
```

Question

What shows in the console?

Answer

`false`

```
var productId = 5;
var value = false && ++productId;
console.log(productId);
```

Question

What shows in the console?

Answer

5

```
var value = true || true;
console.log(value);
```

Question

What shows in the console?

Answer

`true`

```
var value = true || false;
console.log(value);
```

Question

What shows in the console?

Answer

`true`

```
var value = false || true;
console.log(value);
```

Question

What shows in the console?

Answer

`true`

```
var value = false || false;
console.log(value);
```

Question

What shows in the console?

Answer

`false`

```
var obj = {
    calc: 'Logical OR'
};
var value = obj || 99;
console.log(value);
```

Question

What shows in the console?

Answer

```
Object {calc: "Logical
OR"}
```

```
var obj = {
    calc: 'Logical OR'
};
var value = false || 99;
console.log(value);
```

Question

What shows in the console?

Answer

99

```
var defaultSettings = {
    who: 'default'
};
var userSettings = {
    who: 'user'
};
var value = userSettings || defaultSettings;
console.log(value);
```

Question

What shows in the console?

Answer

```
Object {who: "user"}
```

```
var defaultSettings = {
    who: 'default'
};
var userSettings;
var value = userSettings || defaultSettings;
console.log(value);
```

Question

What shows in the console?

Answer

```
Object {who: "default"}
```

Equality Operators

== !== === !===

```
if (true == 1)
    console.log('true');
else
    console.log('false');
```

Question

What shows in the console?

Answer

`true`

```
if (true == 2)
    console.log('true');
else
    console.log('false');
```

Question

What shows in the console?

Answer

`false`

```
if (false == 0)
    console.log('true');
else
    console.log('false');
```

Question

What shows in the console?

Answer

`true`

```
if (42 == '42')
    console.log('true');
else
    console.log('false');
```

Question

What shows in the console?

Answer

`true`

```
var obj = {
    valueOf: function () { return 42; }
}
if (42 == obj)
    console.log('true');
else
    console.log('false');
```

Question

What shows in the console?

Answer

`true`

```
var obj = {
    toString: function () { return 42; }
}
if (42 == obj)
    console.log('true');
else
    console.log('false');
```

Question

What shows in the console?

Answer

`true`

```
var obj = {
    name: 'Trigger'
};
var obj2 = {
    name: 'Trigger'
};
if (obj == obj2)
    console.log('true');
else
    console.log('false');
```

Question

What shows in the console?

Answer

false

```
var obj = {
    name: 'Trigger'
};
if (obj == obj)
    console.log('true');
else
    console.log('false');
```

Question

What shows in the console?

Answer

`true`

```
var obj = {
    name: 'Trigger'
};
var obj2 = obj;
if (obj == obj2)
    console.log('true');
else
    console.log('false');
```

Question

What shows in the console?

Answer

`true`

```
if (null == undefined)
    console.log('true');
else
    console.log('false');
```

Question

What shows in the console?

Answer

`true`

```
if (undefined == 0)
    console.log('true');
else
    console.log('false');
```

Question

What shows in the console?

Answer

`false`

```
if (null == 0)
    console.log('true');
else
    console.log('false');
```

Question

What shows in the console?

Answer

`false`

```
if (NaN == NaN)
    console.log('true');
else
    console.log('false');
```

Question

What shows in the console?

Answer

`false`

```
if (42 != 'forty-two')
    console.log('true');
else
    console.log('false');
```

Question

What shows in the console?

Answer

`true`

```
if (55 === '55')
    console.log('true');
else
    console.log('false');
```

Question

What shows in the console?

Answer

`false`

```
if (55 === 55)
    console.log('true');
else
    console.log('false');
```

Question

What shows in the console?

Answer

`true`

```
if (false === 0)
    console.log('true');
else
    console.log('false');
```

Question

What shows in the console?

Answer

`false`

```
if (null === undefined)
    console.log('true');
else
    console.log('false');
```

Question

What shows in the console?

Answer

`false`

```
if (55 !== 55)
    console.log('true');
else
    console.log('false');
```

Question

What shows in the console?

Answer

`false`

Relational Operators

< <= > >=

```
if (55 < 66)
    console.log('true');
else
    console.log('false');
```

Question

What shows in the console?

Answer

`true`

```
if (55 <= 55)
    console.log('true');
else
    console.log('false');
```

Question

What shows in the console?

Answer

`true`

```
if (55 > 55)
    console.log('true');
else
    console.log('false');
```

Question

What shows in the console?

Answer

`false`

```
if (55 >= 55)
    console.log('true');
else
    console.log('false');
```

Question

What shows in the console?

Answer

`true`

```
if ("alpha" < "beta")
    console.log('true');
else
    console.log('false');
```

Question

What shows in the console?

Answer

`true`

```
if ("alpha" < "alph")
    console.log('true');
else
    console.log('false');
```

Question

What shows in the console?

Answer

`false`

```
if ("beta" < "Alpha")
    console.log('true');
else
    console.log('false');
```

Question

What shows in the console?

Answer

`false`

```
if ("Beta" < "alpha")
    console.log('true');
else
    console.log('false');
```

Question

What shows in the console?

Answer

`true`

```
if ("Beta".toLowerCase() < "alpha".toLowerCase())
    console.log('true');
else
    console.log('false');
```

Question

What shows in the console?

Answer

`false`

```
if ('42' < 55)
    console.log('true');
else
    console.log('false');
```

Question

What shows in the console?

Answer

`true`

```
if ('42' < '142')
    console.log('true');
else
    console.log('false');
```

Question

What shows in the console?

Answer

`false`

```
var total = NaN;
if (total < 5)
    console.log('less than 5');
if (total >= 5)
    console.log('greater than or equal to 5');
```

Question

What shows in the console?

Answer

(nothing)

Miscellaneous Operators

```
var total = 6;
total += 4;
console.log(total);
```

Question

What shows in the console?

Answer

10

```
var total = 6;
total -= 4;
console.log(total);
```

Question

What shows in the console?

Answer

2

```
var total = 6;
total *= 4;
console.log(total);
```

Question

What shows in the console?

Answer

24

```
var total = 6;
total /= 3;
console.log(total);
```

Question

What shows in the console?

Answer

2

```
var total = 6;
total %= 4;
console.log(total);
```

Question

What shows in the console?

Answer

2

```
var total = 1;
total <<= 2;
console.log(total);
```

Question

What shows in the console?

Answer

4

```
var total = 4;
total >>= 1;
console.log(total);
```

Question

What shows in the console?

Answer

2

```
var total = 6;
total *= 4 + 1;
console.log(total);
```

Question

What shows in the console?

Answer

30

```
var total = 99, tax = 9;
console.log(total);
console.log(tax);
```

Question

What shows in the console?

Answer

99

9

```
var total = (99, 88, 44);
console.log(total);
```

Question

What shows in the console?

Answer

44

Summary

- Basic Arithmetic Operators: + - * / %
- Unary
- Bitwise
- Boolean
- Equality
- Relational
- Miscellaneous