

About this document

This cheat-sheet explains the most important parts of the JavaScript language, defines some key terms and shows the syntax through small examples.

However, it's no substitute for proper studying - you can't learn to program off of a cheat sheet (sorry!).

Variables - Explained

What is a variable?

A variable is a storage location, a "box", which we associate with a name (an identifier). The variable can hold a single value and its value may be changed

What is an identifier?

It's the "name" affixed the variable. Later on, whether updating or retrieving its value, we'll use refer to the variable by its identifier.

What can a variable hold?

Any string, number, boolean, array, object or Function.

Why use variables?

Use them to "remember" things in the program. Sometimes, the collection of all variables (everything the program remembers) is called *the state* of the program.

Where to read more

Read the section "Variables" at: eloquentjavascript.net/02_program_structure.html

Variables - Examples

Define a variable

```
var name = " Ada lin a";
```

NB - subsequent examples assume we have defined this variable.

Retrieve the variable's value

Simply refer to the variable's *identifier*.

consol e.l og(name);

is (in this case) the same as:

consol e.l og(" Ada lin a");

Update the variable's value

```
name = " Emm a";
```

NB - The syntax is the same as defining the variable, *sans* the var keyword!

Objects - Explained

What is an object?

If a variable is a "box" which can hold a value, then an object is a box of boxes, holding many values - each of which is a property.

What is a property?

A property is some small part of an object which holds some data (e.g. string) or a Function. Each property has an *identifier*, just like variables.

Where to read more

eloquentjavascript.net/04_data.html -

The introduction and the paragraphs "- Properties" and "Objects"

</> Objects - Examples

Define an object

Define an object with two properties whose identifiers are "name" and "species":

```
var my_pet = {
   name: "spot",
   species: "dog"
}
```

NB Subsequent examples will assume we start with this object.

NB It isn't necessary to define a variable to hold the array (but you almost always will).

Retrieve a property

Get the value of the name property:

```
my_pet ["na me"]
or
my pet.name
```

Update a property

To change the value of the name property (i.e. rename our pet):

```
my_pet ["na me"] = " spa rky "
;
or
my_pet.name = " spa rky ";
```

Add a property

```
my_pet ["br eed "] = 'bulldog'
;
or
my_pet.breed = 'bulldog';
```

NB adding/updating a property uses the same syntax - if the property didn't exist, it is added.

Remove a property

```
To remove the species property:

delete my_pet ["sp eci es"];

or

delete my_pet.sp ecies;
```

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Comparisons

| х === у | true if x is equal to y |
|---------|---|
| x !== y | $\texttt{true} \; \textbf{if} \; x \; \textbf{is different from} \; y$ |
| х >= у | $\label{eq:true} \mbox{true if x is greater than, or} \\ \mbox{equal to y}$ |
| х <= у | $\label{eq:true} \mbox{true if x is less than, or equal} \\ \mbox{to y}$ |
| х > у | true if x is greater than y |
| х < у | $\mathtt{true} \ \textbf{if} \ x \ \textbf{is less than} \ y$ |
| ! x | ${\tt true} {\it if} {\tt x} {\it is} {\tt false}$ |
| х && у | true if $both \times and y$ are true |
| х у | true if either (or both) x or y are true |

☐ Conditions - False & True

What's a condition?

A condition is really just an expression. When we use an expression as a condition, we're not interested in its value, but whether or not that value is *truthy*.

What's a truthy value?

In JavaScript, all but 6 values are truth y, that is, unless your *condition* evaluates to one of those 6 values, the code guarded by the if-block will be run.

☐ Conditions - False & True (cont)

What are the falsy values?

These 6 values will cause the condition to fail and the code it guards to be skipped:

- false
- 0 (the number zero)
- " " (the empty string)
- null
- · undefined
- NaN not a number

Where are conditions used?

Conditions determine which code block to evaluate in if-statements and when to terminate a loop.

Functions - Explained

What is a function?

Functions group code together into a block which is given a name (an *identifier*). Functions often accept arguments to modify their behaviour.

What is an argument?

Think of function arguments as variables which are defined & available to the code inside the function. The value of an argument is determined by the point the function is called and the argument(s) is supplied.

Why use functions?

Functions are the primary way of defining more complex or specific actions than is built into JavaScript and to organise code.

In other words - functions are handy when we wish to use a piece of code more than once.

Where to read more

eloquentjavascript.net/03_functions.html

</> Functions - Syntax

Define a function

```
function takeFive() {
   return 5;
}
```

NB - we will be using this function in some of examples below.

Call a function

Call takeFive, which takes no arguments:
takeFi ve();

NB - Note the parentheses' that follow the function's identifier - *that's* what tells JavaScr call the function rather than just returning it a Function) value.

Define a function (with arguments)

```
function add5(num) {
      con sol e.l og( "I got num
+ num);
      return num + 5;
}
```

NB - To have more arguments than just num, out additional identifiers (names) of argumen and add a comma (,) between each.

Call a function (with arguments)

var x = add5(10);

```
var y = add5(-5);

NB - This amounts to manually typing:
var num1 = 5;
  consol e.l og( "I got num=" + nu
;
  var x = num1 + 5;
  var num2 = -5;
  consol e.l og( "I got num=" + nu
;
  var y = num2 + 5;
```

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JavaScript Survival Kit Cheat Sheet

by pseud via cheatography.com/26472/cs/7447/

rif-statement - Explained

</> if-statements - Examples (cont)

What's an if-statement?

If-statements are used to group code together into af (pet type === " dog ") { block which is only evaluated if the condition evaluates//if var 'pet type' is "dog"

ation of conditions.

What does an if-statement look like?

```
if (CONDI TION) {
       //e valuate this code if CONDITIC
Ν
      //is true
} else if (OTHER -CO NDI TION) {
       //e valuate this code if CONDITIO
      //is false, but OTHER-CONDITION \}
      //is true
} else {
       //e valuate this code if no c
tion
       //e val uated to true.
```

Which parts are needed?

Only the if-part is needed. else if and else blocks are optional.

Also, you can have as many else if blocks as you'd

if-statements - Examples

if-statement

```
if (pet type === " dog ") {
   //done if var 'pet type' is "dog"What is a (while) loop?
```

if/else statement

```
if (pet type === " dog ") {
  //if var 'pet_type' is "dog"
} else {
   //if var 'pet type' is something else
```

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```
if/else if/else statement
```

```
} else if (pet type === " cat ") {
NB - see "Conditions - Falsy & Truthy" for an explan- //if var 'pet type' is "cat"
                                         } else {
                                            //if var 'pet_type' is something
```

(while) Loops - Examples

How do I loop forever

```
while (true) {
       //keep doing this until time
```

How do I loop X times?

To loop X times (say 3), we ensure the condition evaluates to false at the start of the fourth loop var count = 0;

while (count < 4) { //i ncrease count by 1 count = count + 1;//e valuate this code until

NB - if we don't ensure our condition eventually becomes invalid, we will loop forever.

//is 4 or more

(while) Loops - Explained

Loops allow repeating a block of code for as long as a condition remains true.

(while) Loops - Explained (cont)

Real world (tm) loop example

Think of this exchange:

Passenger: Are we there yet?

Driver: No, not yet

Passenger: Are we there yet?

If the passenger is really obnoxious and keeps repeating the question, and the driver patiently answers each time - they are essentially in a conversational loop!

Syntax Example

```
while (CONDI TION) {
       //e valuate code in this b
lock
```

Where to read more

Mid-way through the page linked below, look for the heading "while and do loops": eloquentjavascript.net/02_program_structure.html

Number Any numeric value - 3, 3.14, 2e10

String Any sequence of characters inside quotation marks. " d", " dog ", '

ute dog"

Two possible values, true or fals **Boolean** e. Used as conditions in if-statements & loops. Every expression

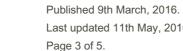
Array A sequence of elements grouped together. E.g. [1, 2, 3] is an

array of 3 numbers.

Object An object which groups other value

> { name: " Rac hel ", age: 2 }

can be boiled down into a boolean.



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</> Syntax - (basic) data types

String

```
" d"
"To be or not to be"
" 300 " //in quotes, this is a stri
ng
'single quotes also work'
```

Number

300 3.1415 2e10

Boolean

true false

Terminology

Syntax

The collection of rules about "what goes where" to form valid JavaScript code.

NB - if you get a syntax error, you've written some code which isn't legal javascript.

Statement

A piece of code (usually a single line) which represents something we want done - some small task.

Expression

Some piece of code which, when evaluated, will yield a value back. E.g. 3 + 6

Evaluation

The thing which happens when the JavaScript interpreter analyses a piece of code and either does something in response (a statement) or yields a value (an expression).

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☐ Terminology (cont)

JavaScript Interpreter

Some program which can understand, and act on JavaScript. Your browser (Firefox/Chrome) is a JavaScript interpreter

(Code) Block

Blocks are delimited by { } and used by if-statements, loops and functions to encapsulate some series of *statements* which should be executed.

Arrays - Explained

What is an array?

An array is a sequence of elements. Each element can be retrieved from the array by its index number.

What is an array element?

An element part of an array, it can be any data type (string, number, boole an, array, object) but it could also be a Function.

How can I get elements from the array?

The first element has index 0, the second has index 1 and so on.

Where to read more

Read the introduction and the paragraph "data sets" at:

eloquentjavascript.net/04_data.html

</> Arrays - Examples

Defining an array

Define an array with 3 elements, the string " one ", the number 2 and the boolean false, in that order:

["on e", 2, " thr ee"]

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</> Arrays - Examples (cont)

Retrieve an element from the array

Get the second element of the array, "b", b into the array using the index number 1:

["a", "b", "c"][1]

Updating an element

```
var pets = ['dog', 'cat', 'canary
pets[1] = 'lion';
Now the array would be:
['dog', 'lion', 'canary']
```

Add an element

Use the method push. **NB** push adds elemened of the array.

```
var pets = ['dog', 'cat', 'canary
pets.push('crocodile');
```

Now the array would be:

```
['dog', 'cat', 'canary', 'croco d
```

Remove element(s)

Use splice - splice needs two argument of where to start and a number of elements to var pets = ['dog', 'cat', 'fish', pets.splice(1,2);

Now the array would be:
['dog', 'bird']

Get number of elements in array

Use the length property on the array: pets.l ength

Yes, arrays are actually a kind of object(!!) - vit has some properties (like length) and me attached to it.

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Helpful Sites

developer.mozilla.org/en-US/

Huge site dedicated web developers.

The "CSS" & "JavaScript" links under
"Web Platform" are especially interesting
to you.

learn.jquery.com

Introduction/Guide to JQuery

api.jquery.com

The JQuery API - go here to read more about a given JQuery function or to search for functionality.

eloquentjavascript.net

Probably the best JavaScript textbook in existence - and it's free! An excellent and recommended read.



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