

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

Applicazioni Web I
Web Applications I

fully aligned

Web Applications II

Human Computer Interaction

Distributed systems
programming

Mobile application
development

- Usability
- Interface design
- Human centered processes

- Distributed Architectures
- Protocols
- Foundations

- Mobile Front-End
- Mobile device programming

You are here

Applicazioni Web I - Web Applications I - 2022/2023

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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



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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>)
 - 1.5 h/week
 - 2 Lab groups (see later for the split)
 - Starting 2nd week
- **Exception:** first week
 - Class instead of Lab

	MO	TU	WE	TH	FR
08:30				8I	
10:00		4P		8I	
11:30		4P			
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

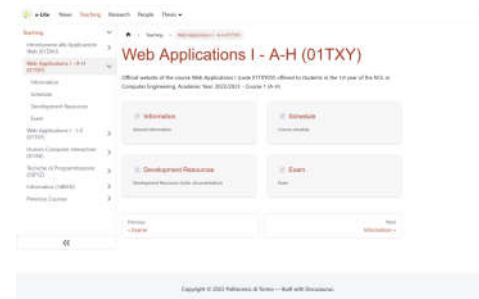
- Starting 09/03/2023
- In rooms with power outlets at the desks
- Text online, some days in advance
- Exercises to be done during Lab hours
- Solution will be posted on GitHub
 - around 1 week after the end of each lab

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:
 - AA-DE
 - DI-ZZ

Learning Material

- Course website – <https://bit.ly/polito-wa1-ah>
 - Slides (in English)
 - Full schedule
 - Links and supplementary material
- Video lectures (screencasts)
 - YouTube - <https://youtube.com/playlist?list=PLqRTLwsxDL8WgeiSZVJzEr1f9aHy2gz>
 - Portale della Didattica
- GitHub - <https://github.com/polito-WA1-AW1-2023>
 - Examples, exercises, labs, exams, ...



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/+7rIW_ZT_2ANIZGZk
- Emails can be an **alternative** for slower, more articulated, and private individual communications

About the Exam

1. Project development
 - Individual
 - up to 26 points
 - 20 days of time
2. Oral discussion (on the project)
 - individual and mandatory
 - “live” correction of the submitted project and discussion
 - up to 6 points
 - when: the official exam day (or starting from that day)

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

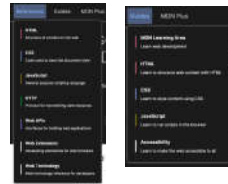
Evaluation Criteria

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

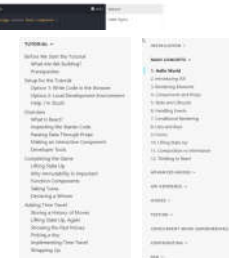
Resources (fundamentals)



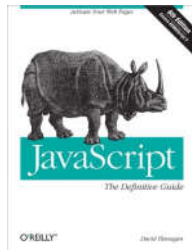
Mozilla Developer Network (MDN)
<https://developer.mozilla.org/>



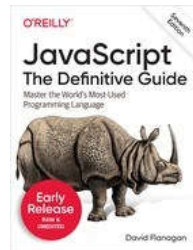
React Library
<https://reactjs.org/>
<https://beta.reactjs.org/>



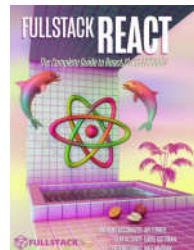
Resources (books)



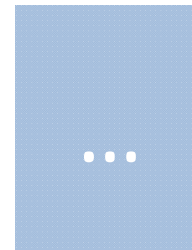
JavaScript: The Definitive Guide, 6th Edition
By David Flanagan
ISBN 978-0596805524
Release Date: July 2011
(not very updated...)



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

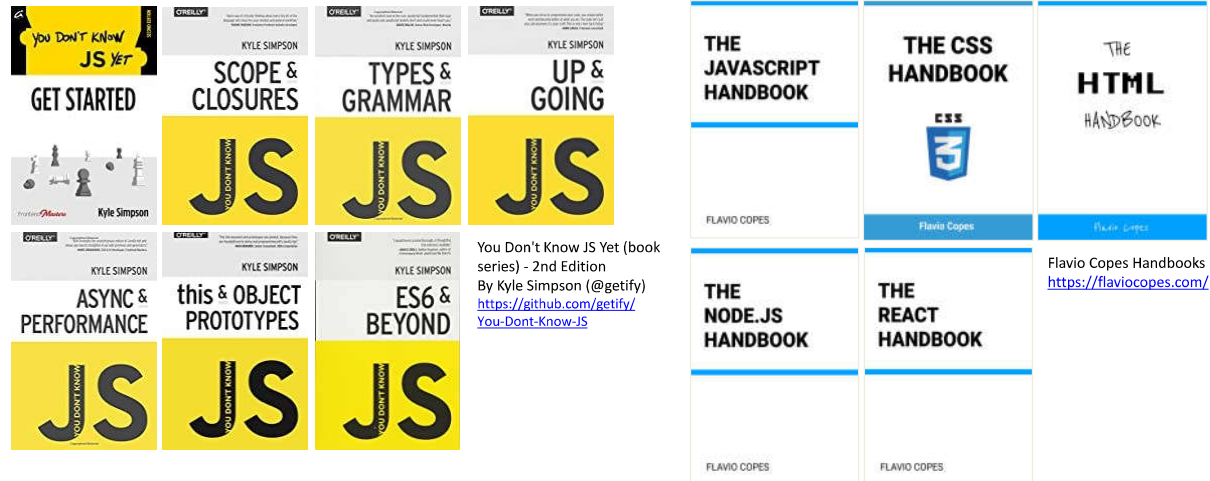


Fullstack React
By Anthony Accomazzo, Nate Murray, Ari Lerner, Clay Allsopp, David Guttman, and Tyler McGinnis
<https://www.newline.co/fullstack-react>
Release: r40 (January 2020)



... and many others

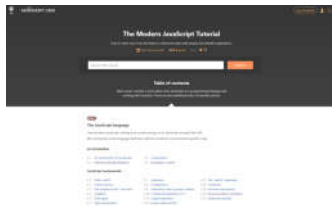
Resources (on-line books)



Resources (on-line books)



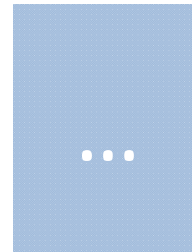
More resources...



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



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



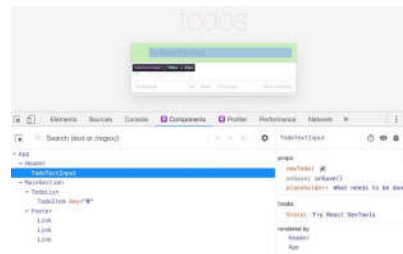
... and many others

Tools



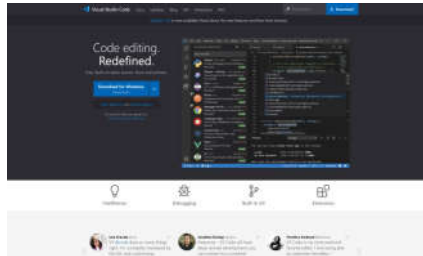
Node.js runtime
Version 18.14 LTS
<https://nodejs.org/en/>

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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