Front End Development

17-316/616 Fall 2025

AI Tools for Software Development

https://ai-developer-tools.github.io

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Today

- Project Team Meeting

- Course Feedback Results

- Turning a wireframe/mockup into front end code.
  - Mobbing

Project Team Meeting

- Spend the next 15 minutes to meet with your team.
- Work on P2: Development Specifications

Course Feedback

- Instructors Start
  - Sharing more wisdom from your industry experience. Any practical tips? What's going on in the AI startup world?
  - Increasing in-class team discussion time.
  - Analyzing case studies of software engineering where AI could help (or harm).
  - Posting additional resources to look at.
  - Posting grades more quickly.
  - Teaching us some basic software engineering information and tools.
  - Giving us more guidance on planning our projects.
  - Giving more time to discussants to talk about their thoughts before asking the class to offer theirs.
  - Feeding us more.
  - Adding more hands-on in-class activities.

- Instructors Stop:
  - Specifying the length requirement for reflection essays.
  - Requiring students to do all their work in groups.

- Instructors Keep:
  - Encouraging students to talk in class.
  - Asking to students to present reflections.
  - Mobbing
  - Connecting lectures, discussions, and homework

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UI Development Big Picture

- UI Architecture
  - Monolithic, Modular, Micro-frontend
  - Model-View-Controller (MVC), Model-View-Presenter (MVP), **Model-View-ViewModel (MVVM)**
  - Using ChatGPT: What are the differences between MVC, MVP, MVVM?

- Technology Stack
  - HTML, CSS, client-side JavaScript or TypeScript
  - UI packages (React, Svelte)
  - Browser (Chrome, Safari, Firefox)

- Standards Compliance
  - Accessibility (WCAG/ARIA)
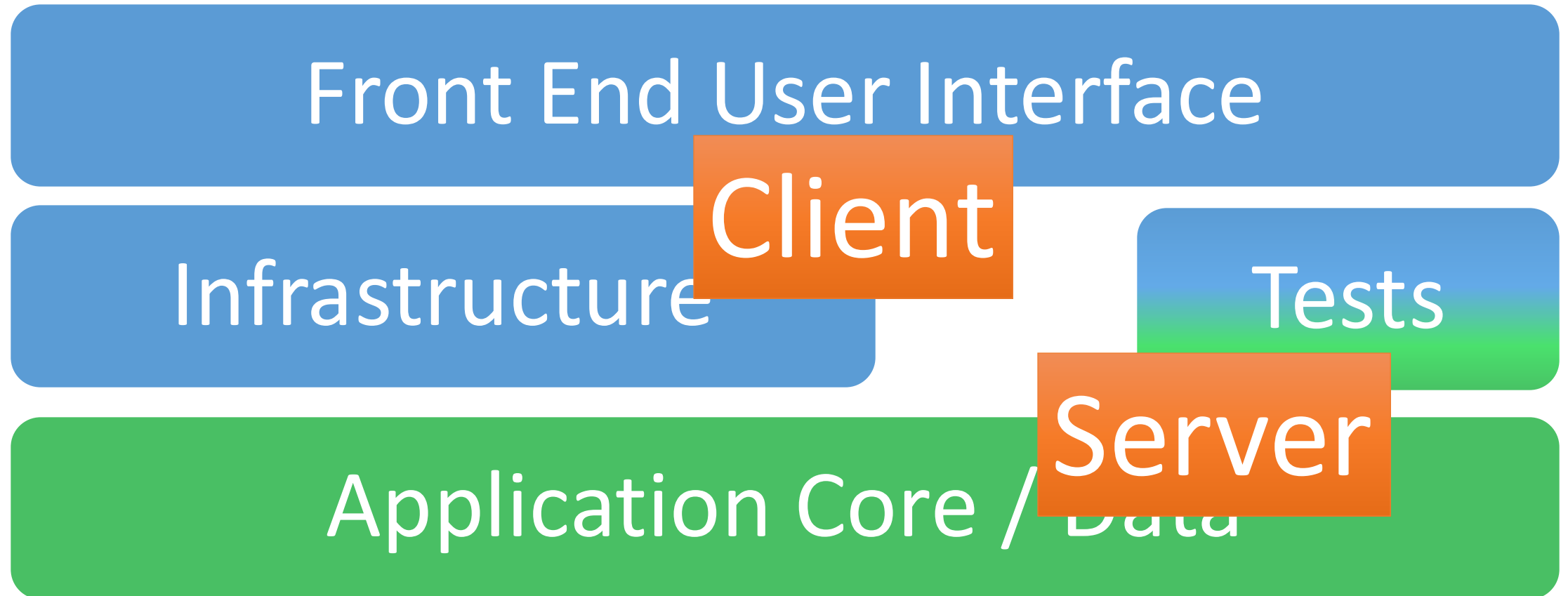
Component-Based Development

Front End User Interface

Infrastructure

Tests

Where do these components live?

Application Core / Data

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Component-Based Development

Front End User Interface

Client

Infrastructure

Tests

Server

Application Core / Data

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Your app lists Instagram followers

```
void buttonClicked() {
  render(getFollowers());
}
List<Friend> getFollowers() {
  Connection c = http.getConnection();
  InstagramAPI api = new InstagramAPI(c);
  return api.getFollowers("john");
}
```

Getting followers requires the Instagram API

```
void buttonClicked() {
  render(getFollowers());
}
List<Friend> getFollowers() {
  Connection c = http.getConnection();
  InstagramAPI api = new InstagramAPI(c);
  return api.getFollowers("john");
}
```

But we haven't built our IG backend, yet

- What if Instagram is down?

- Or slow?

- Or you don't have John's credentials handy?

- Or you don't feel like vibe coding a clone of Instagram just so you can build your frontend?

```
void buttonClicked() {
  render(getFollowers());
}
List<Friend> getFollowers() {
  Connection c = http.getConnection();
  InstagramAPI api = new InstagramAPI(c);
  return api.getFollowers("john");
}
```

Eliminate the backend dependency by mocking it

```java
void buttonClicked() {
  render(getFollowers());
}
List<Friend> getFollowers() {
  Connection c = http.getConnection();
  InstagramAPI api = new InstagramMock(c);
  return api.getFollowers("john");
}
```

```java
class InstagramMock
        implements InstagramAPI {
  void connect() {}
  List<Node> getFollowers(String name) {
    if (name.equals("john")) {
      return List.of(…)
    }
}
```

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Let's clone Google Docs

1. What choices should we make for our front end?
    - Which UI architecture?
    - Which technology stack?
    - What libraries comply with our accessibility standards?
2. What should it look like?
    - Who is our user today?
    - What is the most basic user story for Google Docs?
    - What's the easiest mockup/wireframe we can find?
3. Where is the boundary between front end and backend?
    - Where should the document text live?

Mobbing Activity

- Mobber will come to the hot seat.

- Notetaker sits in the front of the class with their laptop to take notes in the #mobbing channel.

- Let's write the code that implements the user story for our Google Docs clone.
  - Don't forget to mock the backend!

- Everyone tell the mobber what to say to ChatGPT to get it to create our Google Docs front end.

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Next class

- Activating your UI
  - Event handlers
  - Modifying the DOM