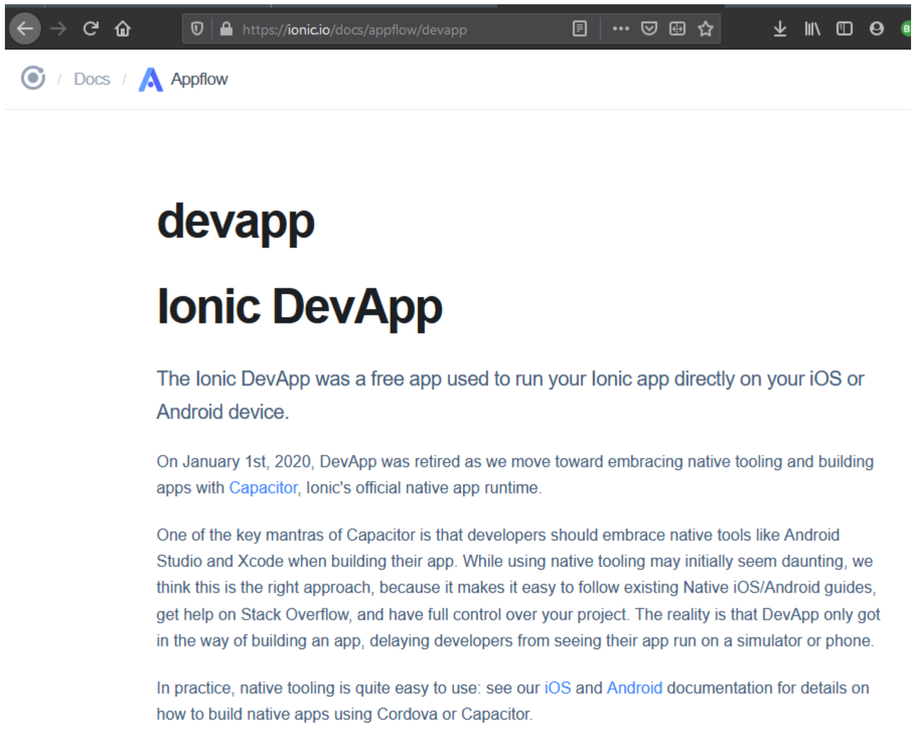
IN4MATX 133: User Interface Software

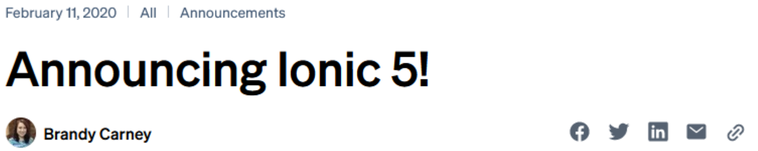
Wrap-Up

Reflecting on 133

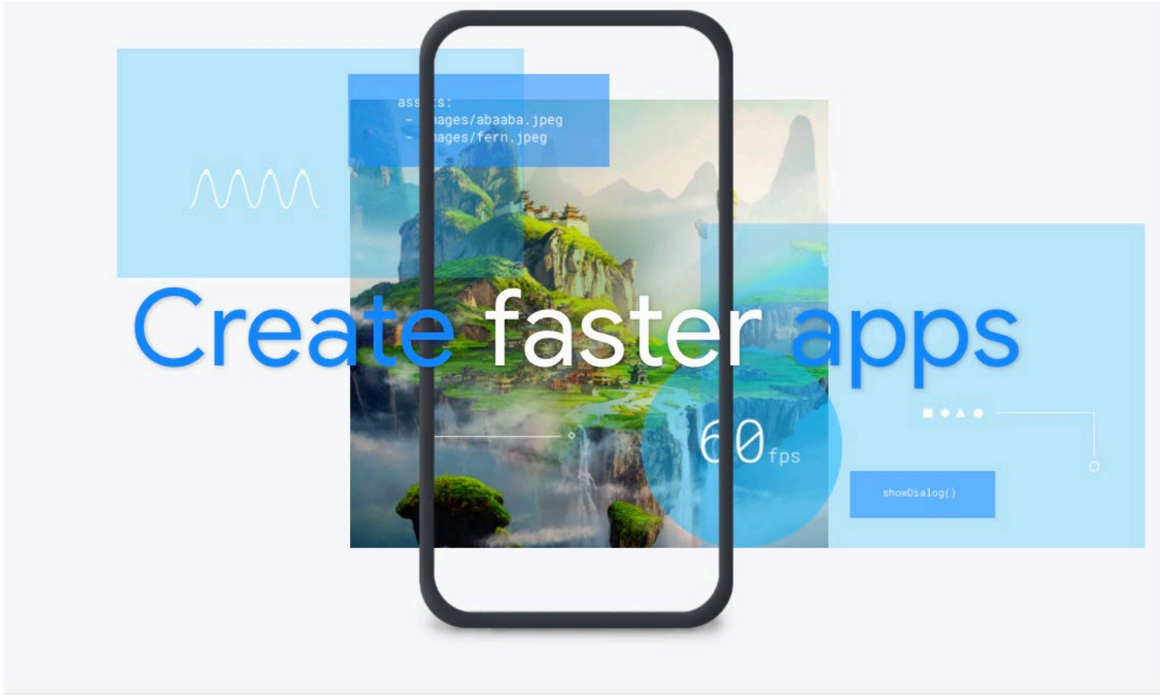
Technology changes quickly

Technology changes quickly





Technology changes quickly



Made by Google

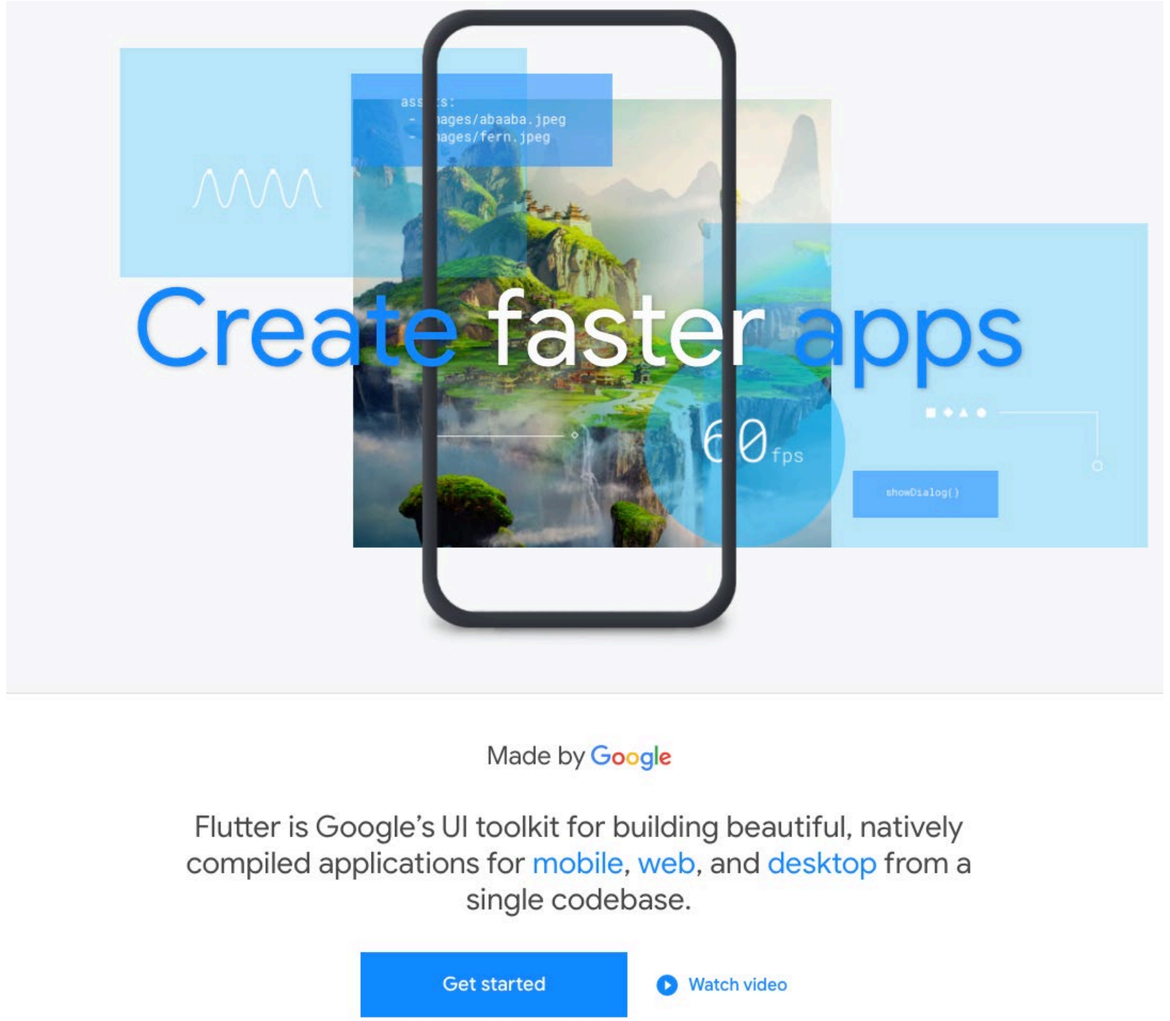
Flutter is Google's UI toolkit for building beautiful, natively compiled applications for mobile, web, and desktop from a single codebase.

Get started Watch video

https://flutter.dev/

Technology changes quickly

- A hybrid framework for building Android and iOS apps
- Goal: higher performance
- Written in Dart, an object-oriented language Google has been pushing
  - Downside: new language…
- Includes libraries for some native resources (Camera/photos)
  - May be more reliable than Ionic



https://flutter.dev/

Technology changes quickly

Your experiences so far…

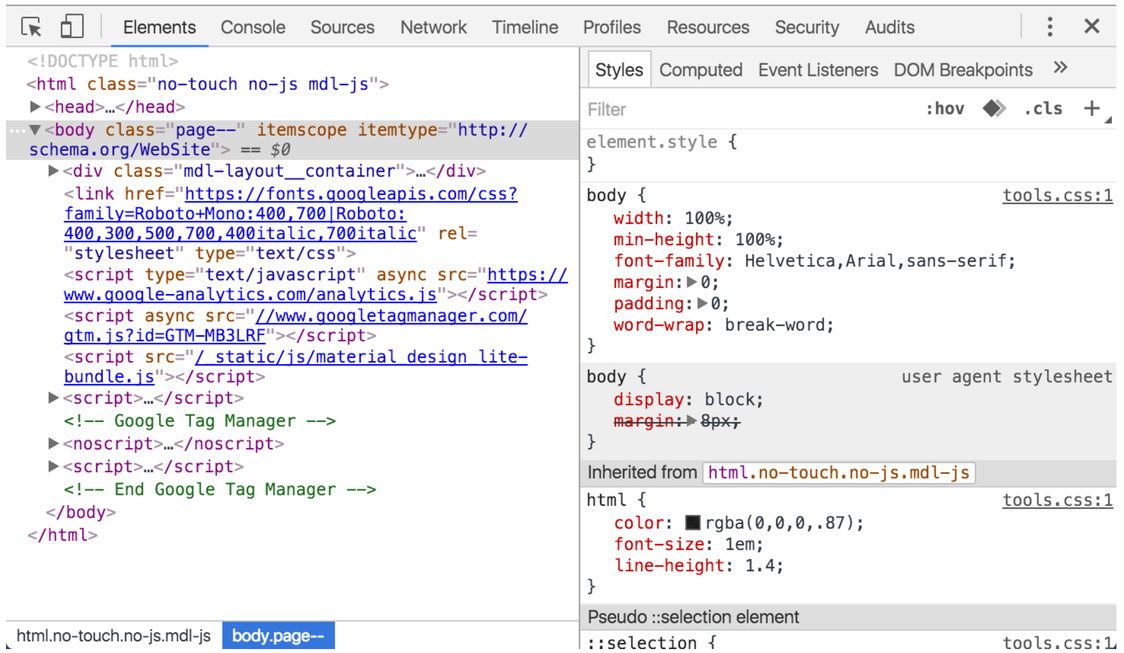
Take away messages from the course

Search before you build

- Do not reinvent the wheel!
- Use interfaces, algorithms, animations, etc. that have been created by other people

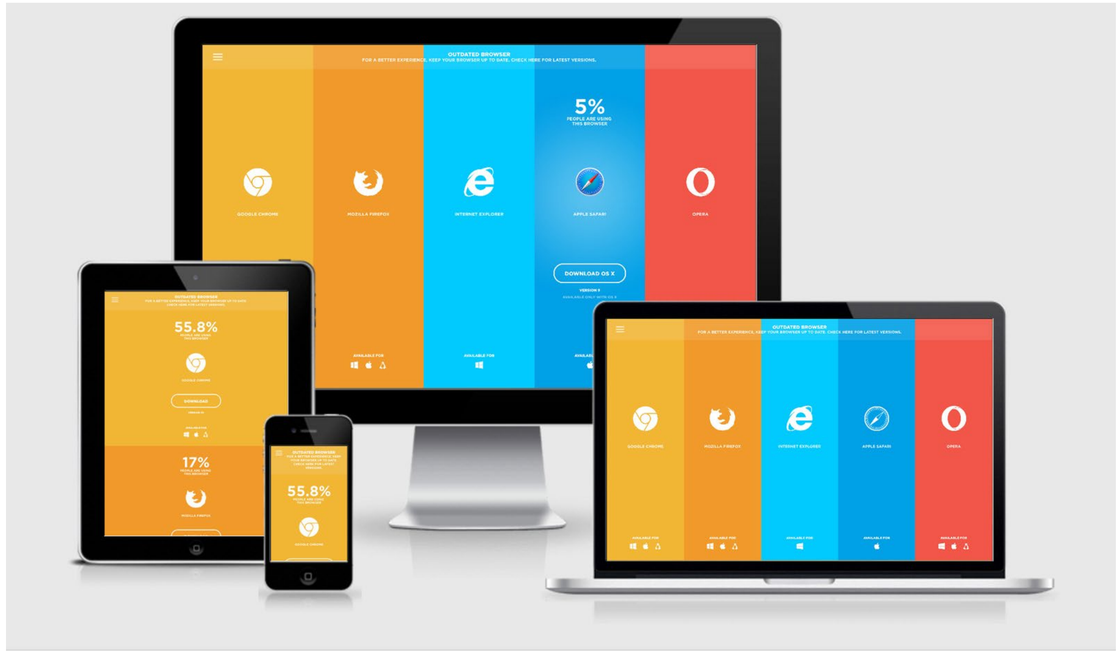
Build by example

- Learn from others (you did a great job this quarter!)
- Read source code on webpages, GitHub, StackOverflow
- Use the element inspector in your browser to see someone's design or implementation



Build for accessibility

- Keep in mind who you are designing for!
- Make sure your app works for:
  - All users
  - All browsers
  - All devices



Build with caution

- Use version control!
- Test while you build
- Iteratively refine and debug

Build on a solid foundation

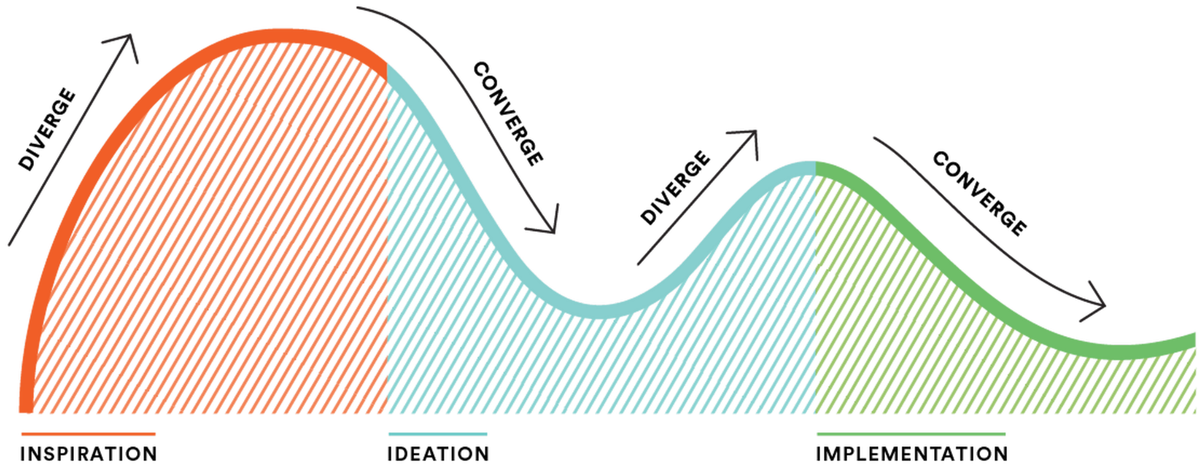
- A new framework will come out next year
  - Or next month or next week
- But some fundamental principles unite them all
  - Separating interface from data and interaction, for example

Take away messages

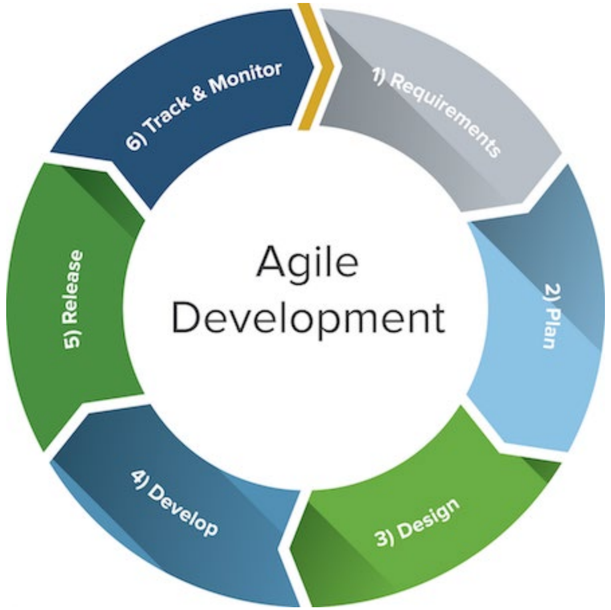
- Search before you build
- Build by example
- Build for accessibility
- Build with caution
- Build on a solid foundation

Applying this course in practice

Product design process

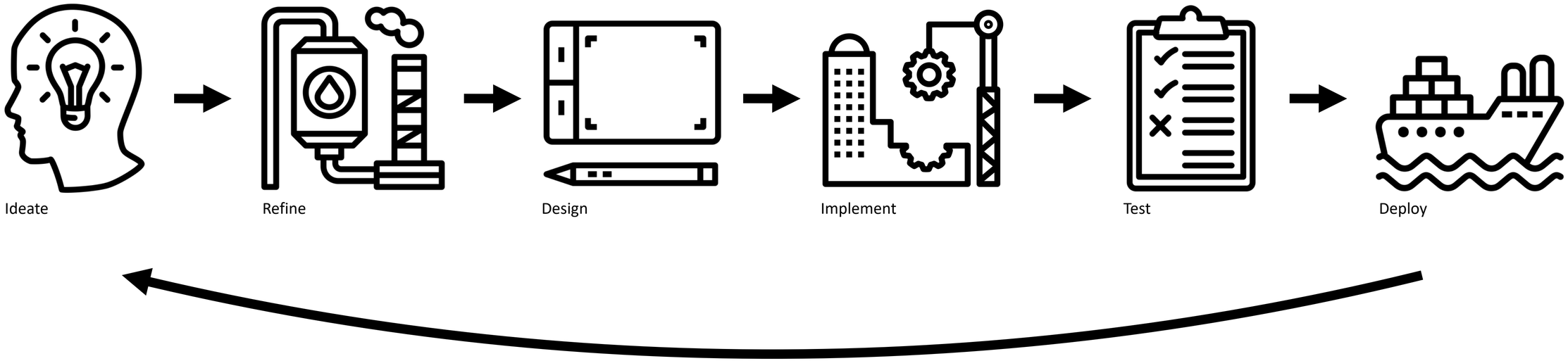


Human-Centered Design, IDEO



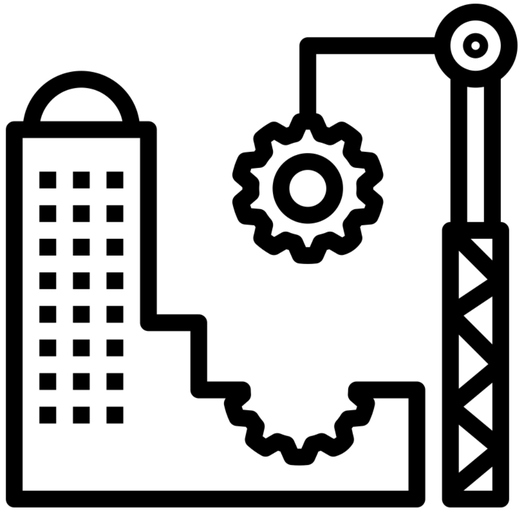
Agile Development, Agile Manifesto

Product design process, simplified



User interface implementation

- Has the power to turn ideas into reality
- Often dictates design decisions and timelines, for better or for worse
- Either you will be implementing, or you will need to communicate with your colleagues who are



What job might you get when you graduate?

Some job options

- User experience designer
- User experience researcher
- Front-end software engineer
- Back-end software engineer
- Academic researcher (graduate student)
- Software consultant
- Something unrelated to technology
- … others?

If you’re going into UX, you can now…

- Follow principles of web, mobile, AR design
  - Responsive design! Error prevention! Give clear instruction!
- Be conversational in web and mobile programming
  - Be able to understand what tasks are easy and what are hard
  - And understand when a developer is BSing you about how long something will take
- Style a webpage
  - Use CSS and SASS to change a design and even add animations

Front-end software engineering…

- Build a webpage in plain HTML
  - Make it responsive with Bootstrap
- Use a framework to build a richer application
  - Angular for a web frontend
  - Ionic for a mobile frontend
- Style a webpage
  - Use CSS and SASS to change a design and even add animations

Back-end software engineering…

- Build a web server
  - Allow it to respond to requests from a front-end interface
  - Allow it to make requests to APIs made by other developers
- Follow authentication and authorization protocols
  - Enable users to sign on
- Use a database
  - Data can persist between sessions

Academic research…

- Explain some key problems in a couple of areas
  - Ubiquitous computing
  - Human performance
  - Mixed reality design
  - Smartphone systems security
  - Wearable computing
  - Augmented and virtual reality

Software consultancy…

- Process and analyze data
  - Retrieve it from an API
  - Parse and process it to answer your question
- Visualize data
  - Use an appropriate tool for the task

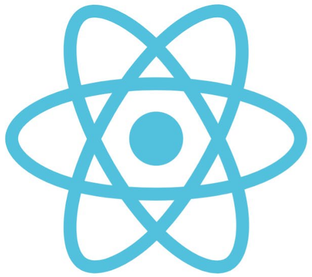
Something unrelated…

- Make a portfolio to show off your skills
  - Selling yourself is key
- Judge new devices and apps that come along
  - Is this solving a real problem?
  - Is this well designed?

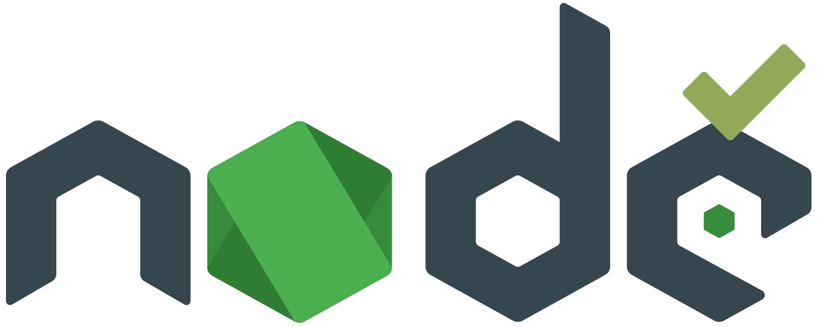
What is interface implementation today?

Often HTML, CSS, and JavaScript

Bootstrap



React JS



jQuery

Assignments

- A1: Personal web portfolio
- A2: Programming on the web
- A3: Web frameworks
- A4: Mobile development
- A5: Alternative Interaction



Other skills

- Git and GitHub
- Package management in npm
- Visualization in Vega-Lite
- Gestural control

Congratulations!

- We said this class would be challenging
- You have risen to the challenge and worked hard (and still are)
- You have created impressive work as a result

It’s been an honor
to be able to teach you.
(No, seriously, I learned a lot!)

I look forward to seeing what you do next!