JavaScript Exponentiation Operator

Summary: in this tutorial, you will learn how to use the JavaScript exponentiation operator (`**`) to raise a number to the power of an exponent.

Introduction to the JavaScript exponentiation operator

To raise a number to the power of an exponent, you often use the static method `Math.pow()` with the following syntax:

```
Math.pow(base, exponent)
```

For example:

```
let result = Math.pow(2,2);
console.log(result); // 4

result = Math.pow(2,3);
console.log(result); // 8
```

ECMAScript 2016 provided an alternative way to get a base to the exponent power by using the exponentiation operator (`**`) with the following syntax:

```
x**n
```

The operator `**` raises the `x` to the power of an exponent `n`.

> Note that some languages use the caret symbol `^` for exponentiation. However, JavaScript already uses that symbol for the bitwise logical XOR operator.

The following example illustrates how to use the exponentiation operator (`**`):

```
let result = 2 ** 2;
console.log(result); // 4

result = 2 ** 3;
console.log(result); // 8
```

The `Math.pow()` accepts a value and converts it to a value of the number type for calculation. Similarly, the operator `**` accepts values of the `number` type. In addition, the operator `**` accepts a value of the `bigint` type. For example:

```
let result = 2n ** 3n;
console.log(result); // 8n
```

You can also use the exponentiation operator (`**`) in the infix notation. For example:

```
let x = 2;
x **= 4;
console.log(x); // 16
```

JavaScript does not allow you to put a unary operator immediately before the base number. If you attempt to do so, you'll get a `SyntaxError` .

The following example causes a syntax error:

```
let result = -2**3;
```

Error:

```
Uncaught SyntaxError: Unary operator used immediately before exponentiation expression. Paren
```

To fix this, you use parentheses like this:

```
let result = (-2)**3;
console.log(result); // -8
```

Summary

- The exponentiation operator `**` raises a number to the power of an exponent.
- The exponentiation operator `**` accepts values of the type `number` or `bigint`.