# JavaScript Glossary

Programming reference for JavaScript

# Arrays

## Accessing array elements

You can get elements out of arrays if you know their index. Array elements' indexes start at 0 and increment by 1, so the first element's index is 0, the second element's index is 1, the third element's is 2, etc.

Syntax

array[index]

Example

var primes = [2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37];

primes[0]; // 2

primes[3]; // 7

primes[150]; // undefined

## Array literals

You can create arrays in two different ways. The most common of which is to list values in a pair of square brackets. JavaScript arrays can contain any types of values and they can be of mixed types.

Syntax

var arrayName = [element0, element1, ..., elementN]

Example

var primes = [2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37];

## Multi-dimensional Arrays

A two-dimensional array is an array within an array. If you fill this array with another array you get a three-dimensional array and so on.

Example

var multidimensionalArray = [[1,2,3],[4,5,6],[7,8,9]] // two dimensions, 3x3

## Array constructor

You can also create an array using the Array constructor.

Example

var stuff = new Array();

stuff[0] = 34;

stuff[4] = 20;

stuff // [34, undefined, undefined, undefined, 20]

Example

var myArray = new Array(45 , "Hello World!" , true , 3.2 , undefined);

console.log(myArray);

// output: [ 45, 'Hello World!', true, 3.2, undefined ]

## Accessing nested array elements

Accessing multi dimensional array elements is quite similar to one-dimension arrays . They are accessed by using [index][index]..... (number of them depends upon the number of arrays deep you want to go inside).

Syntax

array[index][index]....

Example

var myMultiArray = [

[1,2,3,4,5, [1,2,3,4,5] ],

[6,7,8,9,10 , [1,2,3,4,6] ],

[11,12,13,14,15 , [1,2,3,4,5] ],

[16,17,18,19,20, [1,2,3,4,5] ]

];

console.log( myMultiArray[1][5][4] ); // Outputs 6 , the value in the last element of the last element of the second element of myMultiArray.

# Booleans

## Boolean literals

Syntax

true

false

## Boolean logical operators

Syntax

expression1 && expression2 //returns true if both the expressions evaluate to true

expression3 || expression4 // return true if either one of the expression evaluates to true

!expression5 // returns the opposite boolean value of the expression

Example

if ( true && false )alert("Not executed!");

//because the second expression is false

if( false || true )alert("Executed!");

//because any one of the expression is true

if( !false )alert("Executed!");

// because !false evaluates to true

!!true // remains true

Example

if(!false && ( false || (false && true) ))alert("Guess what...");

/\* not executed because

!false && ( false || (false && true) ) - becomes

!false && ( false || false) - becomes

true && false , which is false.\*/

Example

/\* An important thing to note here is the Operator Precedence - which determines the order in which operators are evaluated. Operators with higher precedence are evaluated first. Thus among the four - () , && , || , ! \*/

// Brackets - have the highest precedence

// ! - lower than Brackets

// && - lower than !

// || - the lowest

if(true && !!false || true)alert("Guess again ??");

/\* Executed , here is the evaluation process-

true && !!false || true - becomes

true && false || true - (no brackets present , so ! evaluated ) becomes

false || true - (then && evaluated) which becomes true \*/

Example

/\* Next important thing is the Associativity - which determines the order in which operators of the same precedence are processed. For example, consider an expression: a \* b \* c . Left-associativity (left-to-right) means that it is processed as (a \* b) \* c, while right-associativity (right-to-left) means it is interpreted as a \* (b \* c). \*/

// Brackets , && , || have left to right associativity

// ! has right to left associativity

// So ,

!false && !!false //false

// evaluated in the manner - !false && false - true && false - false

## Comparison operators

Syntax

x === y // returns true if two things are equal

x !== y // returns true if two things are not equal

x <= y // returns true if x is less than or equal to y

x >= y // returns true if x is greater than or equal to y

x < y // returns true if x is less than y

x > y // returns true if x is greater than y

## "Truthy" and "Falsey"

Only Boolean literals (true and false) assert truth or false, but there are some other ways too to derive true or false. Have a look at the examples.

Example

if(1)console.log("True!"); // output True! , since any non-zero number is considered to be true

if(0)console.log("I doubt if this gets executed"); // not executed , since 0 is considered to be false

if("Hello")alert("So, any non-empty String is also true."); //Gets executed

if("")alert("Hence , an empty String is false"); // Not executed

Read more

http://www.sitepoint.com/javascript-truthy-falsy/

## == vs. ===

A simple explanation would be that == does just value checking ( no type checking ) , whereas , === does both value checking and type checking . Seeing the examples may make it all clear. It is always advisable that you never use == , because == often produces unwanted results

Syntax

expression == expression

expression === expression

Example

'1' == 1 //true (same value)

'1' === 1 // false (not the same type)

true == 1 // true (because 1 stands for true ,though it's not the same type)

true === 1 // false (not the same type)

# Code Comments

## Single Line Comment

Anything on the line following // will be a comment while anything before will still be code.

Syntax

console.log("This code will be run")

//console.log("Because this line is in a comment, this code will not be run.")

// This is a single line comment.

## Multi-Line Comment

Anything between /\* and \*/ will be a comment.

Syntax

/\* This is

a multi-line

comment!

\*/

Example

/\*

alert("Hello,I won't be executed.");

console.log("Hello ,I also will not be executed");

\*/

# Console

## console.log

Prints text to the console. Useful for debugging.

Example

var name = "Codecademy";

console.log(name);

## console.time

This function starts a timer which is useful for tracking how long an operation takes to happen.You give each timer a unique name, and may have up to 10,000 timers running on a given page.When you call console.timeEnd() with the same name, the browser will output the time, in milliseconds, that elapsed since the timer was started.

Syntax

console.time(timerName);

Example

console.time("My Math");

var x = 5 + 5;

console.log(x);

console.timeEnd("My Math");

console.log("Done the math.");

/\* Output:

10

My Math: (time taken)

Done the math.

\*/

## console.timeEnd

Stops a timer that was previously started by calling console.time().

Syntax

console.timeEnd(timerName);

Example

console.time("My Math");

var x = 5 + 5;

console.log(x);

console.timeEnd("My Math");

/\* Output :

10

My Math: (time taken)

\*/

# Functions

A function is a JavaScript procedure—a set of statements that performs a task or calculates a value.It is like a reusable piece of code. Imagine , having 20 for loops ,and then having a single function to handle it all . To use a function, you must define it somewhere in the scope from which you wish to call it. A function definition (also called a function declaration) consists of the function keyword, followed by the name of the function, a list of arguments to the function, enclosed in parentheses and separated by commas, the JavaScript statements that define the function, enclosed in curly braces, { }.

Syntax

function name(argument1 , argument2 .... argumentN){

statement1;

statement2;

..

..

statementN;

}

Example

function greet(name) {

return "Hello" + name + "!";

}

## Function calling

Syntax

functionName(argument1, argument2, ..., argumentN);

Example

greet("Anonymous");

// Hello Anonymous!

## Function hoisting

The two ways of declaring functions produce different results. Declaring a function one way "hoists" it to the top of the call, and makes it available before it's actually defined.

Example

hoistedFunction(); // Hello! I am defined immediately!

notHoistedFunction(); // ReferenceError: notHoistedFunction is not defined

function hoistedFunction () {

console.log('Hello! I am defined immediately!');

}

var notHoistedFunction = function () {

console.log('I am not defined immediately.');

}

# If statement

It simply states that if this condition is true, do this, else do something else (or nothing). It occurs in varied forms.

# if

Syntax

// Form : Single If

if (condition) {

// code that runs if the condition is true

}

Example

if (answer === 42) {

console.log('Told you so!');

}

## else

A fallback to an if statement. This will only get executed if the previous statement did not.

Syntax

// If the condition is true, statement1 will be executed.

// Otherwise, statement2 will be executed.

if (condition) {

// statement1: code that runs if condition is true

} else {

// statement2: code that runs if condition is false

}

Example

if (gender == "male") {

console.log("Hello, sir!");

} else {

console.log("Hello, ma'am!");

}

## else if

This is like an else statement, but with its own condition. It will only run if its condition is true, and the previous statement's condition was false.

Syntax

// Form : else if . If the condition is true, statement1 will be executed. Otherwise, condition2 is checked . if it is true , then statement2 is executed. Else , if nothing is true , statement3 is executed.

if (condition1) {

statement1;

} else if (condition2) {

statement2;

} else {

statement3;

}

Example

if (someNumber > 10) {

console.log("Numbers larger than 10 are not allowed.");

} else if (someNumber < 0) {

console.log("Negative numbers are not allowed.");

} else {

console.log("Nice number!");

}

# Loops

## For Loops

You use for loops, if you know how often you'll loop. The most often used varName in loops is i.

Syntax

for ([var i = startValue];[i < endValue]; [i+=stepValue]) {

// Your code here

}

Example

for (var i = 0; i < 5; i++) {

console.log(i); // Prints the numbers from 0 to 4

}

Example

var i; // "outsourcing" the definition

for (i = 10; i >= 1; i--) {

console.log(i); // Prints the numbers from 10 to 1

}

Example

/\* Note that all of the three statements are optional, i.e. , \*/

var i = 9;

for(;;){

if(i === 0)break;

console.log(i);

i--;

}

//This loop is perfectly valid.

## While Loops

You use while loops, if you don't know how often you'll loop.

Syntax

while (condition) {

// Your code here

}

Example

var x = 0;

while (x < 5) {

console.log(x); // Prints numbers from 0 to 4

x++;

}

Example

var x = 10;

while (x <= 5) {

console.log(x); // Won't be executed

x++;

}

## Do While Loops

You use do while loops, if you have to loop at least once, but if you don't know how often.

Syntax

do {

// Your code here

} while (condition);

Example

var x = 0;

do {

console.log(x); // Prints numbers from 0 to 4

x++;

} while (x < 5);

Example

var x = 10;

do {

console.log(x); // Prints 10

x++;

} while (x <= 5);

# Math

## random

Returns a random number between 0 and 1.

Syntax

Math.random()

Example

Math.random(); // A random number between 0 and 1.

## floor

Returns the largest integer less than or equal to a number.

Syntax

Math.floor(expression)

Example

Math.floor(9.99); // 9

Math.floor(1 + 0.5); // 1

Math.floor(Math.random() \* X + 1); // Returns a random number between 1 and X

## pow

Returns base raised to exponent.

Syntax

Math.pow(base,exponent)

Example

Math.pow(2,4); // gives 16

## ceil

Returns the smallest integer greater than or equal to a number.

Syntax

Math.ceil(expression)

Example

Math.ceil(45.4); // 46

Math.ceil(4 - 1.9); // 3

## PI

Returns the ratio of the circumference of a circle to its diameter, approximately 3.14159 or in better terms, the value of PI (π). Note in syntax , we do not put () at the end of Math.PI because Math.PI is not a function.

Syntax

Math.PI

Example

Math.round(Math.PI); // rounds the value of PI ,gives 3

Math.ceil(Math.PI); // 4

## sqrt

Returns the square root of a number.

Syntax

Math.sqrt(expression)

Example

Math.sqrt(5+4); // 3

Math.sqrt(Math.sqrt(122+22) + Math.sqrt(16)); //4

# Numbers

# % (Modulus)

It returns the remainder left after dividing the left hand side with the right hand side.

Syntax

number1 % number2

Example

14 % 9 // returns 5

## isNaN

Returns true if the given number is not a number, else returns false.

Syntax

isNaN([value])

Example

var user\_input = prompt("Enter a number"); // Enter "a number"

if(isNaN(user\_input))

alert("I told you to enter a number.");

//alert executed , since "a number" is not a number

//Another important thing:

if( isNaN("3") )

alert("bad");

//Not executed , because the string "3" gets converted into 3 ,and 3 is a number

## Basic Arithmetic

Doing basic arithmetic is simple.

Syntax

4 + 5; // 9

4 \* 5; // 20

5 - 4; // 1

20 / 5; // 4

## Prefix and Postfix increment/decrement operators

Prefix increment / decrement operators are operators that first increase the value of the variable by 1 (increment) or decrease the value of an expression / variable by 1 (decrement) and then return this incremented / decremented value. They are used like ++(variable) [increment] or --(varaible) [decrement] On the other hand , Postfix increment / decrement operators are operators that first return the value of the variable and then increase the value of that variable by 1 (increment) or decrease the value of the variable by 1 (decrement) . They are used like (variable)++ [increment] or (varaible)-- [decrement]

Syntax

--variable //Prefix Decrement

++variable //Prefix Increment

variable-- //Postfix Decrement

variable++ //Postfix Increment

Example

//The examples will make it clear

var x = 15; // x has a value of 15

var y = x++;

// since it is postfix , the value of x (15) is first assigned to y and then the value of x is incremented by 1

console.log(y); //15

console.log(x); //16

var a = 15; // a has a value of 15

var b = ++a;

// since it is prefix , the value of a (15) is first incremented by 1 and then the value of x is assigned to b

console.log(b); //16

console.log(a); //16

# Objects

## Object Literals

Syntax

{

"property 1": value1,

property2: value2,

number: value3

}

Example

var obj = {

name: "Bob",

married: true,

"mother's name": "Alice",

"year of birth": 1987,

getAge: function () {

return 2012 - obj["year of birth"];

},

1: 'one'

};

## Property Access

Syntax

name1[string]

name2.identifier

Example

obj['name']; // 'Bob'

obj.name; // 'Bob'

obj.getAge(); // 24

# OOP

## Classes

A class can be thought of as a template to create many objects with similar qualities. Classes are a fundamental component of object-oriented programming (OOP).

Syntax

SubClass.prototype = new SuperClass();

Example

var Lieutenant = function (age) {

this.rank = "Lieutenant";

this.age = age;

};

Lieutenant.prototype = new PoliceOfficer();

Lieutenant.prototype.getRank = function () {

return this.rank;

};

var John = new Lieutenant(67);

John.getJob(); // 'Police Officer'

John.getRank(); // 'Lieutenant'

John.retire(); // true

# Popup boxes

## alert

Display an alert dialog with the specified message and an OK button. The alert dialog should be used for messages which do not require any response on the part of the user, other than the acknowledgement of the message.

Syntax

alert(message);

Example

alert("Hello World");

## confirm

Displays a dialog with the specified message and two buttons, OK and Cancel.

Syntax

confirm("message") //returns true if confirmed, false otherwise

Example

if ( confirm("Are you sure you want to delete this post?") ) {

deletePost();

}

## prompt

The prompt() displays a dialog with an optional message prompting the user to input some text. If the user clicks the "Cancel" button, null is returned.

Syntax

prompt(message);

Example

var name = prompt("Enter your name:");

console.log("Hello " + name + "!");

# Strings

Strings are text. They are denoted by surrounding text with either single or double quotes.

Syntax

"string of text"

'string of text'

## Concatenation

Syntax

string1 + string2

Example

"some" + "text"; // returns "sometext"

var first = "my";

var second = "string";

var union = first + second; // union variable has the string "mystring"

## length

Returns the length of the string.

Syntax

string.length

Example

"My name".length // 7 , white space is also counted

"".length // 0

## toUpperCase(), toLowerCase()

Changes the cases of all the alphabetical letters in the string.

Example

"my name".toUpperCase(); // Returns "MY NAME"

"MY NAME".toLowerCase(); // Returns "my name"

## trim()

Removes whitespace from both ends of the string.

Syntax

string.trim()

Example

" a ".trim(); // 'a'

" a a ".trim(); // 'a a'

## replace()

Returns a string with the first match substring replaced with a new substring.

Example

"original string".replace("original", "replaced"); // returns "replaced string"

## charAt()

Returns the specified character from a string. Characters in a string are indexed from left to right. The index of the first character is 0, and the index of the last character in a string called stringName is stringName.length - 1. If the index you supply is out of range, JavaScript returns an empty string.

Syntax

string.charAt(index) // index is an integer between 0 and 1 less than the length of the string.

Example

"Hello World!".charAt(0); // 'H'

"Hello World!".charAt(234); // ''

## substring()

Returns the sequence of characters between two indices within a string.

Syntax

string.substring(indexA[, indexB])

//indexA : An integer between 0 and the length of the string

// indexB : (optional) An integer between 0 and the length of the string.

Example

"adventures".substring(2,9); // Returns "venture"

// It starts from indexA(2) , and goes up to but not including indexB(9)

"hello".substring(1); // returns "ello"

"Web Fundamentals".substring(111); // returns ''

"In the market".substring(2,999); // returns ' the market'

"Fast and efficient".substring(3,3); // returns ''

"Go away".substring("abcd" , 5); // returns 'Go aw'

// Any non-numeric thing is treated as 0

## indexOf()

Returns the index within the calling String object of the first occurrence of the specified value, starting the search at fromIndex, Returns -1 if the value is not found. The indexOf method is case sensitive.

Syntax

string.indexOf(searchValue[, fromIndex]) //fromIndex is optional.It specifies from which index should the search start.Its default value is 0.

Example

"My name is very long.".indexOf("name"); // returns 3

"My name is very long.".indexOf("Name"); // returns -1 , it's case sensitive

"Where are you going?".indexOf("are",11); //returns -1

"Learn to Code".indexOf(""); //returns 0

"Learn to Code".indexOf("",3); //returns 3

"Learn to Code".indexOf("",229); returns 13 , which is the string.length

# Switch statements

Acts like a big if / else if / else chain. Checks a value against a list of cases, and executes the first case that is true. It goes on executing all other cases it finds after the first true case till it finds a breaking statement,after which it breaks out of the switch If it does not find any matching case , it executes the default case.

Syntax

switch (expression) {

case label1:

statements1

[break;]

case label2:

statements2

[break;]

...

case labelN:

statementsN

[break;]

default:

statements\_def

[break;]

}

Example

var gender = "female";

switch (gender) {

case "female":

console.log("Hello, ma'am!");

case "male":

console.log("Hello, sir!");

default:

console.log("Hello!");

}

# Ternary Operator

The ternary operator is usually used as a shortcut for the if statement.

Syntax

condition ? expr1 : expr2

Example

var grade = 85;

console.log("You " + (grade > 50 ? "passed!" : "failed!"));

//Output: You passed!

/\* The above statement is same as saying:

if(grade > 50){

console.log("You " + "passed!"); //or simply "You passed!"

}

else{

console.log("You " + "failed!");

}

\*/

# Variables

## Variable Assignment

Syntax

var name = value;

Example

var x = 1;

var myName = "Bob";

var hisName = myName;

Variable changing

Syntax

varname = newValue

Example

var name = "Michael" //declare variable and give it value of "Michael"

name = "Samuel" //change value of name to "Samuel"