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2022

Applicazioni Web I
Web Applications I

Introduction to the course

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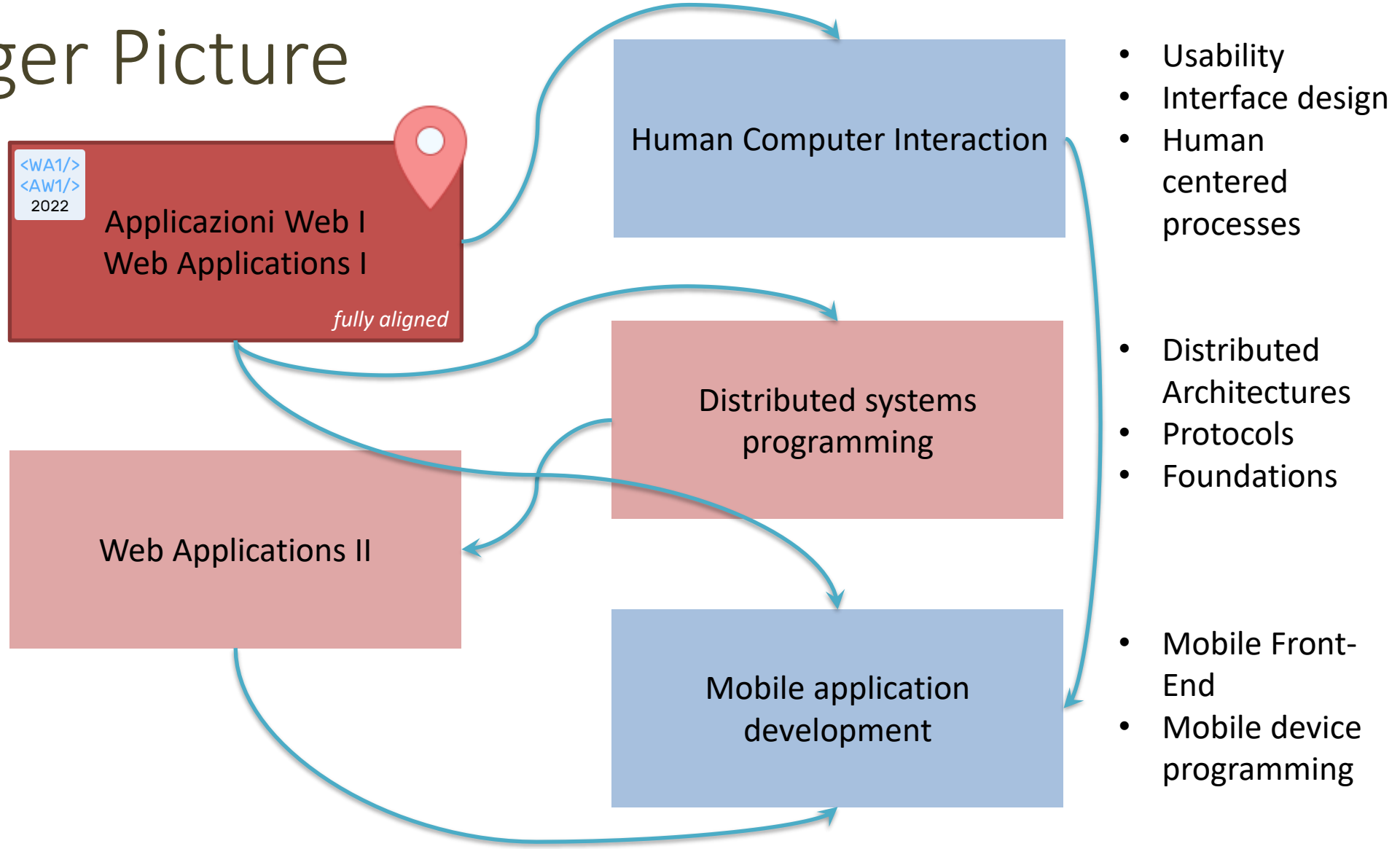
Goal

- 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 browser ecosystem

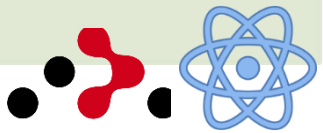
- HTML, CSS, page structure
- DOM
- JavaScript in the browser
- Events, Properties, Handlers, APIs

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 groups (split alphabetically)
  - 3 Labs + 2 BigLabs, starting 2nd week
- **Exception**: first week
  - Class instead of Lab

	MO	TU	WE	TH	FR
08:30		1I		9I	
10:00		1I		9I	
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

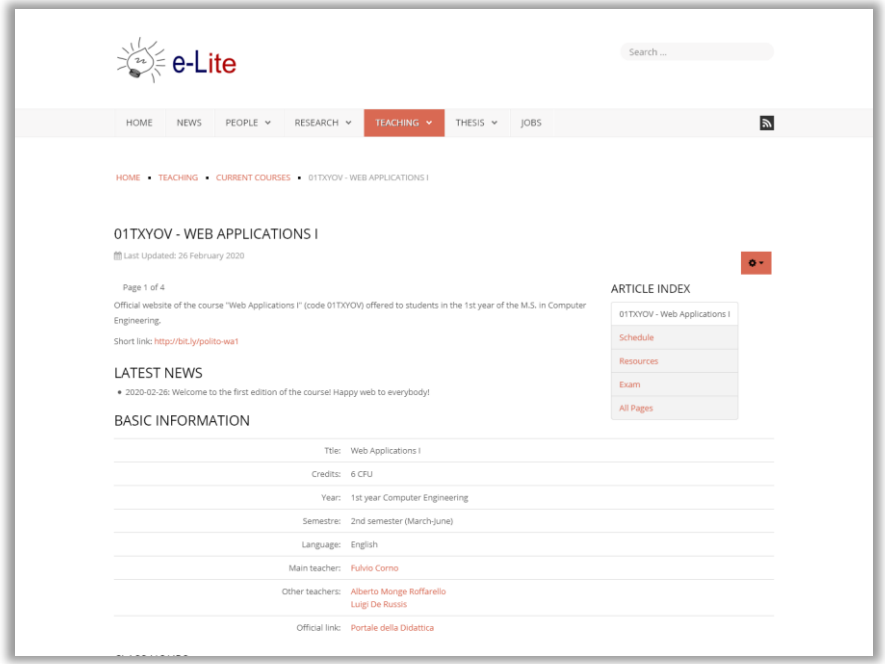
- Text online, some days in advance
- Exercises to be done during Lab hours

- 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: <link>
- 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 – <link>
  - Slides (in English)
  - Full schedule
  - Links and supplementary material
- Video lectures (screencasts)
  - YouTube - https://youtube.com/playlist?list=PLqRTLlwsxDL8LogzYk6FrGEM20us5Wkzh
  - Portale della Didattica
- GitHub - https://github.com/polito-WA1-AW1-2022
  - Examples, exercises, labs, exams, …

Slack

WA1-2022-AJ

- 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-aj/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

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

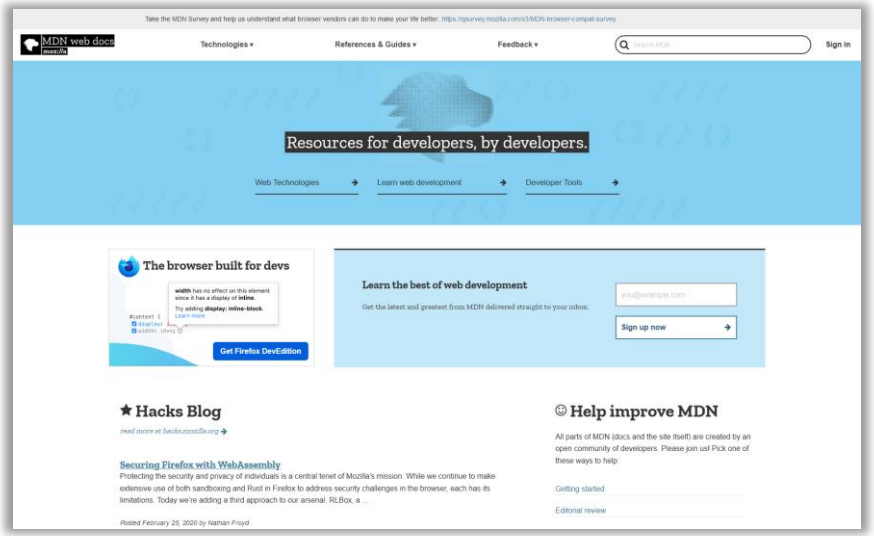
Goals

- 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

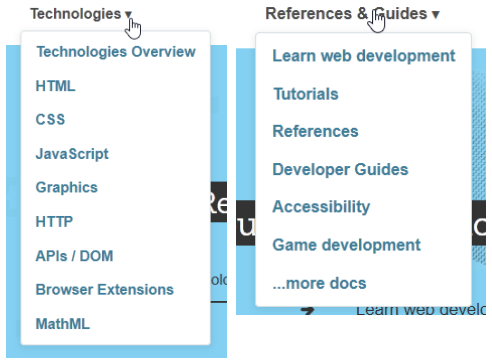
Evaluation Criteria

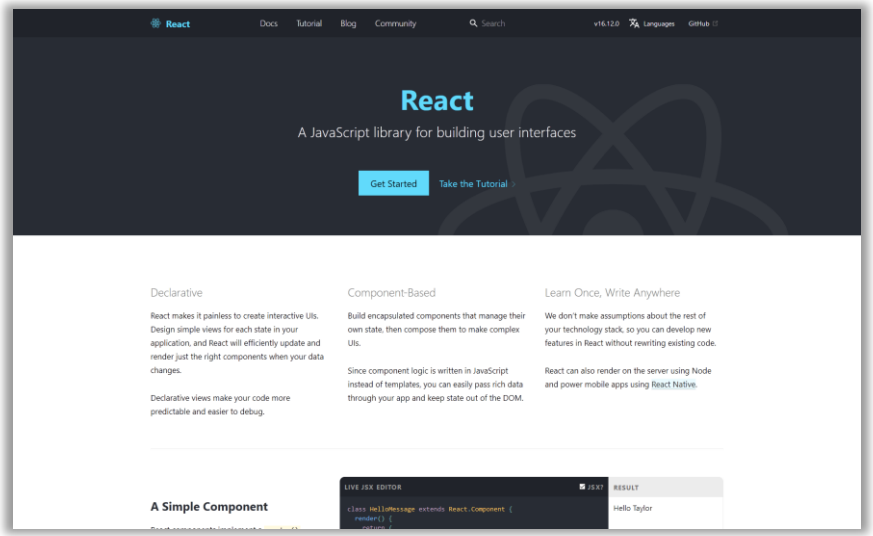
- Theoretical and practical knowledge of the project design
- Theoretical and practical knowledge of the project code base
- Readiness and clarity in the replies

Resources (fundamentals)

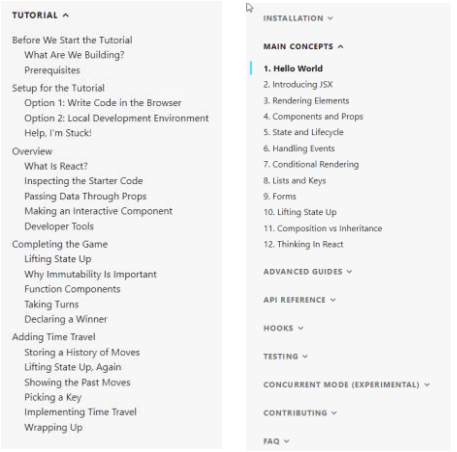


Mozilla Developer Network (**MDN**)
https://developer.mozilla.org/

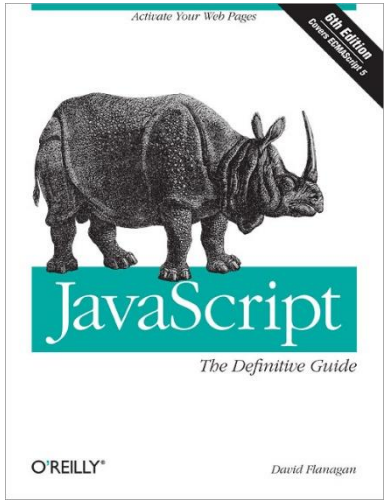




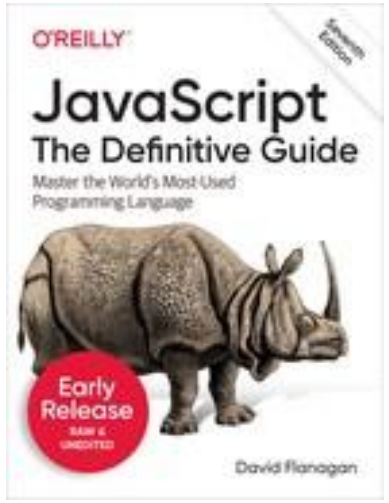
React Library
https://reactjs.org/



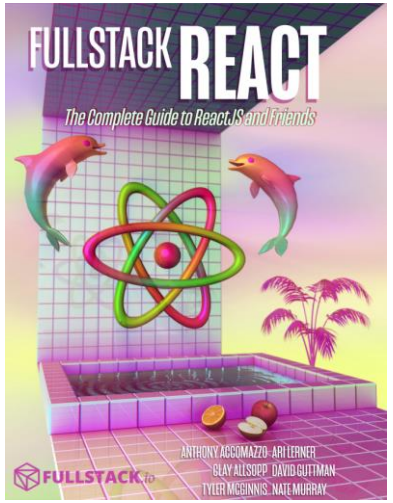
Resources (books)



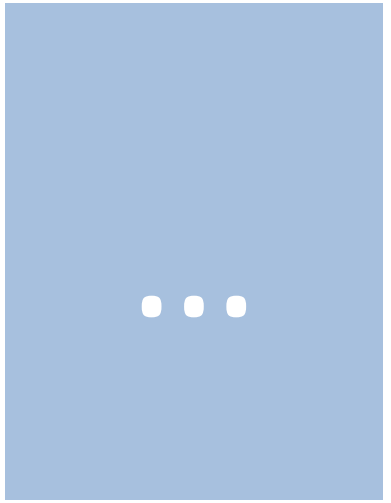
JavaScript: The Definitive Guide, 6th Edition
By David Flanagan
ISBN 978-0596805524
Release Date: May 2011
(not very updated…)



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

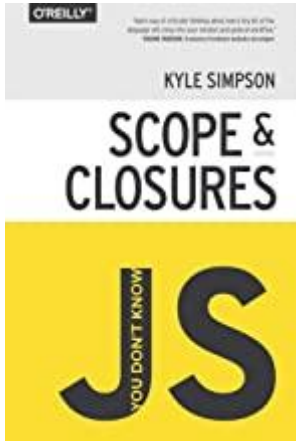


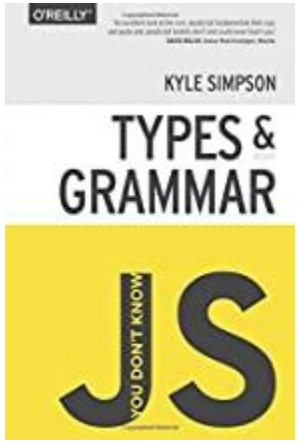
Fullstack React
By Anthony Accomazzo, Nate Murray, Ari Lerner, Clay Allsopp, David Guttman, and Tyler McGinnis
https://www.newline.co/fullstack-react
Release: r40 (January 2020)

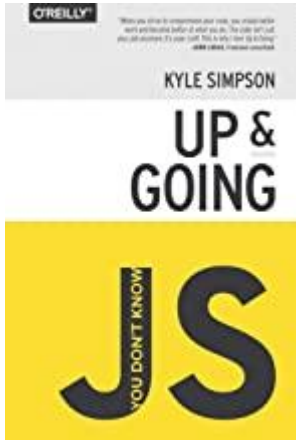


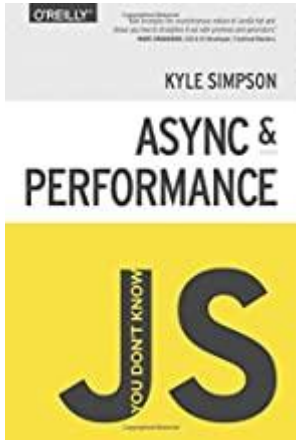
… and many others

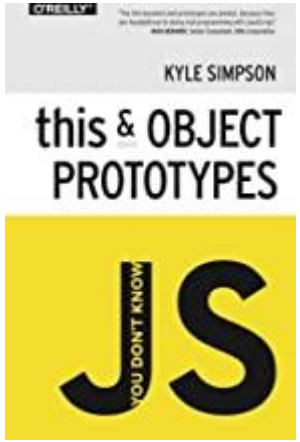
Resources (on-line books)

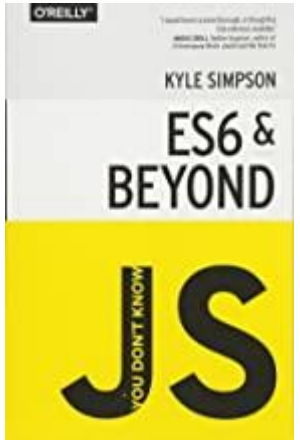




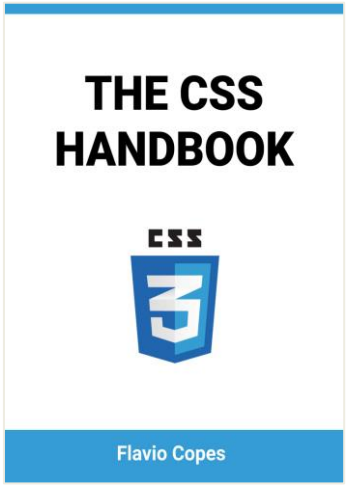


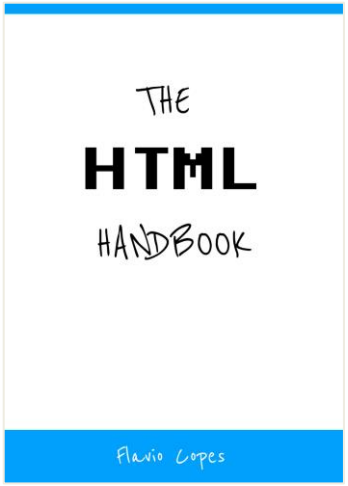


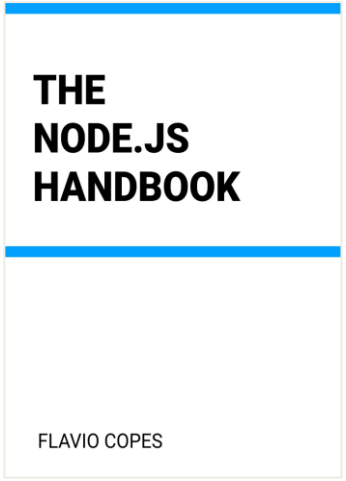




You Don't Know JS Yet (book series) - 2nd Edition
By Kyle Simpson (@getify)
https://github.com/getify/You-Dont-Know-JS

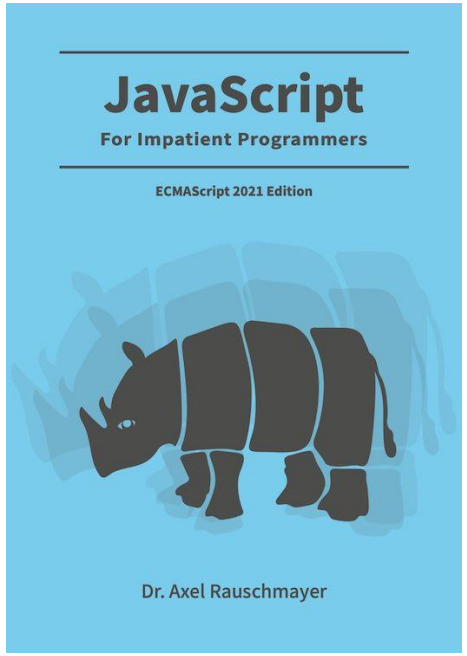






Flavio Copes Handbooks
https://flaviocopes.com/

Resources (on-line books)



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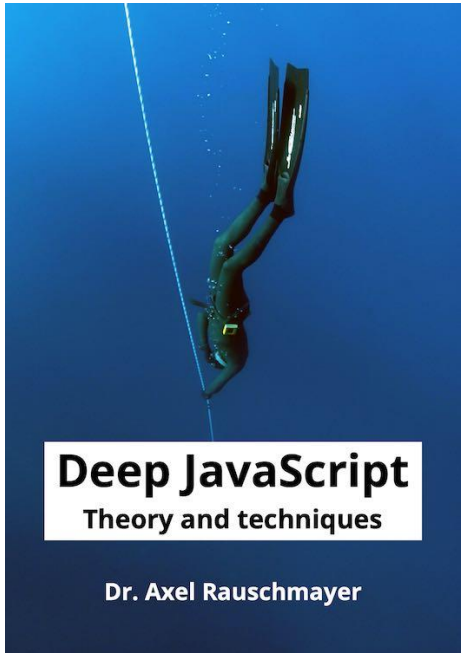
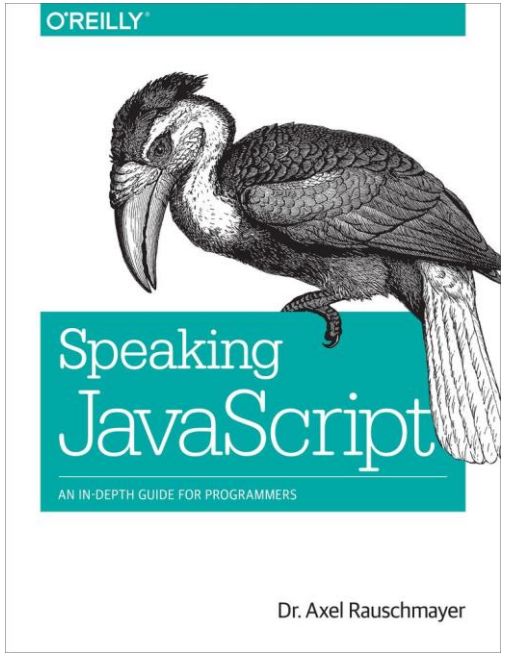


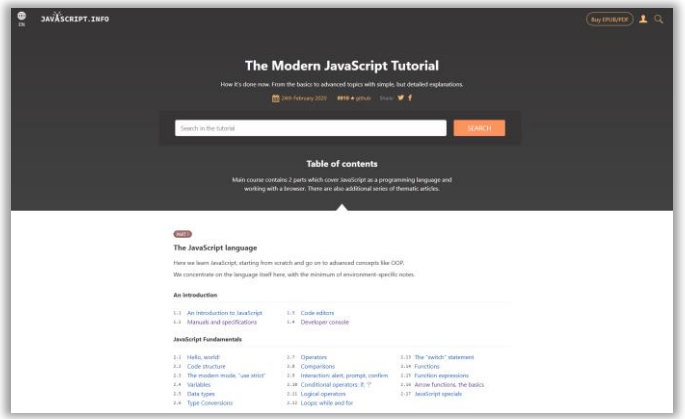


https://exploringjs.com/impatient-js/index.html

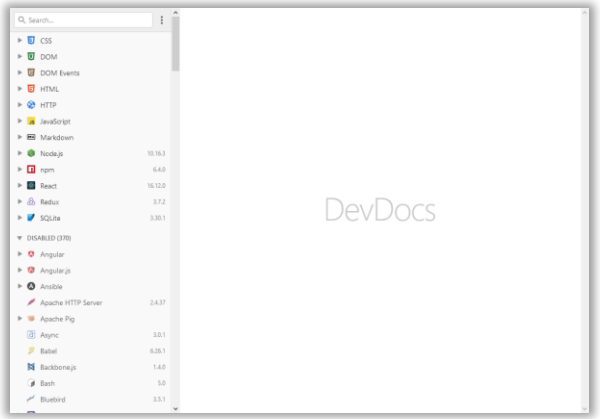
https://exploringjs.com/deep-js/index.html

http://speakingjs.com/

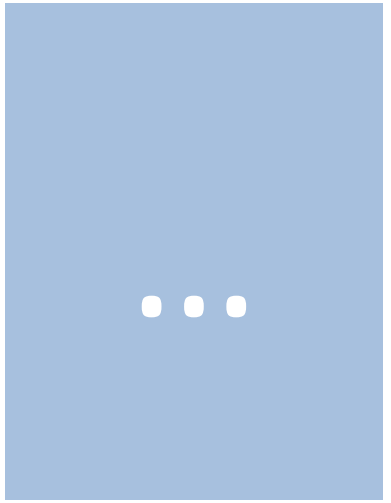
More resources…



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

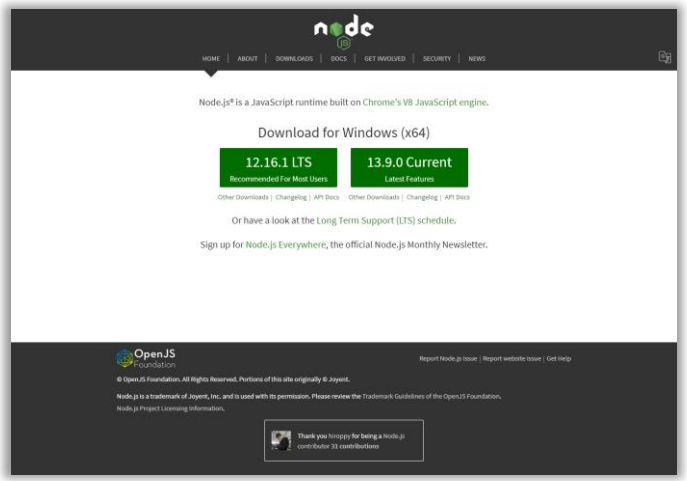


DevDocs: API Documentation Browser
https://devdocs.io/



… and many others

Tools

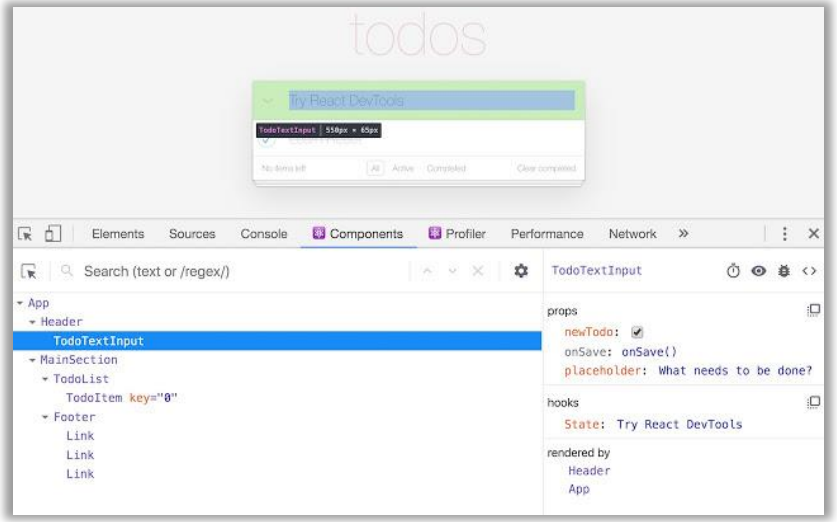


Node.js runtime
Version 16.14 LTS
https://nodejs.org/en/

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

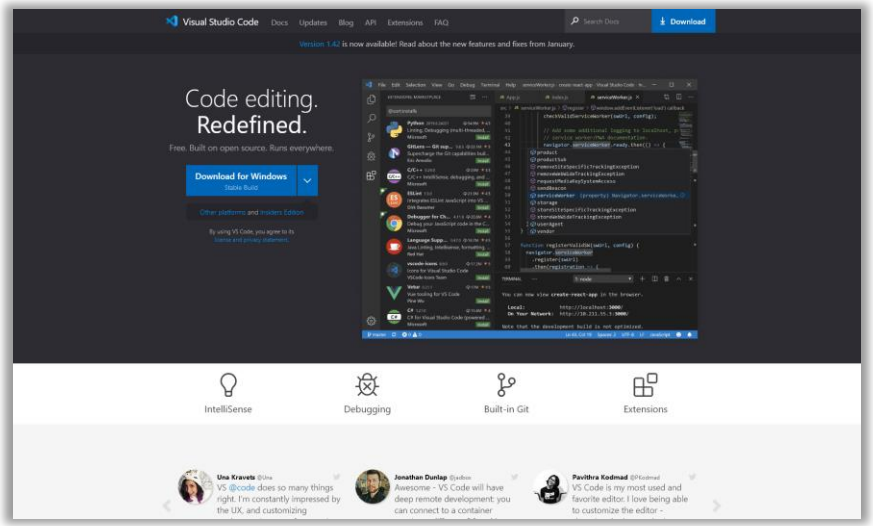
NODESOURCE

debian ubuntu redhat CentOS fedora



React Developer Tools
Extension for Chrome and Firefox

Programming Environment



Visual Studio Code
https://code.visualstudio.com/

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