JavaScript

A JavaScript cheat sheet with the most important concepts, functions, methods, and more. A complete quick reference for beginners.

Getting Started

Introduction

JavaScript is a lightweight, interpreted programming language.

- JSON cheatsheet (quickref.me)
- Regex in JavaScript (quickref.me)

Console

```
// => Hello world!
```

```
ef.ME');

r
);
```

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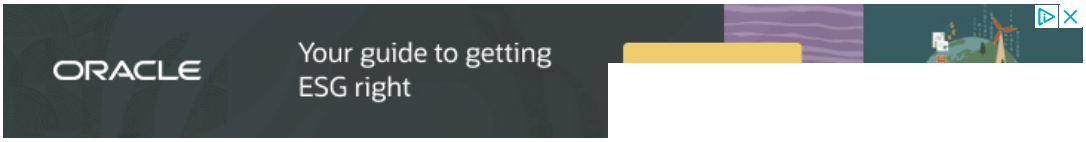

Variables

```
let x = null;
let name = "Tammy";
const found = false;

// => Tammy, false, null
console.log(name, found, x);

var a;
console.log(a); // => undefined
```

Strings

```
let single = 'Wheres my bandit hat?';
let double = "Wheres my bandit hat?";

// => 21
console.log(single.length);
```

Arithmetic Operators

```
5 + 5 = 10      // Addition
10 - 5 = 5      // Subtraction
5 * 10 = 50     // Multiplication
10 / 5 = 2      // Division
10 % 5 = 0      // Modulo
```

Comments

```
// This line will denote a comment

/*
The below configuration must be
changed before deployment.
*/
```

Assignment Operators

```
let number = 100;

// Both statements will add 10
number = number + 10;
number += 10;

console.log(number);
// => 120
```

String Interpolation

```
                                    ';
```

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let Keyword

```
let count;
console.log(count); // => undefined
count = 10;
console.log(count); // => 10
```

const Keyword

```
const numberOfColumns = 4;

// TypeError: Assignment to constant...
numberOfColumns = 8;
```

JavaScript Conditionals

if Statement

```
const isMailSent = true;

if (isMailSent) {
  console.log('Mail sent to recipient');
}
```

Ternary Operator

```
var x=1;

// => true
result = (x == 1) ? true : false;
```

Operators

```
true || false;       // true
10 > 5 || 10 > 20;   // true
false || false;      // false
10 > 100 || 10 > 20; // false
```

Logical Operator &&

```
true && true;        // true
1 > 2 && 2 > 1;      // false
true && false;       // false
4 === 4 && 3 > 1;    // true
```

Comparison Operators

Logical Operator !

```
// => false
console.log(oppositeValue);
```

Nullish coalescing operator ??

```
null ?? 'I win';          //  'I win'
undefined ?? 'Me too';    //  'Me too'

false ?? 'I lose'         //  false
0 ?? 'I lose again'       //  0
'' ?? 'Damn it'           //  ''
```

else if

```
const size = 10;

if (size > 100) {
  console.log('Big');
} else if (size > 20) {
  console.log('Medium');
} else if (size > 4) {
  console.log('Small');
} else {
  console.log('Tiny');
}
// Print: Small
```

switch Statement

```
const food = 'salad';

switch (food) {
  case 'oyster':
    console.log('The taste of the sea');
    break;
  case 'pizza':
    console.log('A delicious pie');
    break;
  default:
    console.log('Enjoy your meal');
}
```

== vs ===

```
0 == false   // true
0 === false  // false, different type
1 == "1"     // true,  automatic type conversion
1 === "1"    // false, different type
null == undefined  // true
null === undefined // false
'0' == false       // true
'0' === false      // false
```

ı the value and the type.

0:01

```
// Defining the function:
function sum(num1, num2) {
  return num1 + num2;
}

// Calling the function:
sum(3, 6); // 9
```

Anonymous Functions

```
// Named function
function rocketToMars() {
  return 'BOOM!';
}

// Anonymous function
const rocketToMars = function() {
  return 'BOOM!';
}
```

-

Arrow Functions (ES6)

With two arguments

```
const sum = (param1, param2) => {
  return param1 + param2;
};
console.log(sum(2,5)); // => 7
```

With no arguments

```
const printHello = () => {
  console.log('hello');
};
printHello(); // => hello
```

With a single argument

```
const checkWeight = weight => {
  console.log(`Weight : ${weight}`);
};
checkWeight(25); // => Weight : 25
```

Concise arrow functions

```
const multiply = (a, b) => a * b;
// => 60
console.log(multiply(2, 30));
```

Arrow function available starting ES2015

return Keyword

he sum

0:01

```
// Defining the function
function sum(num1, num2) {
  return num1 + num2;
}

// Calling the function
sum(2, 4); // 6
```

Function Expressions

```
const dog = function() {
  return 'Woof!';
}
```

Function Parameters

```
// The parameter is name
function sayHello(name) {
  return `Hello, ${name}!`;
}
```

Function Declaration

```
function add(num1, num2) {
  return num1 + num2;
}
```

JavaScript Scope

Scope

```
function myFunction() {

  var pizzaName = "Margarita";
  // Code here can use pizzaName

}

// Code here can't use pizzaName
```

Block Scoped Variables

```
const isLoggedIn = true;

if (isLoggedIn == true) {
  const statusMessage = 'Logged in.';
```

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Global Variables

```
function printColor() {
  console.log(color);
}

printColor(); // => blue
```

let vs var

```
for (let i = 0; i < 3; i++) {
  // This is the Max Scope for 'let'
  // i accessible ✔
}
// i not accessible ✖
```

```
for (var i = 0; i < 3; i++) {
  // i accessible ✔
}
// i accessible ✔
```

`var` is scoped to the nearest function block, and `let` is scoped to the nearest enclosing block.

Loops with closures

```
// Prints 3 thrice, not what we meant.
for (var i = 0; i < 3; i++) {
  setTimeout(_ => console.log(i), 10);
}
```

```
// Prints 0, 1 and 2, as expected.
for (let j = 0; j < 3; j++) {
  setTimeout(_ => console.log(j), 10);
}
```

The variable has its own copy using `let`, and the variable has shared copy using `var`.

JavaScript Arrays

Arrays

```
const fruits = ["apple", "orange", "banana"];

// Different data types
const data = [1, 'chicken', false];
```

Property .length

Index

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```
console.log(myArray[0]); // 100
```

Mutable chart

	add	remove	start	end
push	✔			✔
pop		✔		✔
unshift	✔		✔	
shift		✔	✔	

Method .push()

```
// Adding a single element:
const cart = ['apple', 'orange'];
cart.push('pear');

// Adding multiple elements:
const numbers = [1, 2];
numbers.push(3, 4, 5);
```

Add items to the end and returns the new array length.

Method .pop()

```
const fruits = ["apple", "orange", "banana"];

const fruit = fruits.pop(); // 'banana'
console.log(fruits); // ["apple", "orange"]
```

Remove an item from the end and returns the removed item.

Method .shift()

```
let cats = ['Bob', 'Willy', 'Mini'];

cats.shift(); // ['Willy', 'Mini']
```

Remove an item from the beginning and returns the removed item.

Method .unshift()

```
let cats = ['Bob'];

// => ['Willy', 'Bob']
cats.unshift('Willy');

// => ['Puff', 'George', 'Willy', 'Bob']
cats.unshift('Puff', 'George');
```

new array length.

Method .concat()

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```
// => [ 3, 2, 1, 4 ]
numbers.concat(newFirstNumber)
```

if you want to avoid mutating your original array, you can use concat

JavaScript Loops

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While Loop

```
while (condition) {
  // code block to be executed
}

let i = 0;
while (i < 5) {
  console.log(i);
  i++;
}
```

Reverse Loop

```
const fruits = ["apple", "orange", "banana"];

for (let i = fruits.length - 1; i >= 0; i--) {
  console.log(`${i}. ${fruits[i]}`);
}

// => 2. banana
// => 1. orange
// => 0. apple
```

Do…While Statement

```
x = 0
i = 0

do {
  x = x + i;
  console.log(x)
  i++;
} while (i < 5);
// => 0 1 3 6 10
```

For Loop

```
for (let i = 0; i < 4; i += 1) {
  console.log(i);
};

// => 0, 1, 2, 3
```

Looping Through Arrays

```
for (let i = 0; i < array.length; i++){
  console.log(array[i]);
}

// => Every item in the array
```

Break

```
{
```

Continue

```
for (i = 0; i < 10; i++) {
  if (i === 3) { continue; }
  text += "The number is " + i + "<br>";
}
```

Nested

```
for (let i = 0; i < 2; i += 1) {
  for (let j = 0; j < 3; j += 1) {
    console.log(`${i}-${j}`);
  }
}
```

for...in loop

```
const fruits = ["apple", "orange", "banana"];

for (let index in fruits) {
  console.log(index);
}
// => 0
// => 1
// => 2
```

for...of loop

```
const fruits = ["apple", "orange", "banana"];

for (let fruit of fruits) {
  console.log(fruit);
}
// => apple
// => orange
// => banana
```

JavaScript Iterators

Functions Assigned to Variables

```
let plusFive = (number) => {
  return number + 5;
};
// f is assigned the value of plusFive
let f = plusFive;
```

it can be invoked.

Callback Functions

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```
let printMsg = (evenFunc, num) => {
  const isNumEven = evenFunc(num);
  console.log(`${num} is an even number: ${isNumEven}.`)
}

// Pass in isEven as the callback function
printMsg(isEven, 4);
// => The number 4 is an even number: True.
```

Array Method .reduce()

```
const numbers = [1, 2, 3, 4];

const sum = numbers.reduce((accumulator, curVal) => {
  return accumulator + curVal;
});

console.log(sum); // 10
```

Array Method .map()

```
const members = ["Taylor", "Donald", "Don", "Natasha", "Bobby"];

const announcements = members.map((member) => {
  return member + " joined the contest.";
});

console.log(announcements);
```

Array Method .forEach()

```
const numbers = [28, 77, 45, 99, 27];

numbers.forEach(number => {
  console.log(number);
});
```

Array Method .filter()

```
const randomNumbers = [4, 11, 42, 14, 39];
const filteredArray = randomNumbers.filter(n => {
  return n > 5;
});
```

JavaScript Objects

Accessing Properties

```
ıty: '$4/kg' }

Green
'/ => $3/kg
```

0:01

```
// Example of invalid key names
const trainSchedule = {
  // Invalid because of the space between words.
  platform num: 10,
  // Expressions cannot be keys.
  40 - 10 + 2: 30,
  // A + sign is invalid unless it is enclosed in quotations.
```

Non-existent properties

```
const classElection = {
  date: 'January 12'
};

console.log(classElection.place); // undefined
```

Mutable

```
const student = {
  name: 'Sheldon',
  score: 100,
  grade: 'A',
}

console.log(student)
// { name: 'Sheldon', score: 100, grade: 'A' }

delete student.score
student.grade = 'F'
console.log(student)
// { name: 'Sheldon', grade: 'F' }

student = {}
// TypeError: Assignment to constant variable.
```

Assignment shorthand syntax

```
const person = {
  name: 'Tom',
  age: '22',
};
const {name, age} = person;
console.log(name); // 'Tom'
console.log(age);  // '22'
```

Delete operator

```
const person = {
  firstName: "Matilda",
  age: 27,
  hobby: "knitting"

e person[hobby];
```

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```
}
*/
```

Objects as arguments

```
const origNum = 8;
const origObj = {color: 'blue'};

const changeItUp = (num, obj) => {
  num = 7;
  obj.color = 'red';
};

changeItUp(origNum, origObj);

// Will output 8 since integers are passed by value.
console.log(origNum);

// Will output 'red' since objects are passed
// by reference and are therefore mutable.
console.log(origObj.color);
```

Shorthand object creation

```
const activity = 'Surfing';
const beach = { activity };
console.log(beach); // { activity: 'Surfing' }
```

this Keyword

```
const cat = {
  name: 'Pipey',
  age: 8,
  whatName() {
    return this.name
  }
};
console.log(cat.whatName()); // => Pipey
```

Factory functions

```
// A factory function that accepts 'name',
// 'age', and 'breed' parameters to return
// a customized dog object.
const dogFactory = (name, age, breed) => {
  return {
    name: name,
    age: age,
    breed: breed,
    bark() {
```

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Methods

```
  },
  // anonymous arrow function expression with no arguments
  sputter: () => {
    console.log('The engine sputters...');
  },
};

engine.start('noisily');
engine.sputter();
```

Getters and setters

```
const myCat = {
  _name: 'Dottie',
  get name() {
    return this._name;
  },
  set name(newName) {
    this._name = newName;
  }
};

// Reference invokes the getter
console.log(myCat.name);

// Assignment invokes the setter
myCat.name = 'Yankee';
```

JavaScript Classes

Static Methods

```
class Dog {
  constructor(name) {
    this._name = name;
  }

  introduce() {
    console.log('This is ' + this._name + ' !');
  }

  // A static method
  static bark() {
    console.log('Woof!');
  }
}
```

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Class

```
  }

  play() {
    console.log('Song playing!');
  }
}

const mySong = new Song();
mySong.play();
```

Class Constructor

```
class Song {
  constructor(title, artist) {
    this.title = title;
    this.artist = artist;
  }
}

const mySong = new Song('Bohemian Rhapsody', 'Queen');
console.log(mySong.title);
```

Class Methods

```
class Song {
  play() {
    console.log('Playing!');
  }

  stop() {
    console.log('Stopping!');
  }
}
```

extends

```
// Parent class
class Media {
  constructor(info) {
    this.publishDate = info.publishDate;
    this.name = info.name;
  }
}

// Child class
class Song extends Media {
  constructor(songData) {
    super(songData);
    this.artist = songData.artist;
  }
}
```

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JavaScript Modules

Export

```
// myMath.js

// Default export
export default function add(x,y){
    return x + y
}

// Normal export
export function subtract(x,y){
    return x - y
}

// Multiple exports
function multiply(x,y){
    return x * y
}
function duplicate(x){
    return x * 2
}
export {
    multiply,
    duplicate
}
```

Import

```
// main.js
import add, { subtract, multiply, duplicate } from './myMath.js';

console.log(add(6, 2)); // 8
console.log(subtract(6, 2)) // 4
console.log(multiply(6, 2)); // 12
console.log(duplicate(5)) // 10

// index.html
<script type="module" src="main.js"></script>
```

Export Module

```
// myMath.js

function add(x,y){
    return x + y
}
function subtract(x,y){
    return x - y
```

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```
    subtract,
    multiply,
    duplicate
}
```

Require Module

```
// main.js
const myMath = require('./myMath.js')

console.log(myMath.add(6, 2)); // 8
console.log(myMath.subtract(6, 2)) // 4
console.log(myMath.multiply(6, 2)); // 12
console.log(myMath.duplicate(5)) // 10
```

JavaScript Promises

Promise states

```
const promise = new Promise((resolve, reject) => {
  const res = true;
  // An asynchronous operation.
  if (res) {
    resolve('Resolved!');
  }
  else {
    reject(Error('Error'));
  }
});

promise.then((res) => console.log(res), (err) => console.error(err));
```

Executor function

```
const executorFn = (resolve, reject) => {
  resolve('Resolved!');
};

const promise = new Promise(executorFn);
```

setTimeout()

```
const loginAlert = () =>{
  console.log('Login');
};

setTimeout(loginAlert, 6000);
```

.then() method

```
olve, reject) => {
```

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```
  console.error(err);
});
```

.catch() method

```
const promise = new Promise((resolve, reject) => {
  setTimeout(() => {
    reject(Error('Promise Rejected Unconditionally.'));
  }, 1000);
});

promise.then((res) => {
  console.log(value);
});

promise.catch((err) => {
  console.error(err);
});
```

Promise.all()

```
const promise1 = new Promise((resolve, reject) => {
  setTimeout(() => {
    resolve(3);
  }, 300);
});
const promise2 = new Promise((resolve, reject) => {
  setTimeout(() => {
    resolve(2);
  }, 200);
});

Promise.all([promise1, promise2]).then((res) => {
  console.log(res[0]);
  console.log(res[1]);
});
```

Avoiding nested Promise and .then()

```
const promise = new Promise((resolve, reject) => {
  setTimeout(() => {
    resolve('*');
  }, 1000);
});

const twoStars = (star) => {
  return (star + star);
};

const oneDot = (star) => {
  return (star + '.');
```

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```
ot).then(print);
```

```
const executorFn = (resolve, reject) => {
  console.log('The executor function of the promise!');
};
```

Chaining multiple .then()

```
const promise = new Promise(resolve => setTimeout(() => resolve('dAlan'), 100));

promise.then(res => {
  return res === 'Alan' ? Promise.resolve('Hey Alan!') : Promise.reject('Who are you?')
}).then((res) => {
  console.log(res)
}, (err) => {
  console.error(err)
});
```

Fake http Request with Promise

```
const mock = (success, timeout = 1000) => {
  return new Promise((resolve, reject) => {
    setTimeout(() => {
      if(success) {
        resolve({status: 200, data:{}});
      } else {
        reject({message: 'Error'});
      }
    }, timeout);
  });
}
const someEvent = async () => {
  try {
    await mock(true, 1000);
  } catch (e) {
    console.log(e.message);
  }
}
```

JavaScript Async-Await

Asynchronous

```
function helloWorld() {
  return new Promise(resolve => {
    setTimeout(() => {
      resolve('Hello World!');
    }, 2000);


                          '/Async Function Expression
                          ;
```

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```
msg(); // Message: Hello World! <-- after 2 seconds
msg1(); // Message: Hello World! <-- after 2 seconds
```

Resolving Promises

```
let pro1 = Promise.resolve(5);
let pro2 = 44;
let pro3 = new Promise(function(resolve, reject) {
  setTimeout(resolve, 100, 'foo');
});

Promise.all([pro1, pro2, pro3]).then(function(values) {
  console.log(values);
});
// expected => Array [5, 44, "foo"]
```

Async Await Promises

```
function helloWorld() {
  return new Promise(resolve => {
    setTimeout(() => {
      resolve('Hello World!');
    }, 2000);
  });
}

async function msg() {
  const msg = await helloWorld();
  console.log('Message:', msg);
}

msg(); // Message: Hello World! <-- after 2 seconds
```

Error Handling

```
let json = '{ "age": 30 }'; // incomplete data

try {
  let user = JSON.parse(json); // <-- no errors
  console.log( user.name ); // no name!
} catch (e) {
  console.error( "Invalid JSON data!" );
}
```

Aysnc await operator

```
function helloWorld() {
  return new Promise(resolve => {
    setTimeout(() => {
      resolve('Hello World!');
```

```
                                ;
```

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JavaScript Requests

JSON

```
const jsonObj = {
  "name": "Rick",
  "id": "11A",
  "level": 4
};
```

Also see: JSON cheatsheet

XMLHttpRequest

```
const xhr = new XMLHttpRequest();
xhr.open('GET', 'mysite.com/getjson');
```

`XMLHttpRequest` is a browser-level API that enables the client to script data transfers via JavaScript, NOT part of the JavaScript language.

GET

```
const req = new XMLHttpRequest();
req.responseType = 'json';
req.open('GET', '/getdata?id=65');
req.onload = () => {
  console.log(xhr.response);
};

req.send();
```

POST

```
const data = {
  fish: 'Salmon',
  weight: '1.5 KG',
  units: 5
};
const xhr = new XMLHttpRequest();
xhr.open('POST', '/inventory/add');
xhr.responseType = 'json';
xhr.send(JSON.stringify(data));

xhr.onload = () => {
  console.log(xhr.response);
};
```

fetch api

```
                        .on/json',
```

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```
    throw new Error('Request failed!');
  }, networkError => {
    console.log(networkError.message)
  })
}
```

JSON Formatted

```
fetch('url-that-returns-JSON')
.then(response => response.json())
.then(jsonResponse => {
  console.log(jsonResponse);
});
```

promise url parameter fetch api

```
fetch('url')
.then(
  response  => {
    console.log(response);
  },
 rejection => {
    console.error(rejection.message);
);
```

Fetch API Function

```
fetch('https://api-xxx.com/endpoint', {
  method: 'POST',
 body: JSON.stringify({id: "200"})
}).then(response => {
  if(response.ok){
      return response.json();
  }
    throw new Error('Request failed!');
}, networkError => {
  console.log(networkError.message);
}).then(jsonResponse => {
  console.log(jsonResponse);
})
```

async await syntax

```
const getSuggestions = async () => {
  const wordQuery = inputField.value;
  const endpoint = `${url}${queryParams}${wordQuery}`;
  try{
const response = await fetch(endpoint, {cache: 'no-cache'});
    if(response.ok){
      const jsonResponse = await response.json()
    }
```

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