

<WA1/>  
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2024

# Applicazioni Web I Web Applications I

**Introduction to the course**

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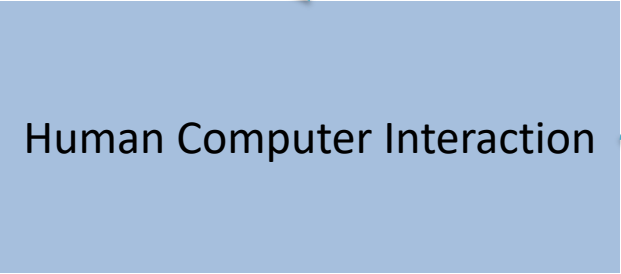


# Goal

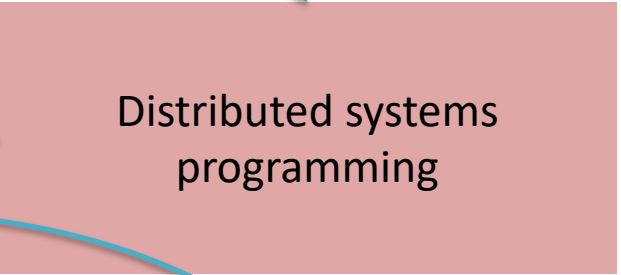
- Understanding web architectures
- Understanding and mastering web application design and development
- Gaining in-depth knowledge of the JavaScript language and ecosystem
- Becoming familiar with one of the most popular JavaScript frameworks (React)
- ...with special focus on the front-end

# The Bigger Picture

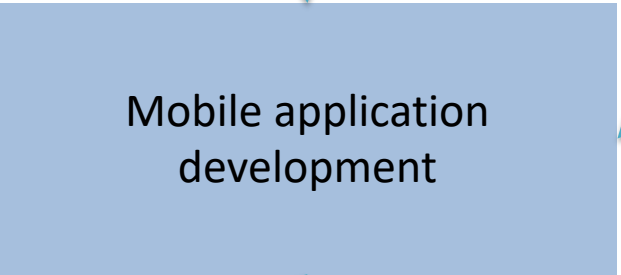
- Web architecture
- JavaScript
- Browsers
- **Front-End** programming
- **Back-end** programming
- Scalability
- Large-scale



- 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, ...

JS

## 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
3. Intro to Web and server-side with Express
4. HTML, CSS, Bootstrap
5. DOM and JS in the browser
6. Intro to React
7. React: props and state
8. React: context, life cycle, forms
9. React router
10. Fetch and client-server interaction (in React)
11. Authentication

# Course Organization

- Classes
  - 3 h/week
  - Lectures + Exercises (*mixed*)
- Laboratories
  - 1.5 h/week
  - 2 Lab groups (see later for the split)
  - Starting 2<sup>nd</sup> week
- **Exception:** first week
  - Class instead of Lab

	MO	TU	WE	TH	FR
08:30		2P		R2	
10:00		2P		R2	
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 instead of a lecture
  - published well *in advance*

# Laboratories

- Starting 14/03/2024
- 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

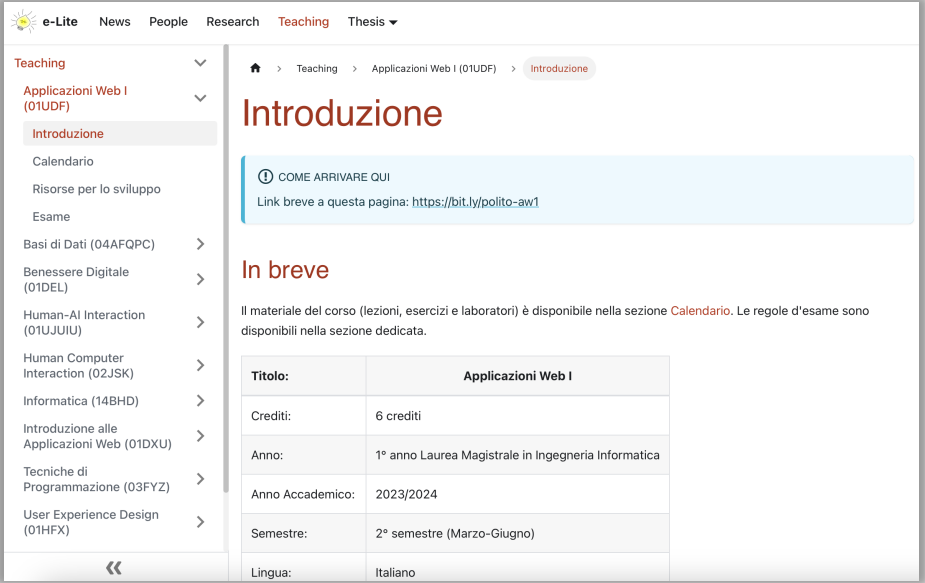


# Laboratories

- You will build a simple project during the labs
  - Step by step, following the course topics
- Some labs will last one week, others will span multiple weeks
- 2 slots:
  - Thursday, 08:30-10:00, room R2, surnames: [A-L](#)
  - Thursday, 10:00-11:30, room R2, surnames: [M-Z](#)

# Learning Material

- Course website – <https://bit.ly/polito-aw1>
  - Slides (in English)
  - Full schedule
  - Links and supplementary material
- Video lectures (screencasts)
  - YouTube - [https://www.youtube.com/playlist?list=PLs7DWGc\\_wmwTz6XD62wCYGRaVXMztRpwd](https://www.youtube.com/playlist?list=PLs7DWGc_wmwTz6XD62wCYGRaVXMztRpwd)
  - Portale della Didattica
- GitHub - <https://github.com/polito-webapp1>
  - Examples, exercises, labs, exams, ...



Teaching > Applicazioni Web I (01UDF) > Introduzione

## Introduzione

📄 COME ARRIVARE QUI  
Link breve a questa pagina: <https://bit.ly/polito-aw1>

### In breve

Il materiale del corso (lezioni, esercizi e laboratori) è disponibile nella sezione **Calendario**. Le regole d'esame sono disponibili nella sezione dedicata.

Titolo:	Applicazioni Web I
Crediti:	6 crediti
Anno:	1° anno Laurea Magistrale in Ingegneria Informatica
Anno Accademico:	2023/2024
Semestre:	2° semestre (Marzo-Giugno)
Lingua:	Italiano



# Communications

- We will use **Telegram** for the main communications
  - among students, with teachers, etc.
- Announcements, official information, and Q&A
- Feel free to contact the teachers for feedback and questions
  - questions of general interest must be posted in the group, so that everybody can see the answer
- Link to the Telegram group:  
<https://t.me/+du8qADsfwMgxOTI0>
  - “mandatory” participation in the group
- Emails can be an **alternative** for slower, more articulated, and private individual communications



# Students' Hours

- **Why?**

- An opportunity to discuss issues or needs
- To get clarifications or ask questions on the course
- To discuss academic or professional goals (e.g., thesis, what to do next)
- To know more about specific topics
- ...

- **When?**

- **Wednesday 16:00-17:00** in my office; send a message at least one day before
- On request, in person (at my office) or remotely (via Zoom)

# Exam: Two Parts

## 1. **Project development** (up to 26 points)

- Individual
- Starting from shared requirements
- 20 days of time – submit by 23:59 on the day before the official exam date

## 2. **Oral discussion** (up to 4 points)

- individual and mandatory – in-person, only
- “live” correction and discussion of the submitted project
- when: the official exam day (or starting from that day)

# Exam: Score and Process

- Project development + oral discussion: up to 30 points
- Up to 2 extra points for students whose projects demonstrate a high quality and for the richness and precision of the answers during the discussion

**Note:** If it emerges that the student does not have mastery of the written code, the exam will be immediately canceled, without a numerical evaluation.

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
  - strict submission procedure
- Teacher's Evaluation
  - running the application on the teacher's laptop
  - examining the code

# Project Evaluation Criteria

- Correct and complete implementation of the specification
  - Functional requirements
  - Non-functional requirements
- Soundness of design choices and implementation choices
- Consistency with standards and good practices
- Quality and clarity of the code



# Oral Discussion

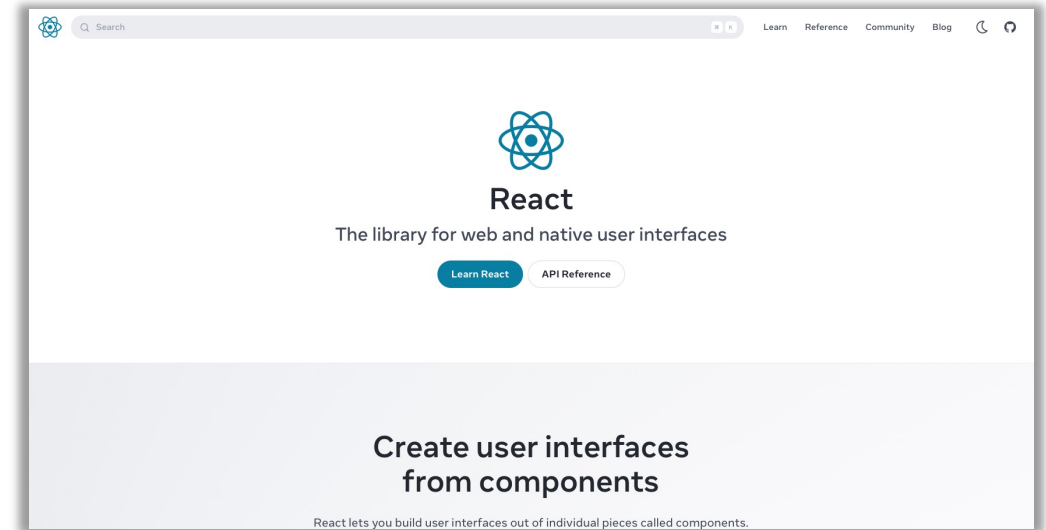
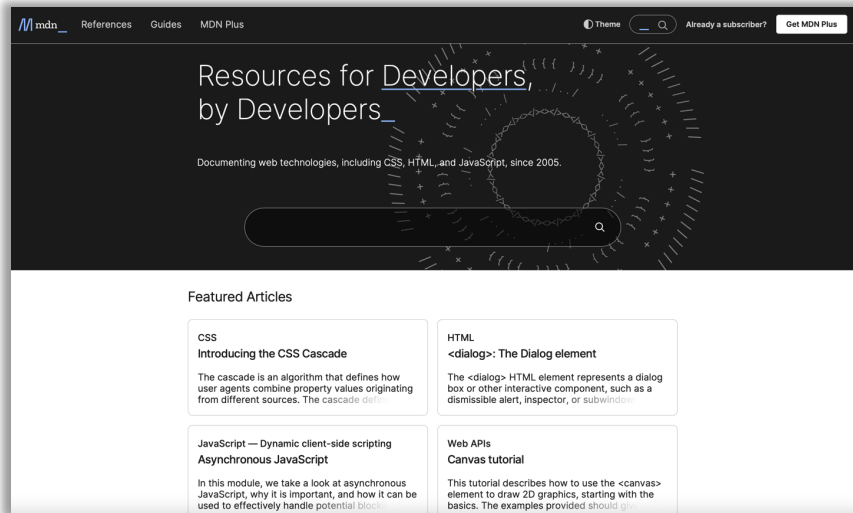
## Goals

- 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
- To discuss design and technical choices

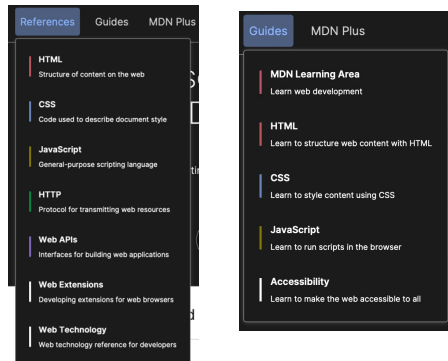
## Evaluation Criteria

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

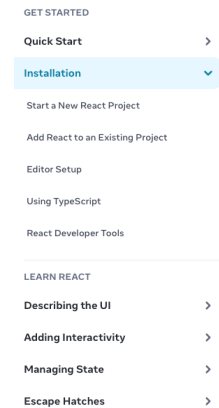
# Resources (fundamentals)



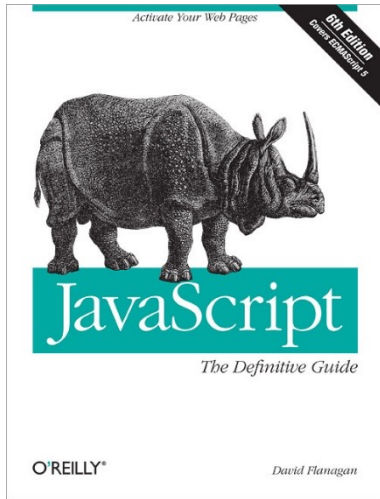
Mozilla Developer Network  
(MDN)  
<https://developer.mozilla.org/>



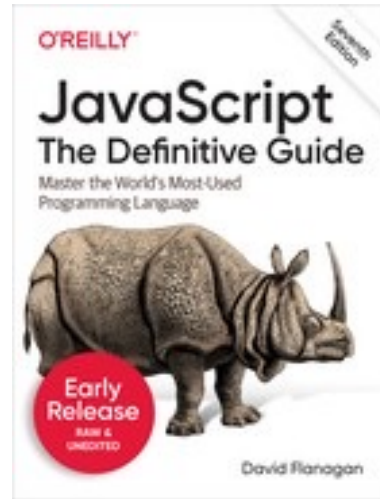
React  
<https://react.dev>



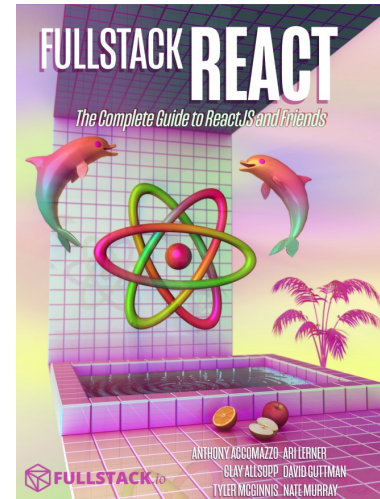
# Resources (books)



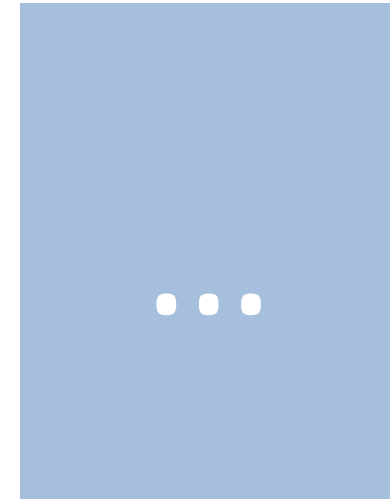
JavaScript: The Definitive Guide,  
6th Edition  
By David Flanagan  
ISBN 978-0596805524  
*Release Date: May 2011*  
(not very updated...)



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

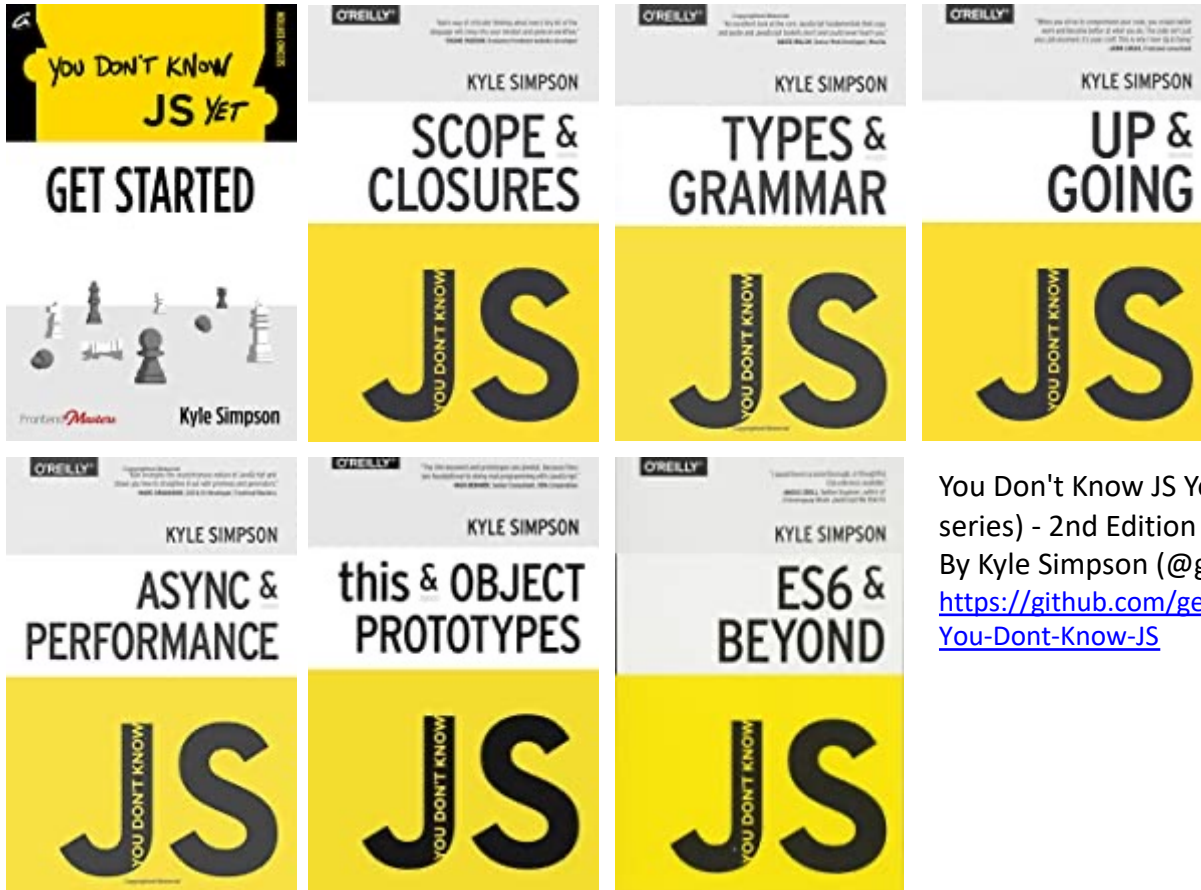


Fullstack React  
By Anthony Accomazzo, Nate  
Murray, Ari Lerner, Clay  
Allsopp, David Guttman, and  
Tyler McGinnis  
<https://www.newline.co/fullstack-react>  
*Release: r40 (January 2020)*



... and many others

# Resources (on-line books)

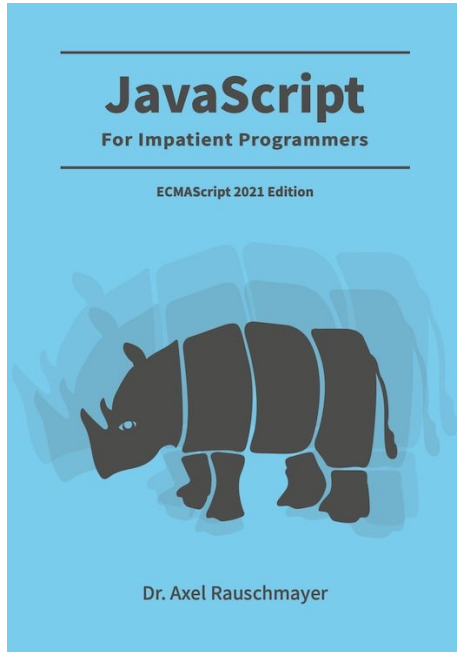


You Don't Know JS Yet (book series) - 2nd Edition  
By Kyle Simpson (@getify)  
<https://github.com/getify/You-Dont-Know-JS>

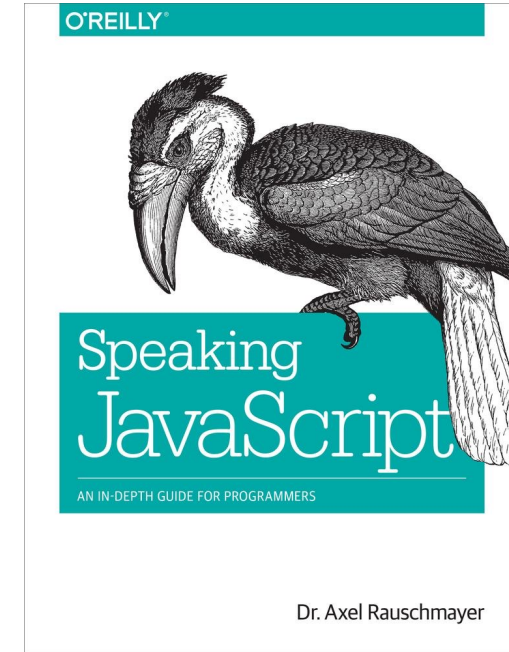
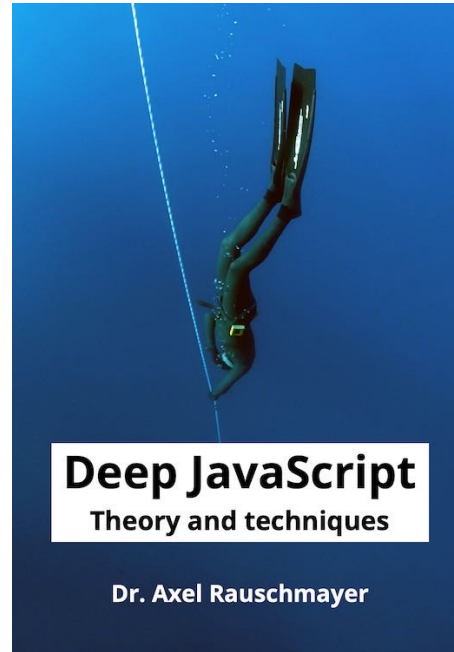


Flavio Copes Handbooks  
<https://flaviocopes.com/>

# Resources (on-line books)



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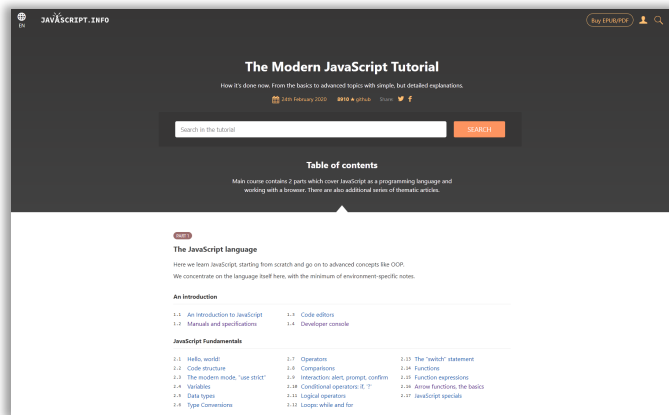


<https://exploringjs.com/impatient-js/index.html>

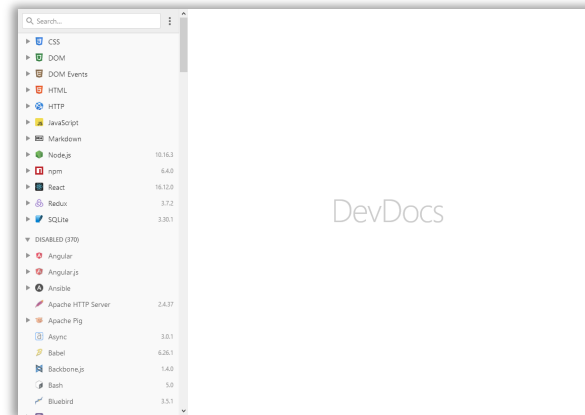
<https://exploringjs.com/deep-js/index.html>

<http://speakingjs.com/>

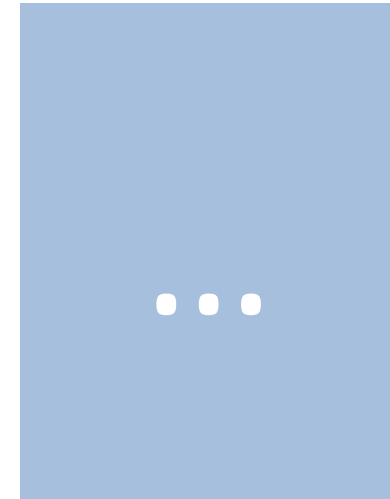
# More resources...



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

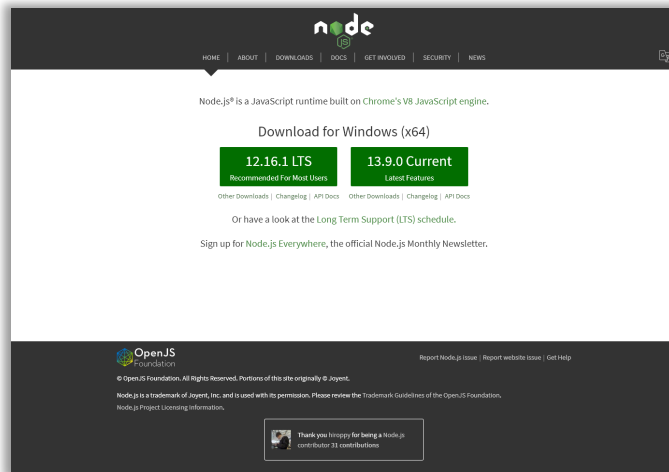


DevDocs: API Documentation  
Browser  
<https://devdocs.io/>

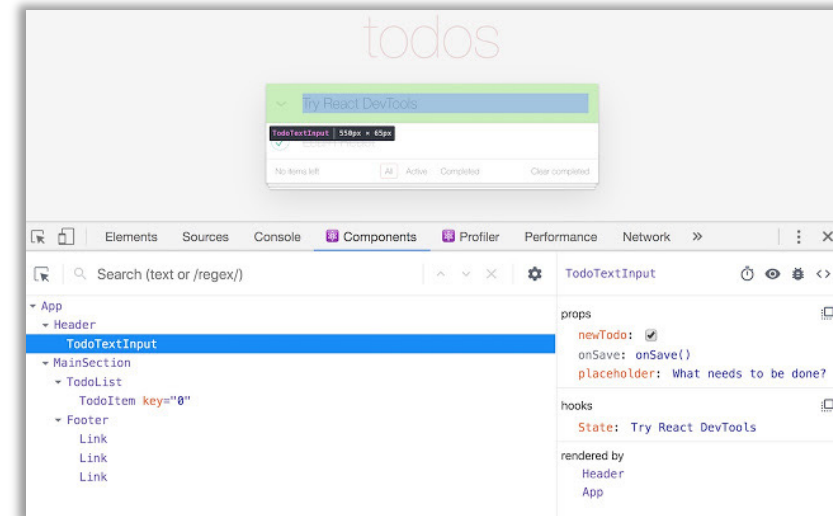


... and many others

# Tools

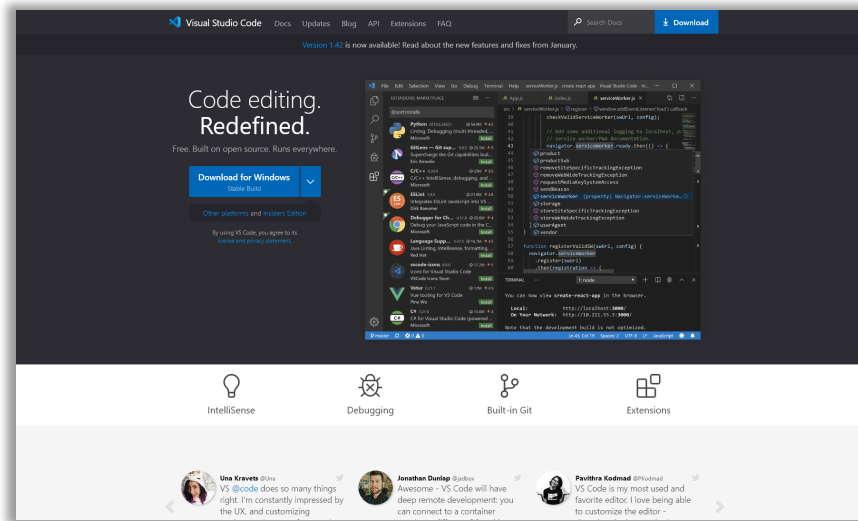


Node.js runtime  
Version 20.x LTS  
<https://nodejs.org/en/>



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

# Programming Environment



Visual Studio Code

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





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