

<WA1/>  
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2022

# Applicazioni Web I Web Applications I

## Introduction to the course

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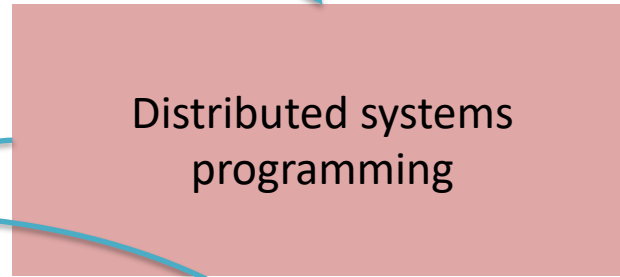
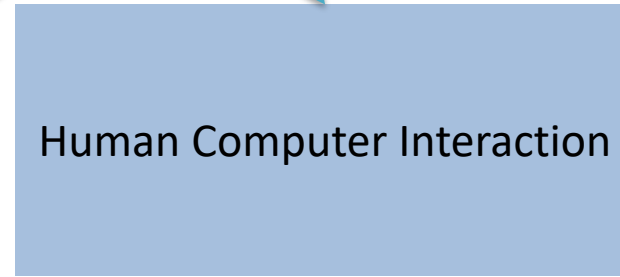
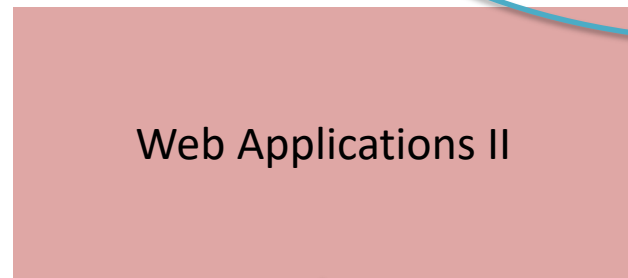


# Goal

- Understanding web architectures
- Understanding and mastering web application design and development
- Gaining in-depth knowledge of the JavaScript language and ecosystem
- Becoming familiar with one of the most popular JavaScript frameworks (React)
- ...with special focus on the front-end

# The Bigger Picture

- Web architecture
- JavaScript
- Browsers
- **Front-End** programming
- **Back-end** programming
- Scalability
- Large-scale



- Usability
- Interface design
- Human centered processes
- Distributed Architectures
- Protocols
- Foundations
- Mobile Front-End
- Mobile device programming



You are here

# What We Will Learn

## JavaScript as a language

- ECMAScript ES6
- Language constructs
- In-depth semantics
- Functional, Asynchronous, Modular, ...

The JavaScript logo, consisting of the letters 'JS' in a bold, black, sans-serif font on a yellow square background.

## The browser ecosystem

- HTML, CSS, page structure
- DOM
- JavaScript in the browser
- Events, Properties, Handlers, APIs



## Single Page Applications

- Server-side (bare minimum) with node
- API development
- Backend storage
- Sessions and Authentication



## React framework

- Components, Properties, State
- JSX
- Hooks
- Router



# Weeks and Calendar... At a Glance!

1. Intro to JS: basics, objects, functions
2. Intro to JS: async programming, callbacks, DB interaction + Intro to Web
3. HTML, CSS, Bootstrap
4. JS: classes, modules, this + JS in the browser
5. Intro to React
6. React: props and state
7. React: context, life cycle, forms
8. React router
9. Server-side with Express
10. Fetch and client-server interaction (in React)
11. Authentication

# Course Organization

- Classes
  - 3 h/week
  - Lectures + Exercises (*mixed*)
- Laboratories (room 1I)
  - 1.5 h/week
  - 2 Lab slots (see later for the split)
  - 3 Labs + 2 BigLabs, starting 2<sup>nd</sup> week
- **Exception:** first week
  - Class instead of Lab

	MO	TU	WE	TH	FR
08:30		9I		1I	
10:00		9I		1I	
11:30					
13:00					
14:30					
16:00					
17:30					

# Classes

- In person, in rooms with power outlets at the desks
  - bring your own computer, if possible, to follow the examples/exercises
- Video-recorded and made available soon after each class
  - *not* streamed live
- A few times during the course, we will give you some materials to read/watch before a lecture
  - relatively *short* and published *in advance*

# Laboratories

- Starting 10/03/2022
- In rooms with power outlets at the desks
- Text online, some days in advance
- Exercises to be done during Lab hours
- Solution will be posted on GitHub
  - around 1 week after the end of each lab

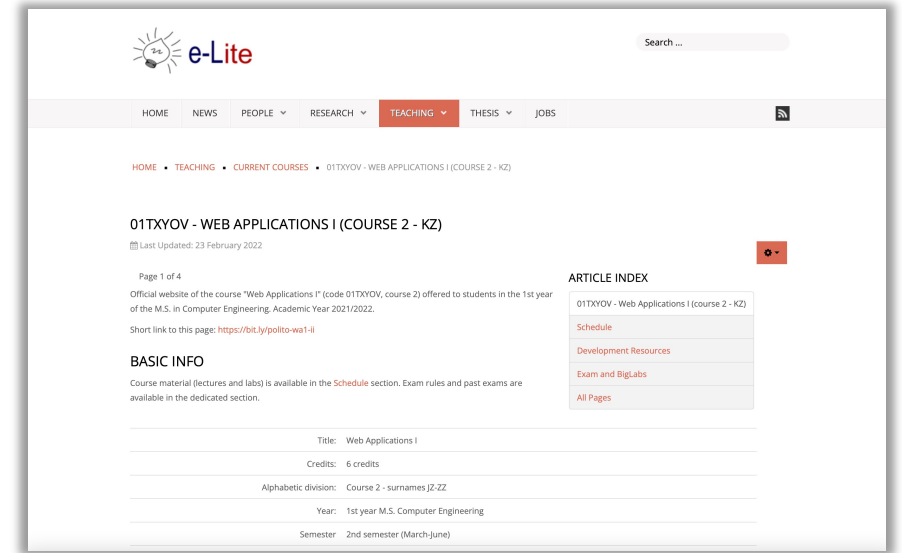


# Laboratories

- In (fixed) group
  - 3-4 people
  - you decide the team
  - fill this out with your group composition and your Lab slot preference, by **March 6** (end of the day): <https://forms.gle/oaADCNnud2x85r726>
- 3 Labs, each long 1.5 hours
- 2 BigLabs, each long 6 hours
  - if submitted, each BigLab gives up to +1 point to the exam
  - evaluated as a group
  - detailed instructions will follow

# Learning Material

- Course website – <https://bit.ly/polito-wa1-ii>
  - Slides (in English)
  - Full schedule
  - Links and supplementary material
- Video lectures (screencasts)
  - YouTube - [https://www.youtube.com/playlist?list=PLs7DWGc\\_wmwQJhmKEK2v8JbjbJSklv120](https://www.youtube.com/playlist?list=PLs7DWGc_wmwQJhmKEK2v8JbjbJSklv120)
  - Portale della Didattica
- GitHub - <https://github.com/polito-WA1-AW1-2022>
  - Examples, exercises, labs, exams, ...



# Slack



- We will use Slack for all communications
  - among students, with teachers, etc.
  - new to Slack? -> <https://slack.com/resources/using-slack/how-to-use-slack>
- Join with your @studenti.polito.it email at <https://join.slack.com/t/wa1-2022-kz/signup>
- Announcements and official information in **#general**
- Feel free to contact the teachers for feedback and questions in **#discussion**
  - questions of general interest must be posted there, so that everybody can see the answer

# Office Hours

## Why?

- An opportunity *for students* to discuss any need or challenge
- To clarify information and ask questions about the course
- To discuss academic and/or career goals
- To know more about certain topics
- ...

## When?

- The hour after Tuesday's class
- On request, either in person (in my office) or remotely (on Zoom)

# About the Exam

## 1. Project development

- Individual
- up to 24 points (minimum: 12)
- 20 days of time

## 2. Oral discussion (on the project)

- individual and mandatory
- up to 6 points

## 3. BigLabs evaluation

- *optional* (i.e., if submitted as a group)
- up to 2 points -> the only way to get 30L

Full exam rules in the course website (under "Exams")

# Project Development

## What

- Develop a web application using
  - React + JavaScript
  - Node + Express
  - SQLite
- According to a functional specification
  - published 20 days before each official exam date

## How

- Individually (i.e., not in group)
- Using GitHub Classroom
  - commit + push your project
- Teacher's Evaluation
  - running the application on a clean recent Linux distro (with node)
  - examining the code

# Oral Discussion

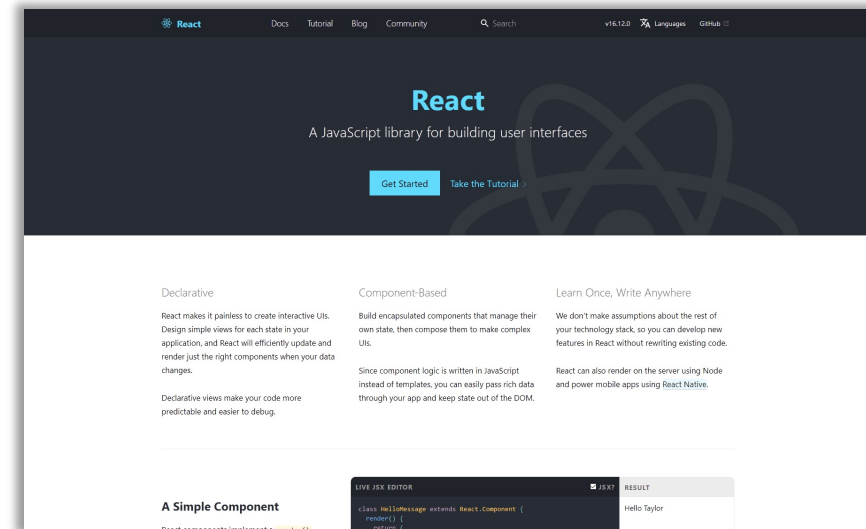
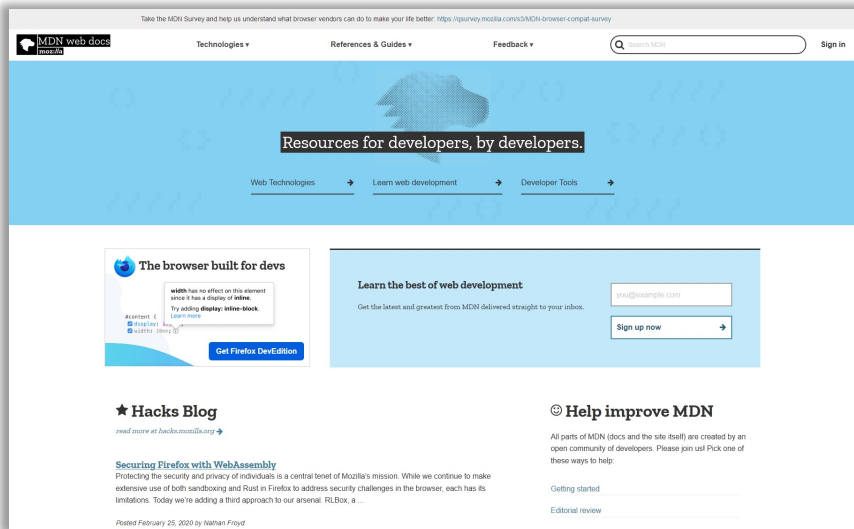
## Goals

- To ensure that each student developed the web application by themselves
- To evaluate how much the student can explain the exact behaviour of the code

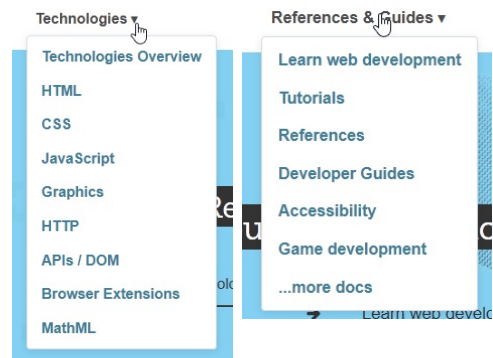
## Evaluation Criteria

- Theoretical and practical knowledge of the project design
- Theoretical and practical knowledge of the project code base
- Readiness and clarity in the replies

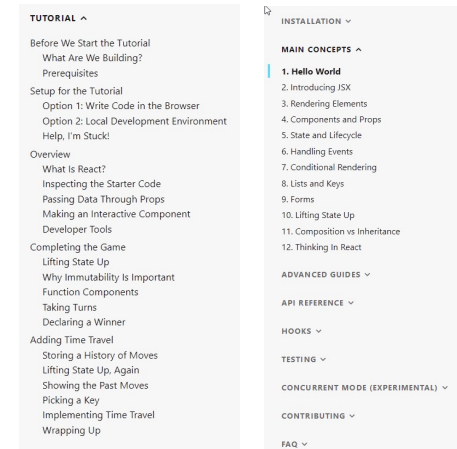
# Resources (fundamentals)



Mozilla Developer Network (MDN)  
<https://developer.mozilla.org/>

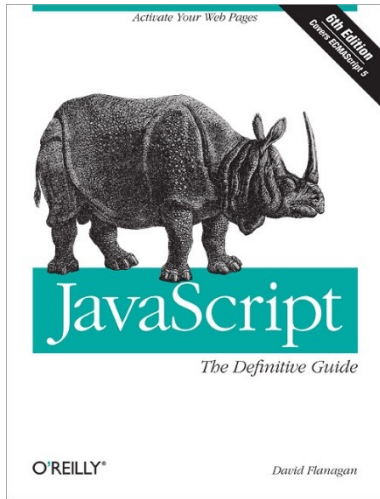


React Library  
<https://reactjs.org/>

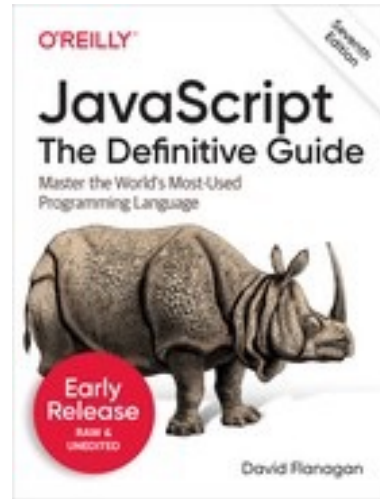




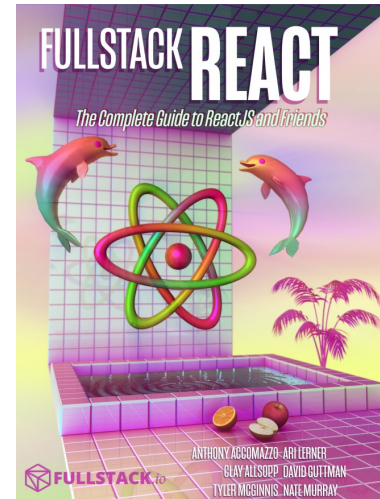
# Resources (books)



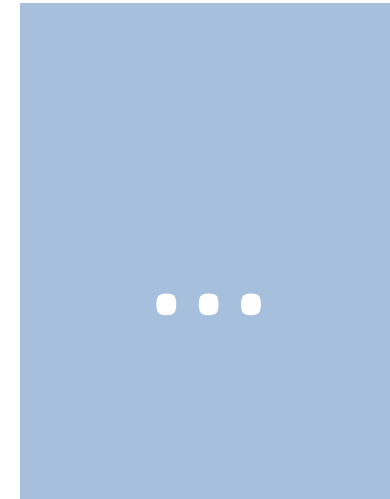
JavaScript: The Definitive Guide,  
6th Edition  
By David Flanagan  
ISBN 978-0596805524  
*Release Date: May 2011*  
(not very updated...)



JavaScript: The Definitive Guide,  
7th Edition  
By David Flanagan  
ISBN 978-1491952023  
*Release Date: July 2020*

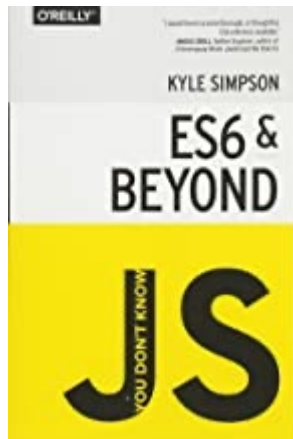
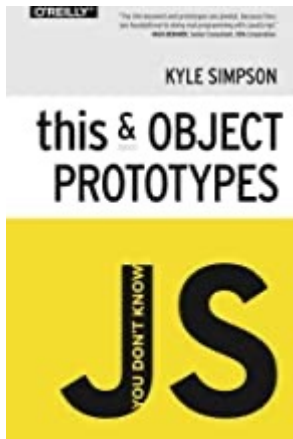
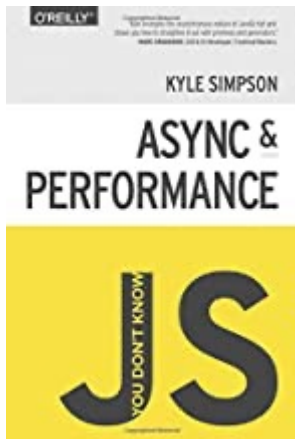
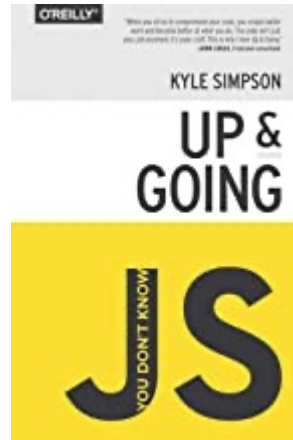
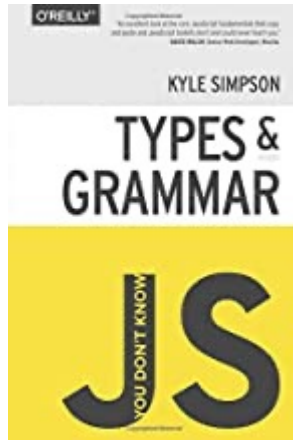
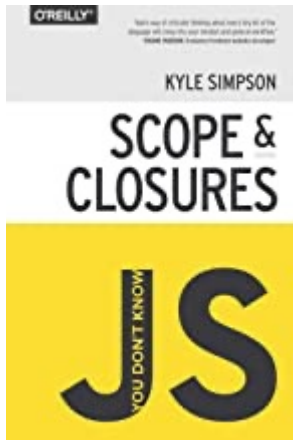


Fullstack React  
By Anthony Accomazzo, Nate  
Murray, Ari Lerner, Clay  
Allsopp, David Guttman, and  
Tyler McGinnis  
<https://www.newline.co/fullstack-react>  
*Release: r40 (January 2020)*

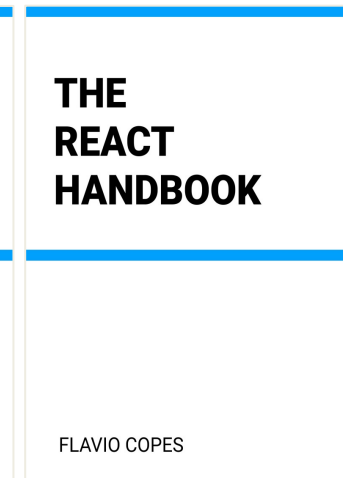
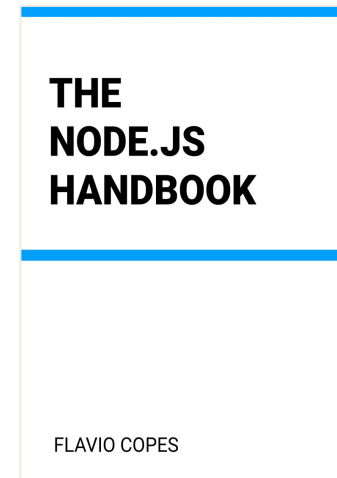
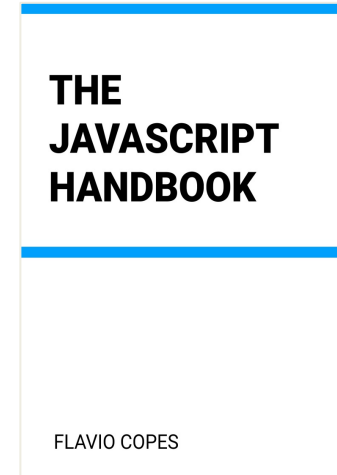


... and many others

# Resources (on-line books)

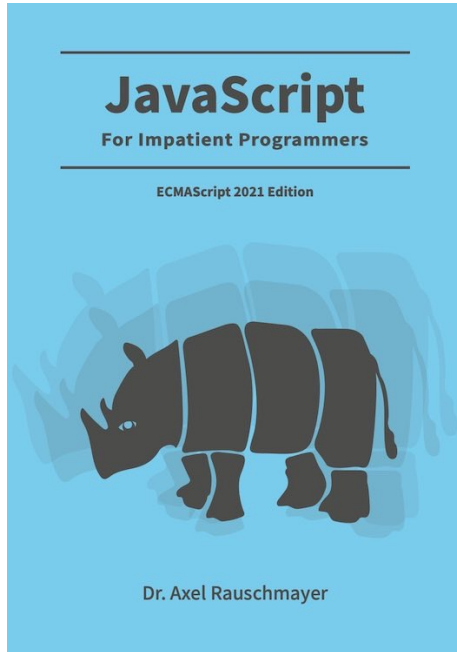


You Don't Know JS Yet (book series) - 2nd Edition  
By Kyle Simpson (@getify)  
<https://github.com/getify/You-Dont-Know-JS>

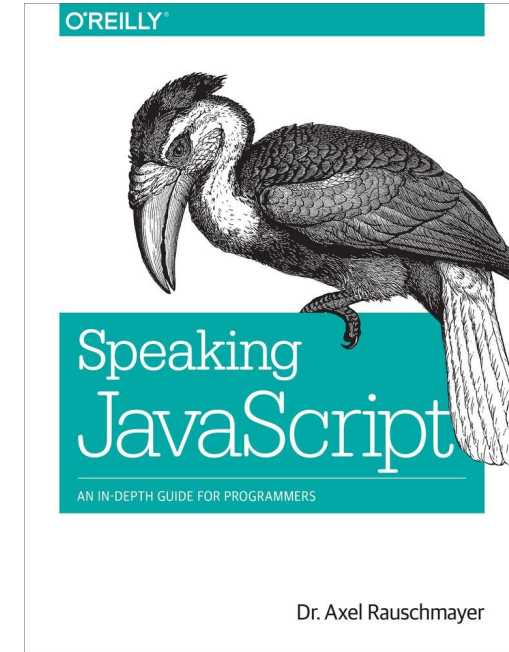
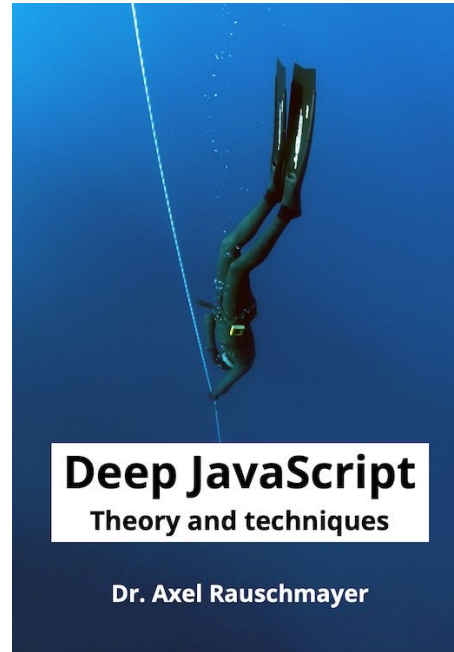


Flávio Copes Handbooks  
<https://flaviocopes.com/>

# Resources (on-line books)



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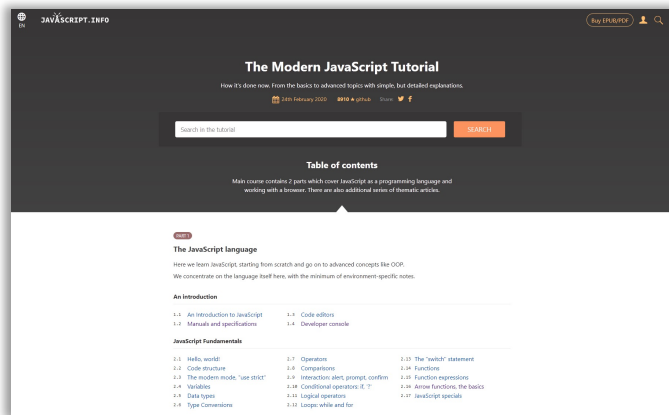


<https://exploringjs.com/impatient-js/index.html>

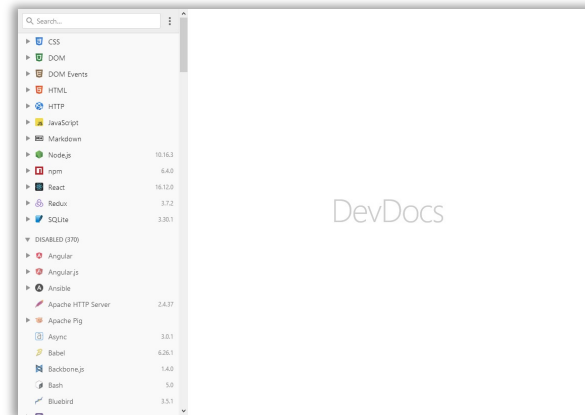
<https://exploringjs.com/deep-js/index.html>

<http://speakingjs.com/>

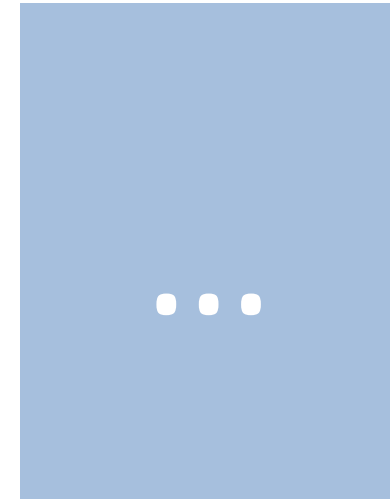
# More Resources...



The Modern JavaScript Tutorial  
<https://javascript.info/>

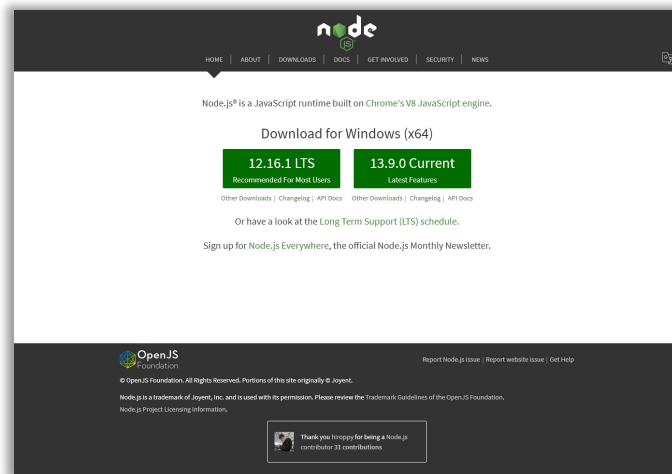


DevDocs: API Documentation  
Browser  
<https://devdocs.io/>



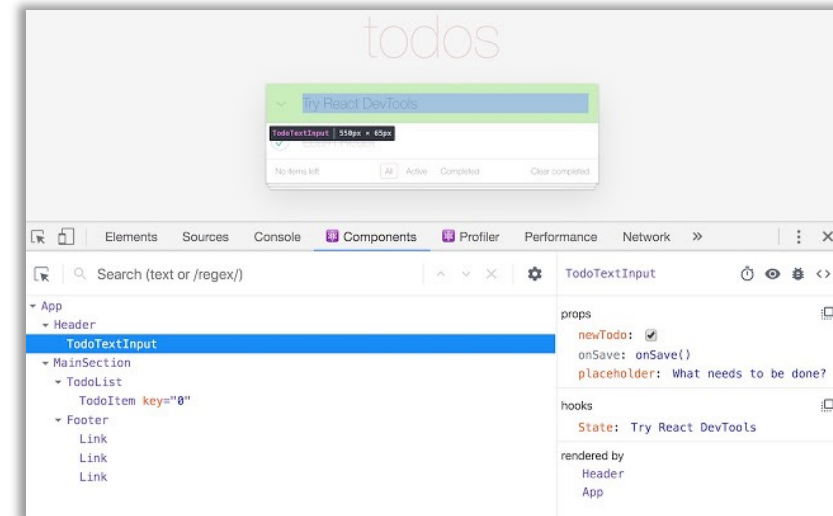
... and many others

# Tools



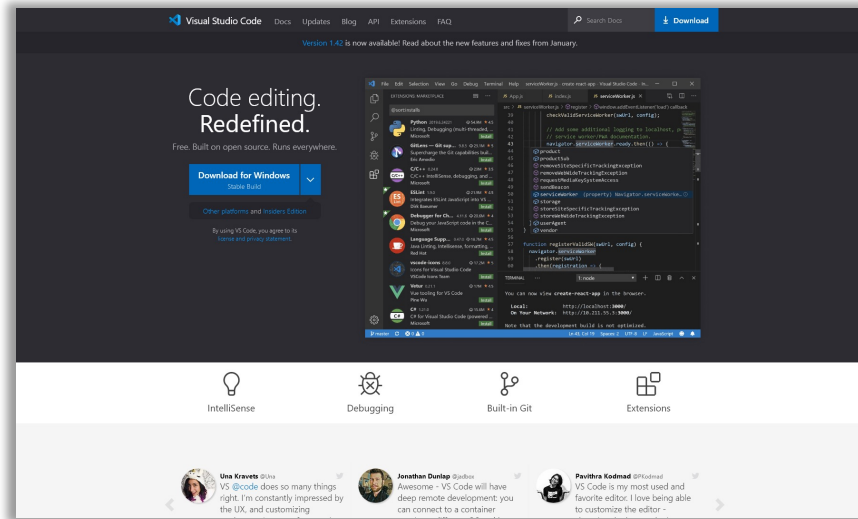
Node.js runtime  
Version 16.14 LTS  
<https://nodejs.org/en/>

Install on Linux using the instructions on  
<https://github.com/nodesource/distributions>



React Developer Tools  
Extension for [Chrome](#) and [Firefox](#)

# Programming Environment



Visual Studio Code

<https://code.visualstudio.com/>



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