



# آشنایی با NODE.JS

گروه کامپیوتر دانشگاه صفاهان

@Safahan\_IT

محمد صمدیه

Moh.Samadiehl@gmail.com





# معرفی JAVASCRIPT

JavaScript, often abbreviated as JS, is a high-level, dynamic, weakly typed, prototype-based, multi-paradigm, and interpreted programming language. Alongside HTML and CSS.

JavaScript is one of the three core technologies of World Wide Web content production.

First appeared December 4, 1995; 22 years ago[2]

Stable release ECMAScript 2017[3] / June 2017; 6 months ago

## تاریخچه

❑ Developed by Brendan Eich of Netscape, under the name of *Mocha*, then *LiveScript*, and finally *JavaScript*.

❑ 1995 - JavaScript 1.0 in Netscape Navigator 2.0 (Dec)

❑ 1996 - JavaScript 1.1 in Netscape Navigator 3.0 (Aug), JScript 1.0

in Internet Explorer 3.0 (Aug). *JavaScript had no standards governing its syntax or features.*

❑ 1997 - ECMAScript 1.0 (ECMA-262, based on JavaScript 1.1) (Jun), JavaScript 1.2 in Netscape Navigator 4.0 (Jun), JScript 3.0 in Internet Explorer 4.0 (Sep)

❑ 1998 - JavaScript 1.3 in Netscape 4.5 (ECMAScript 1.0) (Oct)

❑ 1999 - JScript 5.0 in Internet Explorer 5.0 (ECMAScript 1.0) (Mar), ECMAScript 3.0 (Regular expressions, error handling, etc.) (Dec)

❑ 2000 - JScript 5.5 in Internet Explorer 5.5 (ECMAScript 3.0) (Jul),  
JavaScript 1.5 in Netscape 6.0 (ECMAScript 3.0) (Nov)

❑ 2001 - JScript 5.6 in Internet Explorer 6.0 (Aug)

❑ 2005 - JavaScript 1.6 in Firefox 1.5 (Nov)



# معرفی JAVASCRIPT



<https://www.ecma-international.org/ecma-262/6.0/>



# آموزش JAVASCRIPT

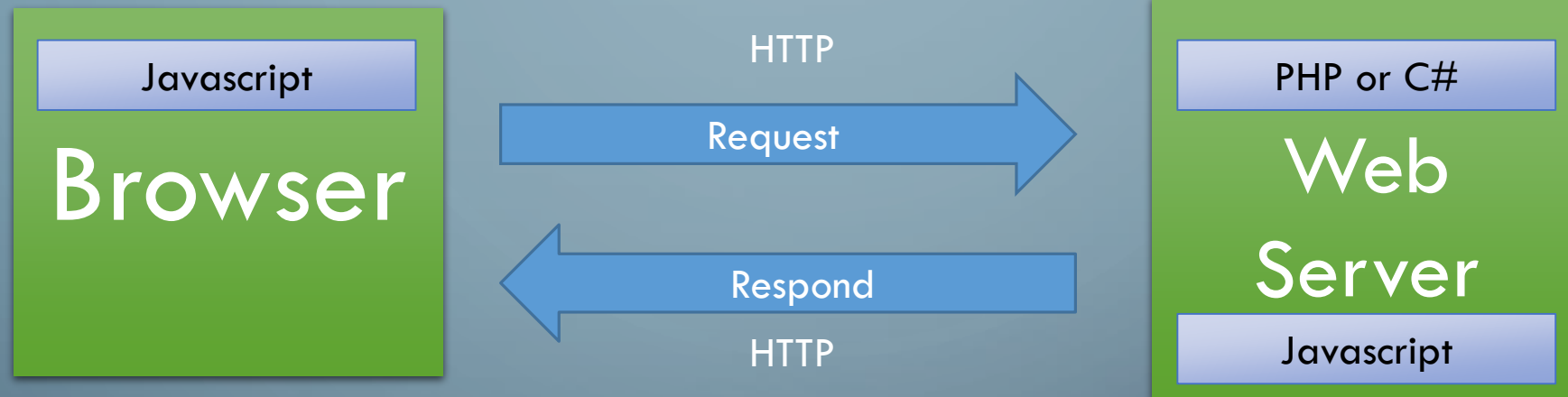


**w3schools.com**

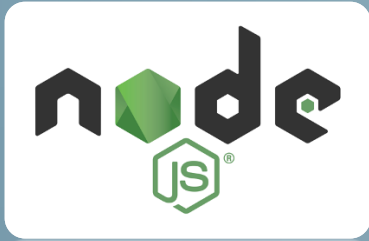
<https://www.w3schools.com/js/default.asp>



Client-Server Model of computing



Client-Server in web



# معرفی NODE.JS

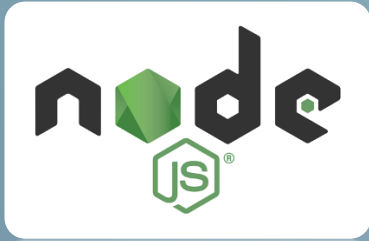
Node.js® is a JavaScript runtime built on Chrome's V8 JavaScript engine. Node.js uses an event-driven, non-blocking I/O model that makes it lightweight and efficient.

Node.js was developed by Ryan Dahl in 2009

Node.js is an open source, cross-platform runtime environment for developing server-side and networking applications. Node.js applications are written in JavaScript, and can be run within the Node.js runtime on OS X, Microsoft Windows, and Linux.

Node.js also provides a rich library of various JavaScript modules which simplifies the development of web applications using Node.js to a great extent.





# FEATURES OF NODE.JS

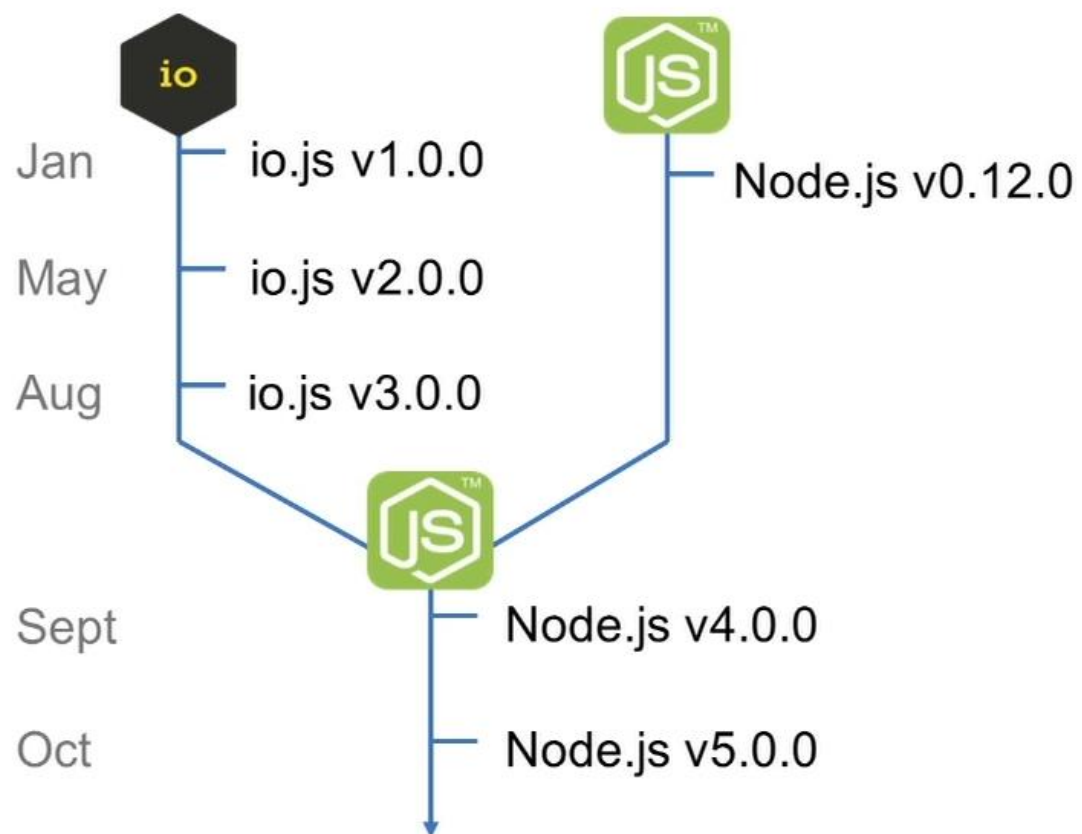
Following are some of the important features that make Node.js the first choice of software architects.

- Asynchronous and Event Driven – All APIs of Node.js library are asynchronous, that is, non-blocking. It essentially means a Node.js based server never waits for an API to return data. The server moves to the next API after calling it and a notification mechanism of Events of Node.js helps the server to get a response from the previous API call.
- Very Fast – Being built on Google Chrome's V8 JavaScript Engine, Node.js library is very fast in code execution.
- Single Threaded but Highly Scalable – Node.js uses a single threaded model with event looping. Event mechanism helps the server to respond in a non-blocking way and makes the server highly scalable as opposed to traditional servers which create limited threads to handle requests. Node.js uses a single threaded program and the same program can provide service to a much larger number of requests than traditional servers like Apache HTTP Server.
- No Buffering – Node.js applications never buffer any data. These applications simply output the data in chunks.
- License – Node.js is released under the MIT license.

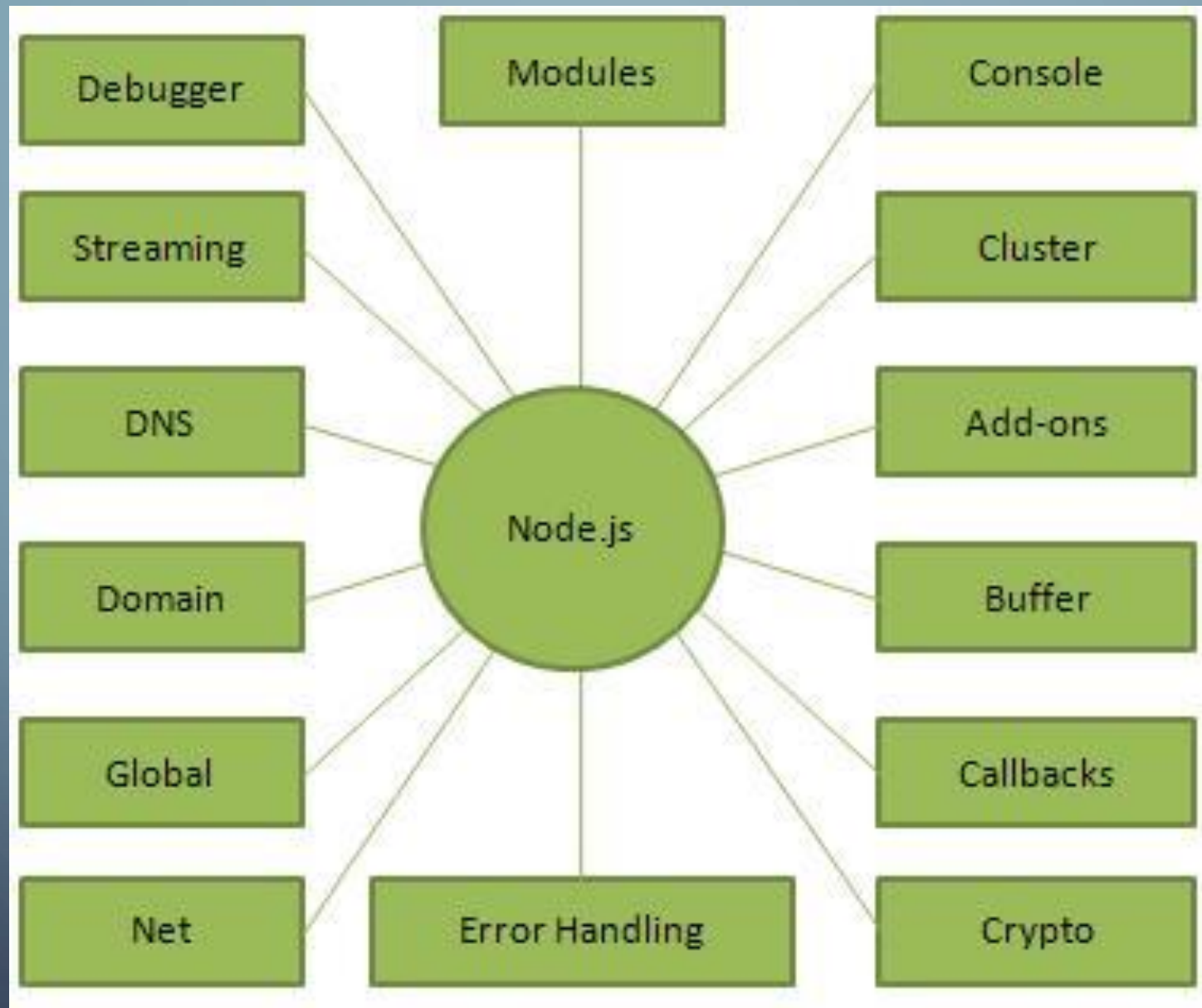


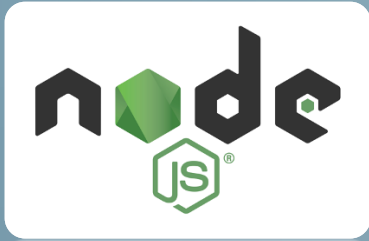
<https://nodejs.org/en/download/releases/>

# نسخه های NODE.JS



Version	LTS	Date	V8	npm	NODE_MODULE_VERSION[1]			
Node.js 9.3.0		2017-12-12	6.2.414.46	5.5.1	59	Downloads	Changelog	Docs
Node.js 9.2.1		2017-12-08	6.2.414.44	5.5.1	59	Downloads	Changelog	Docs
Node.js 9.2.0		2017-11-14	6.2.414.44	5.5.1	59	Downloads	Changelog	Docs
Node.js 9.1.0		2017-11-07	6.2.414.32	5.5.1	59	Downloads	Changelog	Docs
Node.js 9.0.0		2017-10-31	6.2.414.32	5.5.1	59	Downloads	Changelog	Docs
Node.js 8.9.3	Carbon	2017-12-07	6.1.534.48	5.5.1	57	Downloads	Changelog	Docs
Node.js 8.9.2	Carbon	2017-12-05	6.1.534.48	5.5.1	57	Downloads	Changelog	Docs
Node.js 8.9.1	Carbon	2017-11-07	6.1.534.47	5.5.1	57	Downloads	Changelog	Docs
Node.js 8.9.0	Carbon	2017-10-31	6.1.534.46	5.5.1	57	Downloads	Changelog	Docs
Node.js 8.8.1		2017-10-25	6.1.534.42	5.4.2	57	Downloads	Changelog	Docs
Node.js 8.8.0		2017-10-24	6.1.534.42	5.4.2	57	Downloads	Changelog	Docs
Node.js 8.7.0		2017-10-11	6.1.534.42	5.4.2	57	Downloads	Changelog	Docs
Node.js 8.6.0		2017-09-26	6.0.287.53	5.3.0	57	Downloads	Changelog	Docs
Node.js 8.5.0		2017-09-12	6.0.287.53	5.3.0	57	Downloads	Changelog	Docs
Node.js 8.4.0		2017-08-15	6.0.286.52	5.3.0	57	Downloads	Changelog	Docs
Node.js 8.3.0		2017-07-08	6.0.286.52	5.3.0	57	Downloads	Changelog	Docs
Node.js 8.2.1		2017-07-20	5.8.283.41	5.3.0	57	Downloads	Changelog	Docs
Node.js 8.2.0		2017-07-19	5.8.283.41	5.3.0	57	Downloads	Changelog	Docs
Node.js 8.1.4		2017-07-11	5.8.283.41	5.0.3	57	Downloads	Changelog	Docs
Node.js 8.1.3		2017-06-29	5.8.283.41	5.0.3	57	Downloads	Changelog	Docs
Node.js 8.1.2		2017-06-15	5.8.283.41	5.0.3	57	Downloads	Changelog	Docs
Node.js 8.1.1		2017-06-13	5.8.283.41	5.0.3	57	Downloads	Changelog	Docs
Node.js 8.1.0		2017-06-08	5.8.283.41	5.0.3	57	Downloads	Changelog	Docs





## WHERE TO USE NODE.JS?

- Following are the areas where Node.js is proving itself as a perfect technology partner.
- I/O bound Applications
- Data Streaming Applications
- Data Intensive Real-time Applications (DIRT)
- JSON APIs based Applications
- Single Page Applications



## معرفی CHROME V8

Chrome V8, or simply V8, is an open-source JavaScript engine developed by The Chromium Project for Google Chrome and Chromium web browsers.

The project's creator is Lars Bak.



<https://github.com/v8/v8/wiki>

## معرفی CHROME V8

V8 is Google's open source high-performance JavaScript engine, written in C++.

It is used in Google Chrome, the open source browser from Google, and in Node.js, among others.

It implements ECMAScript as specified in ECMA-262, and runs on Windows 7 or later, macOS 10.12+, and Linux systems that use IA-32, ARM, or MIPS processors.

V8 can run standalone, or can be embedded into any C++ application.



# نصب و راه اندازی

## 1. Text Editor

Windows Notepad

Visual Studio Code

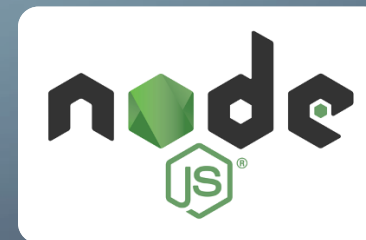
Sublime Text



## 2. Node.js Runtime

<https://nodejs.org/en/download/>

Latest Current Version: **9.3.0** (includes npm 5.5.1)



# مراحل راه اندازی

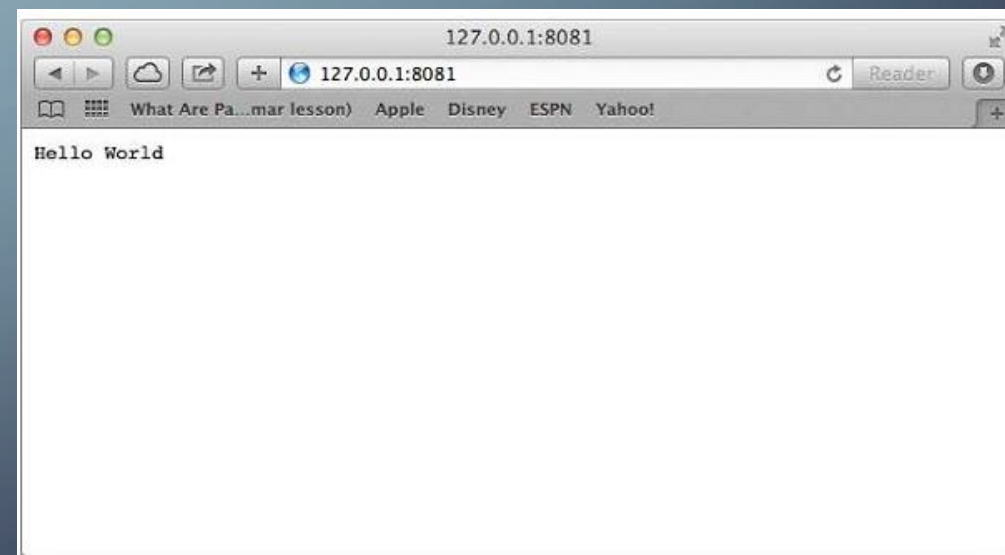
- Step 1 - Import Required Module
- Step 2 - Create Server
- Step 3 - Testing Request & Response

```
var http = require("http");
```

```
http.createServer(function (request, response) {  
  // Send the HTTP header  
  // HTTP Status: 200 : OK  
  // Content Type: text/plain  
  response.writeHead(200, {'Content-Type': 'text/plain'});  
  
  // Send the response body as "Hello World"  
  response.end('Hello World\n');  
}).listen(8081);  
  
// Console will print the message  
console.log('Server running at http://127.0.0.1:8081/');
```

```
$ node main.js
```

```
Server running at http://127.0.0.1:8081/
```







# FIRST CLASS FUNCTIONS AND FUNCTION EXPRESSIONS

```
//function statement  
function greet() {  
    console.log("hi");  
}  
greet();
```

```
//first class function  
function logGreeting(fn) {  
    fn();  
}  
logGreeting(greet);
```

```
//function expression  
var greetMe = function () {  
    console.log("hi");  
}  
greetMe();  
logGreeting(greetMe);
```

```
logGreeting(function () {  
    console.log("hi");  
})
```



# MODULES

```
//app.js  
var greet = require("./greet.js");  
greet();
```

```
//greet.js  
var greet = function() {  
    console.log("hello");  
};  
module.exports = greet;
```



# OBJECT LITERAL

```
var person = {  
    firstname : "John",  
    lastname : "Doe",  
    greet : function() {  
        console.log("hello, " + this.firstname + this.lastname);  
    }  
};  
person.greet();
```

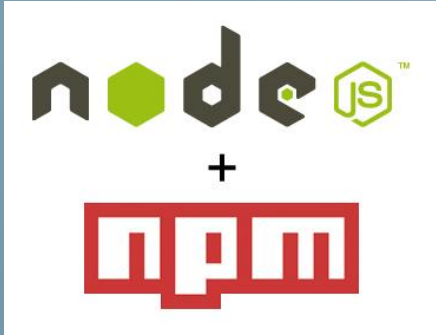


# PROTOTYPAL INHERITANCE

```
function Person(firstname, lastname) {  
    this.firstname = firstname;  
    this.lastname = lastname;  
};  
Person.prototype.greet = function () {  
    console.log(this.firstname + this.lastname);  
}  
var john = new Person("John", "Doe");  
john.greet();
```

# WRAPPER

```
(function (exports, require, module, __filename, __dirname) {  
  
    var greet = function() {  
        console.log('Hello!');  
    };  
  
    module.exports = greet;  
  
});  
  
fn(module.exports, require, module, filename, dirname);  
  
return module.exports;
```



<https://www.npmjs.com/>

## معرفی NPM

Node Package Manager (NPM) provides two main functionalities:

1. Online repositories for node.js packages/modules which are searchable on [search.nodejs.org](https://search.nodejs.org)
2. Command line utility to install Node.js packages, do version management and dependency management of Node.js packages.



# express

<https://expressjs.com/>

## معرفی EXPRESS

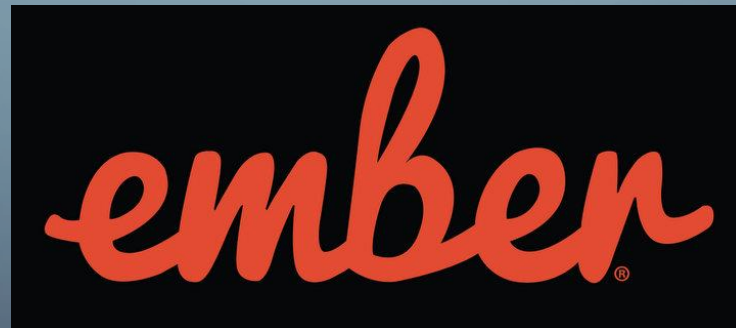
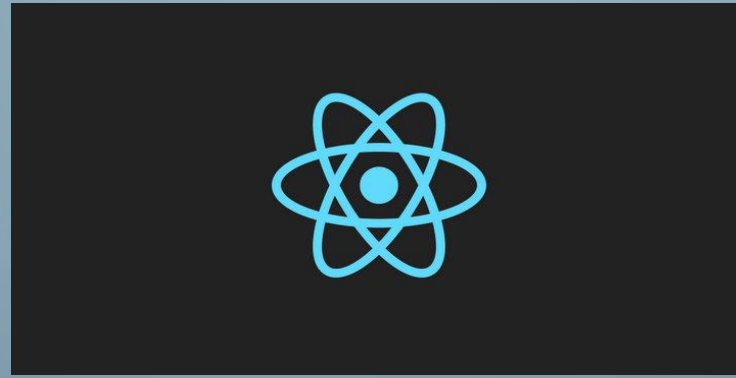


```
var express = require('express')
var app = express()

app.get('/', function (req, res) {
  res.send('Hello World')
})

app.listen(3000)
```

# معرفی JAVASCRIPT FRAMEWORKS





# JAVASCRIPT FRAMEWORKS معرفی

<https://da-14.com/blog/5-best-javascript-frameworks-2017>

	AngularJS	Angular 2	ReactJS	Vue.js	Ember.js	Meteor.js
Definition	MVW framework	MVC framework	JavaScript library	MVC framework	MVC framework	JavaScript app platform
1st Release	2009	2016	2013	2014	2011	2012
Homepage	angularjs.org	angular.io	reactjs.net	vuejs.org	emberjs.com	meteor.com
# Contributors on GitHub	1,562	392	912	62	636	328
GitHub Star Rating	54,402	19,832	57,878	39,933	17,420	36,496