**Conditional operators: if, '?'**

Sometimes, we need to perform different actions based on different conditions.

To do that, we can use the if statement and the conditional operator ?, that’s also called a “question mark” operator.

**[The “if” statement](https://javascript.info/ifelse" \l "the-if-statement)**

The if(...) statement evaluates a condition in parentheses and, if the result is true, executes a block of code.

For example:

let year = prompt('In which year was ECMAScript-2015 specification published?', '');

if (year == 2015) alert( 'You are right!' );

In the example above, the condition is a simple equality check (year == 2015), but it can be much more complex.

If we want to execute more than one statement, we have to wrap our code block inside curly braces:

if (year == 2015) {

alert( "That's correct!" );

alert( "You're so smart!" );

}

We recommend wrapping your code block with curly braces {} every time you use an if statement, even if there is only one statement to execute. Doing so improves readability.

**[Boolean conversion](https://javascript.info/ifelse" \l "boolean-conversion)**

The if (…) statement evaluates the expression in its parentheses and converts the result to a boolean.

Let’s recall the conversion rules from the chapter [Type Conversions](https://javascript.info/type-conversions):

* A number 0, an empty string "", null, undefined, and NaN all become false. Because of that they are called “falsy” values.
* Other values become true, so they are called “truthy”.

So, the code under this condition would never execute:

if (0) { // 0 is falsy

...

}

…and inside this condition – it always will:

if (1) { // 1 is truthy

...

}

We can also pass a pre-evaluated boolean value to if, like this:

let cond = (year == 2015); // equality evaluates to true or false

if (cond) {

...

}

**[The “else” clause](https://javascript.info/ifelse" \l "the-else-clause)**

The if statement may contain an optional “else” block. It executes when the condition is false.

For example:

let year = prompt('In which year was the ECMAScript-2015 specification published?', '');

if (year == 2015) {

alert( 'You guessed it right!' );

} else {

alert( 'How can you be so wrong?' ); // any value except 2015

}

**[Several conditions: “else if”](https://javascript.info/ifelse" \l "several-conditions-else-if)**

Sometimes, we’d like to test several variants of a condition. The else if clause lets us do that.

For example:

let year = prompt('In which year was the ECMAScript-2015 specification published?', '');

if (year < 2015) {

alert( 'Too early...' );

} else if (year > 2015) {

alert( 'Too late' );

} else {

alert( 'Exactly!' );

}

In the code above, JavaScript first checks year < 2015. If that is falsy, it goes to the next condition year > 2015. If that is also falsy, it shows the last alert.

There can be more else if blocks. The final else is optional.

**[Conditional operator ‘?’](https://javascript.info/ifelse" \l "conditional-operator)**

Sometimes, we need to assign a variable depending on a condition.

For instance:

let accessAllowed;

let age = prompt('How old are you?', '');

if (age > 18) {

accessAllowed = true;

} else {

accessAllowed = false;

}

alert(accessAllowed);

The so-called “conditional” or “question mark” operator lets us do that in a shorter and simpler way.

The operator is represented by a question mark ?. Sometimes it’s called “ternary”, because the operator has three operands. It is actually the one and only operator in JavaScript which has that many.

The syntax is:

let result = condition ? value1 : value2;

The condition is evaluated: if it’s truthy then value1 is returned, otherwise – value2.

For example:

let accessAllowed = (age > 18) ? true : false;

Technically, we can omit the parentheses around age > 18. The question mark operator has a low precedence, so it executes after the comparison >.

This example will do the same thing as the previous one:

// the comparison operator "age > 18" executes first anyway

// (no need to wrap it into parentheses)

let accessAllowed = age > 18 ? true : false;

But parentheses make the code more readable, so we recommend using them.

**Please note:**

In the example above, you can avoid using the question mark operator because the comparison itself returns true/false:

// the same

let accessAllowed = age > 18;

**[Multiple ‘?’](https://javascript.info/ifelse" \l "multiple)**

A sequence of question mark operators ? can return a value that depends on more than one condition.

For instance:

let age = prompt('age?', 18);

let message = (age < 3) ? 'Hi, baby!' :

(age < 18) ? 'Hello!' :

(age < 100) ? 'Greetings!' :

'What an unusual age!';

alert( message );

It may be difficult at first to grasp what’s going on. But after a closer look, we can see that it’s just an ordinary sequence of tests:

1. The first question mark checks whether age < 3.
2. If true – it returns 'Hi, baby!'. Otherwise, it continues to the expression after the colon ‘":"’, checking age < 18.
3. If that’s true – it returns 'Hello!'. Otherwise, it continues to the expression after the next colon ‘":"’, checking age < 100.
4. If that’s true – it returns 'Greetings!'. Otherwise, it continues to the expression after the last colon ‘":"’, returning 'What an unusual age!'.

Here’s how this looks using if..else:

if (age < 3) {

message = 'Hi, baby!';

} else if (age < 18) {

message = 'Hello!';

} else if (age < 100) {

message = 'Greetings!';

} else {

message = 'What an unusual age!';

}

**[Non-traditional use of ‘?’](https://javascript.info/ifelse" \l "non-traditional-use-of)**

Sometimes the question mark ? is used as a replacement for if:

let company = prompt('Which company created JavaScript?', '');

(company == 'Netscape') ?

alert('Right!') : alert('Wrong.');

Depending on the condition company == 'Netscape', either the first or the second expression after the ? gets executed and shows an alert.

We don’t assign a result to a variable here. Instead, we execute different code depending on the condition.

**It’s not recommended to use the question mark operator in this way.**

The notation is shorter than the equivalent if statement, which appeals to some programmers. But it is less readable.

Here is the same code using if for comparison:

let company = prompt('Which company created JavaScript?', '');

if (company == 'Netscape') {

alert('Right!');

} else {

alert('Wrong.');

}

Our eyes scan the code vertically. Code blocks which span several lines are easier to understand than a long, horizontal instruction set.

The purpose of the question mark operator ? is to return one value or another depending on its condition. Please use it for exactly that. Use if when you need to execute different branches of code.

[**Tasks**](https://javascript.info/ifelse#tasks)

**[if (a string with zero)](https://javascript.info/ifelse" \l "if-a-string-with-zero)**

importance: 5

Will alert be shown?

if ("0") {

alert( 'Hello' );

}

solution

**Yes, it will.**

Any string except an empty one (and "0" is not empty) becomes true in the logical context.

We can run and check:

if ("0") {

alert( 'Hello' );

}

**[The name of JavaScript](https://javascript.info/ifelse" \l "the-name-of-javascript)**

importance: 2

Using the if..else construct, write the code which asks: ‘What is the “official” name of JavaScript?’

If the visitor enters “ECMAScript”, then output “Right!”, otherwise – output: “Didn’t know? ECMAScript!”

[Demo in new window](https://en.js.cx/task/check-standard/ifelse_task2/)

solution

<!DOCTYPE html>

<html>

<body>

<script>

'use strict';

let value = prompt('What is the "official" name of JavaScript?', '');

if (value == 'ECMAScript') {

alert('Right!');

} else {

alert("You don't know? ECMAScript!");

}

</script>

</body>

</html>

**[Show the sign](https://javascript.info/ifelse" \l "show-the-sign)**

importance: 2

Using if..else, write the code which gets a number via prompt and then shows in alert:

* 1, if the value is greater than zero,
* -1, if less than zero,
* 0, if equals zero.

In this task we assume that the input is always a number.

[Demo in new window](https://en.js.cx/task/sign/if_sign/)

solution

let value = prompt('Type a number', 0);

if (value > 0) {

alert( 1 );

} else if (value < 0) {

alert( -1 );

} else {

alert( 0 );

}

**[Rewrite 'if' into '?'](https://javascript.info/ifelse" \l "rewrite-if-into)**

importance: 5

Rewrite this if using the conditional operator '?':

let result;

if (a + b < 4) {

result = 'Below';

} else {

result = 'Over';

}

solution

let result = (a + b < 4) ? 'Below' : 'Over';

**[Rewrite 'if..else' into '?'](https://javascript.info/ifelse" \l "rewrite-if-else-into)**

importance: 5

Rewrite if..else using multiple ternary operators '?'.

For readability, it’s recommended to split the code into multiple lines.

let message;

if (login == 'Employee') {

message = 'Hello';

} else if (login == 'Director') {

message = 'Greetings';

} else if (login == '') {

message = 'No login';

} else {

message = '';

}

solution

let message = (login == 'Employee') ? 'Hello' :

(login == 'Director') ? 'Greetings' :

(login == '') ? 'No login' :

'';