

# 9. Frontend Design

(You can tell this is my favorite topic from how my slides look)

# Logistics

- We're going a little out of order here! That's because the **SWE/Capstone Showcase is November 2nd from 11-3!** You are all cordially invited to present either mockups for your project in this class, or a past project.
  - Extra credit incentive: +10% on the group project grade in this class if you present your future project.
- Programming Club is hosting **mock interviews** today from 3-5pm in 25 Park Place, room 1802
- Homework solutions posted for assignments so far!
- Do folks have something to write with/on?

# Agenda

1. CSS Challenge
2. Visual Specifications
3. Figma
4. Components/Bootstrap
5. Homework time

# CSS Challenge 🤖

- To build some intuition for good visual design (or not), we're starting with a group activity.
- You're going to take someone's homework 6 (or 7 or 8) page and add styling to it.
- You can choose one of two lanes:
  - Try to make it as visually appealing as possible
  - Try to make it as cursed as possible
- We'll share out at the end! TBD incentive for the best-looking or most cursed page, as determined by me.

# Visual Specifications

# Why do we care? 🤔

In Software Engineering...

- Though you may not be engaging in product and graphic design, you should have a general idea of the process in regard to design

For this course...

- You need wireframes to complete your project proposal, and sketching before wireframing is a great way to toss around ideas



# Pen and paper sketches!

- You already know the tools
  - (Hopefully.)
- Useful for brainstorming
- Super easy to change



# Making good sketches: focus on the human

- Humans are going to be using your app, so focus on the user experience
  - Make sketches about the user stories, not about the pixels on the page
  - If a story involves a user being able to do an action (click, type), sketch out what that would look like

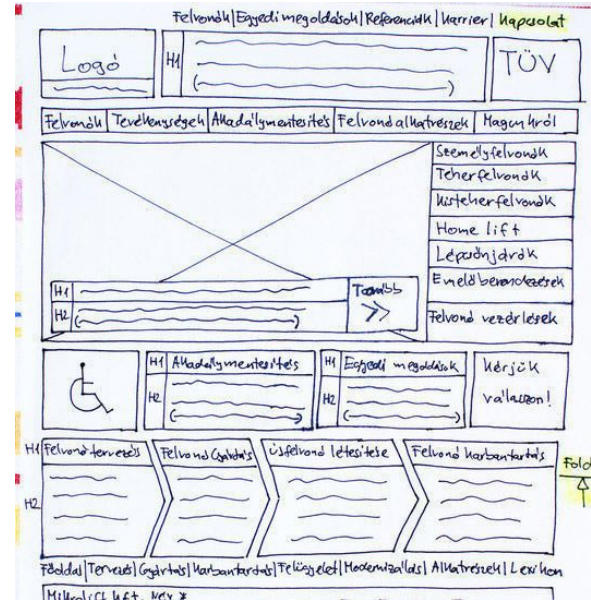
# Making good sketches: focus on the human

- Only major elements should appear
  - Rule of thumb is to only have basic shapes (lines, circles, triangles, and rectangles)
  - Text should only be for headings and buttons
  - If your talent is drawing pretty pictures, you should *save it for later*
- It's okay if one screen is shared by multiple user stories
  - You can always combine multiple sketches into one sketch at a later time

# Remember: nothing is final at this stage!

- User stories and designs are for communicating ideas
- Ideas can always change
  - And this is okay!

# Sketches for an app view



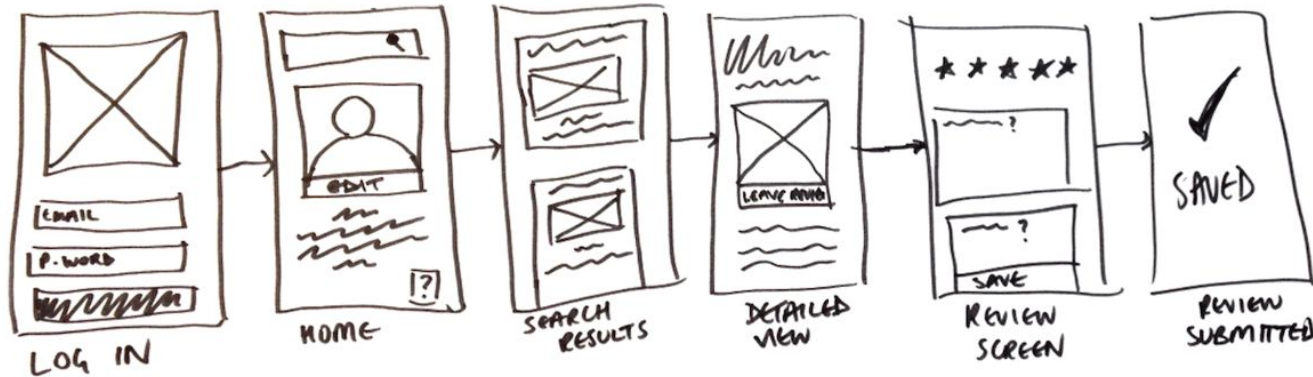
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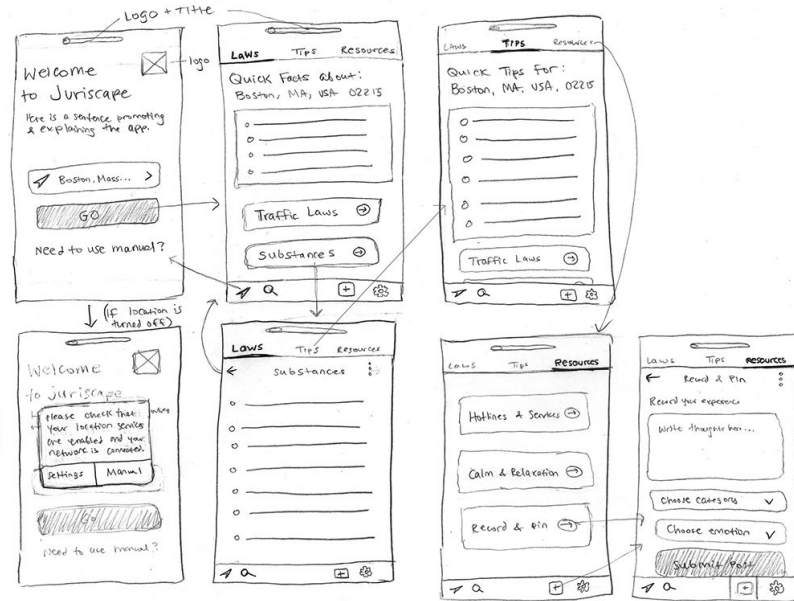
# Sketches for an app flow

Source:

<https://d33wubrfki0l68.cloudfront.net/c759f6065c8cc4dd9b24559f6db0131f7feba1a4/da33e/en/blog/uploads/low-fid-wireframe.png>



# Sketches for an app flow



Source:

<https://cdn.dribbble.com/users/2310984/screenshots/5936867/pencilwireframesv1.jpg>

Let's make more detailed designs...

# Beyond sketches

- Pen and pencil sketches are the best starting point
  - It's easiest to iterate on the most prominent elements
- But at some point you'll want more detail
  - And closer to what an actual user would see
- This is a concept known as **fidelity**
  - Having high fidelity refers to a mock or visual spec looking closest to what a user would see
  - Having low fidelity, on the other hand, refers to the roughest of sketches
- Our pencil and paper sketches are low fidelity



# Beyond sketches

- Typically, as you refine your UIs you'll be able to create higher-fidelity designs
- **Wireframes** are low-fidelity designs that map out where major elements are
  - This is basically a digital version of what you've sketched out, with fake content
- **Mockups** are mid-fidelity designs that lays out elements, often with styling and visual designs
  - Think wireframes with color, emoji, and visual design elements added in
- **Prototypes** are high-fidelity designs that are often interactive and simulate entire user stories end-to-end
  - Think mockups, but with clicking on buttons/swiping/navigating actually working

# Sketches, wireframes, mockups, and prototypes

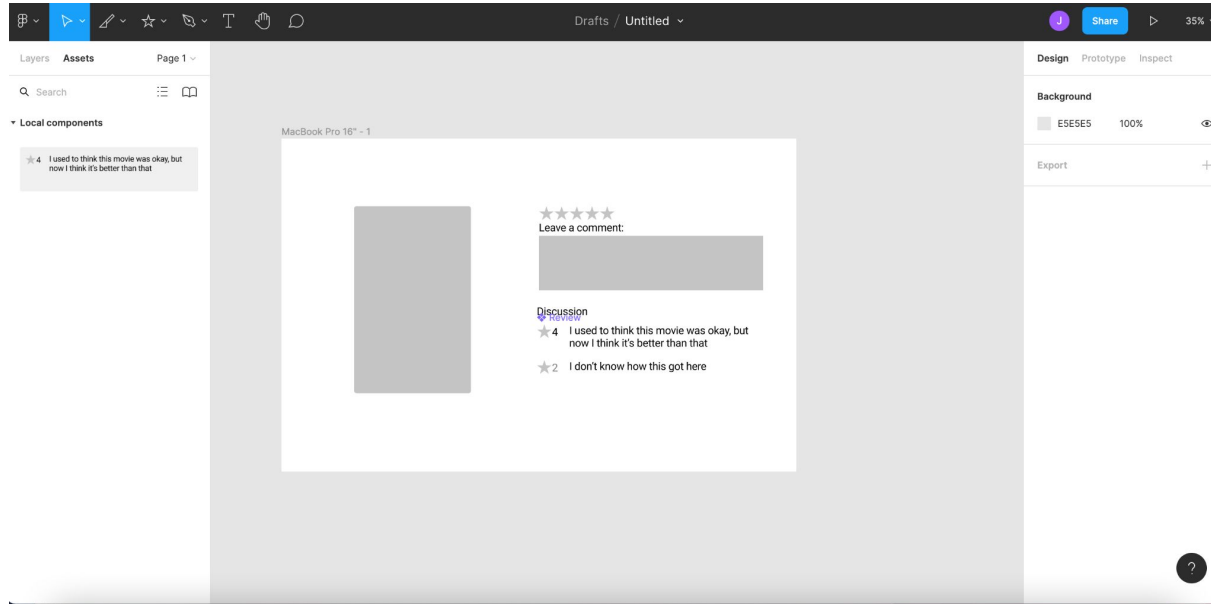


Source: <https://cdn.artandlogic.com/wp-content/uploads/PROGRESSION.jpg>

# “Why don’t I always use X?”

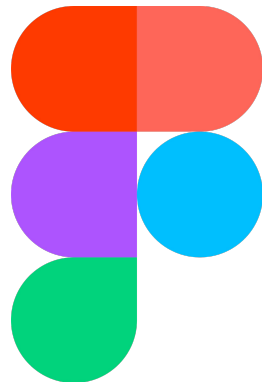
- There are tradeoffs to picking high- versus low- fidelity designs
- Low fidelity designs are easy to make, but lack detail and leave a lot of room for ambiguity
  - This could be harmful if you’re communicating specs to other teams
- High fidelity designs communicate ideas, flows, and interactions very clearly, but take a long time to make
  - This could be harmful if you’re still ironing out details of what goes where
- For software projects with large teams, you’ll typically start at low fidelity and move up as the designs get more and more final

# Wireframing in Figma



# Wireframing in Figma

- Figma is a free(ish) tool used by designers in industry. It's super feature-rich but pretty intuitive to get started with.
- [figma.com](https://figma.com)
- <https://www.youtube.com/watch?v=FTFaQWZBqQ8> ← great YouTube resource on copying a design



# Other tools for wireframes, mockups, and prototypes

- Many tools in the industry exist that allow you to make designs of your app all across the fidelity spectrum
  - Wireframing: Moqups, Balsamiq, OmniGraffle, even Powerpoint!
  - Mockup: Sketch and maybe Photoshop (strong maybe)
  - Prototyping: Origami, Axure, and Mockplus
- You don't have to be some sort of design expert to use them
- And remember, there's always pen and paper
  - Don't get lost in the tools
  - If you're working on a small project usually this is fine by itself

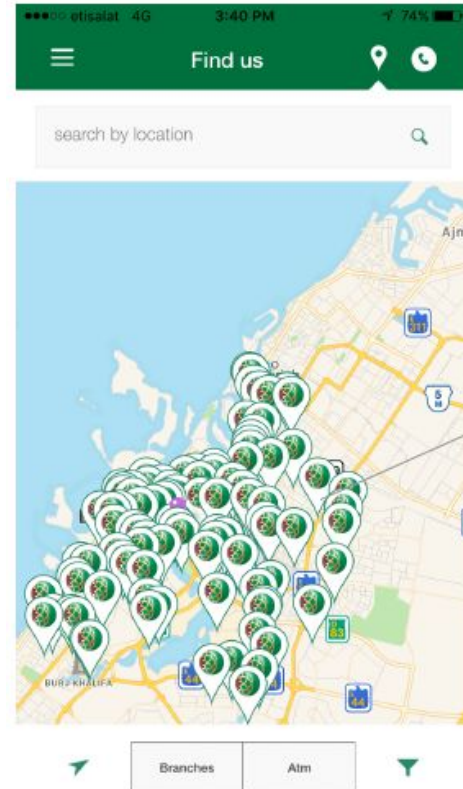
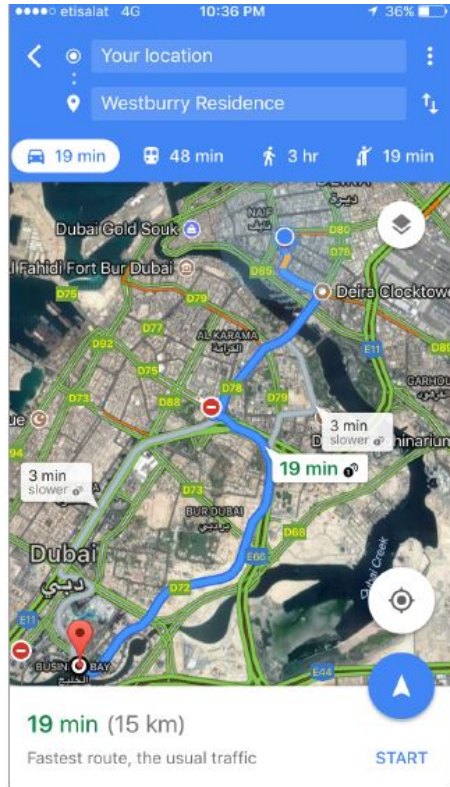
# Design

# How do I design? Fake it till you make it... 🙌

- Look at popular apps that you feel are intuitive and copy them!
- Read through some design principles to get you thinking in the right mode
  - <https://www.interaction-design.org/literature/topics/design-principles>
  - <https://xd.adobe.com/ideas/process/ui-design/4-golden-rules-ui-design/>
- Some others I can think of:
  - Make the interaction as **simple** as possible
  - **Consistency** across the app
  - You don't know the correct design, your **user** does (try and test)
  - Only put information on the page that you **need**
  - Be as **explicit** as possible when displaying options or info



# Design Examples



# How do I design? Steal stuff!

- Most companies will have libraries of assets available to give your app a consistent feel
  - Really basic example - the YouTube logo should look the same every time it appears on the site.
  - Less basic example - most drop-down menus across Facebook's sites (internal and external) have a similar feel
- What if we don't have an existing archive of materials?

# Bootstrap

- Developed by Twitter originally
- Started with the goal of standardizing the appearance of things across the site, but eventually became a general-purpose library that anyone can use to get a mature-looking UI for free
- Does a bunch of things, but we're going to focus on these basics:
  - Adds styling on top of your existing HTML
  - Gives you a library of components that you can add in



# Bootstrap

## Resources:

- <https://getbootstrap.com/docs/4.3/getting-started/introduction/> ← for adding Bootstrap to any old HTML page
- <https://react-bootstrap.github.io/getting-started/introduction> ← for using Bootstrap in React projects
- <https://github.com/facebook/create-react-app/issues/301> ← more React/Bootstrap instructions/background if those first ones aren't working for you

# Until next time... 🤞

- Activity: in your groups, create 3-4 **sketches** of different screens in your project.
- These will be the basis for Homework 9, which will have you convert these to wireframes, then mockups
  - (Yes, this is a little wasteful in that you may end up changing your designs later - we're moving a little faster than you probably would with money on the line)