CS142 - Web Applications

http://cs142.stanford.edu

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Today: CS142 FAQ

- What is this course about?
- How is my course grade determined?
- Who is teaching the course?
- How do I communicate with the course staff?
- What kind of programming projects will I have do?
- What kind of computing environment do I need?
- Do I need to buy a textbook?
- Are the course lectures record on video?

Course is about Web Applications

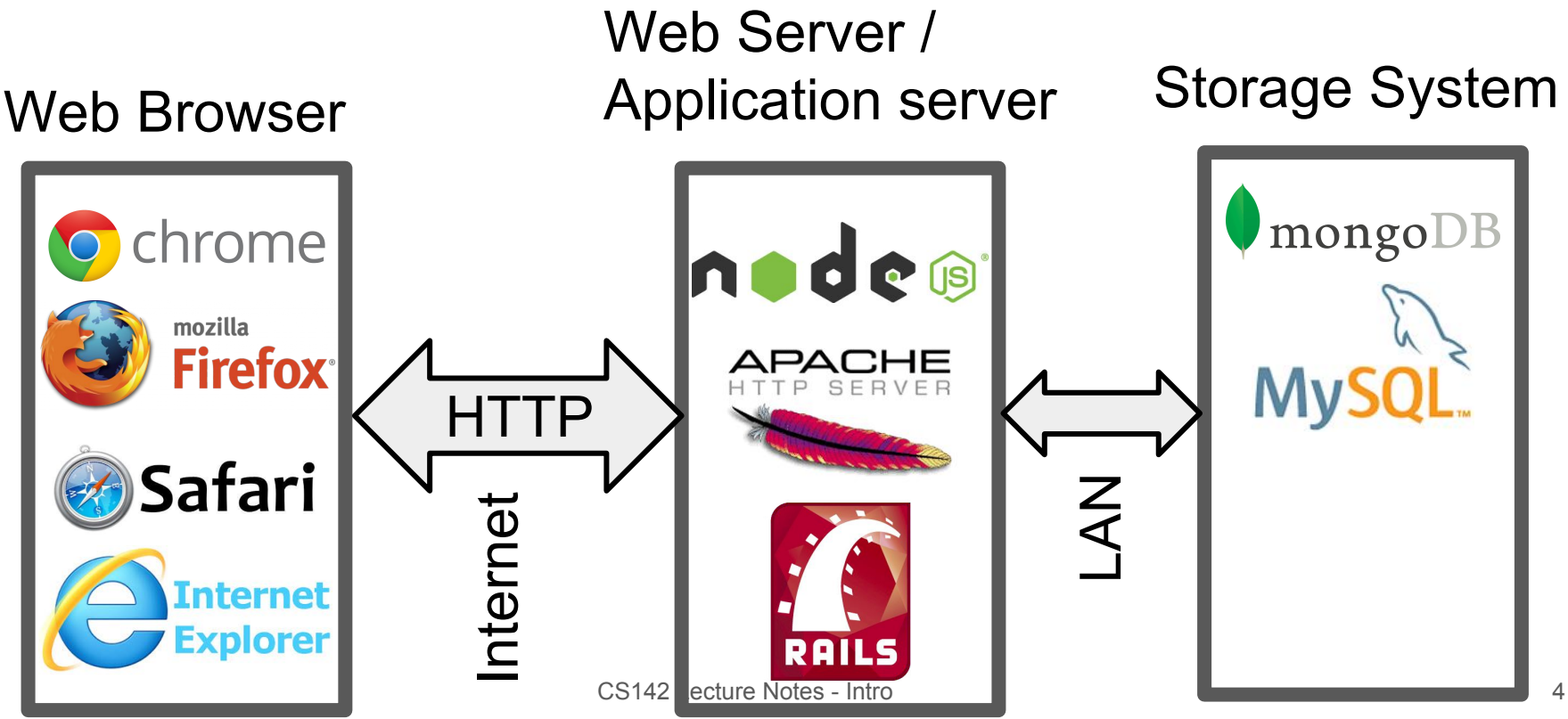
Technologies used to build modern web applications

- Note: CS14x (computer systems course in Computer Science department)
- Full stack: Browser ⇔ Web server ⇔ Storage system
- Goal: Learn how a web application is built and run

How to build a web application - learn by doing

- Use MEAN stack (AngularJS, Node.js, Express.js, MongoDB)

Full Stack Web Application Architecture



CS142 Technologies and Concepts

- HTML/CSS/JavaScript - Markup, separation of content & style, reuse
- Document object Model (DOM) - Document structure
- Angular.js - Model View Controller, Single page applications
- HTTP/AJAX/REST/GraphQL - API design
- Cookies/Sessions - Storage/Trust
- DBMS - Schema, Objects, CRUD, indexes, transactions
- End-to-End - Scale and Security

Grading

55% Projects - 8 projects (Due on Thursdays - First due 4/12, last due 6/7)

Projects 1-4: Learn technologies in front-end: HTML/CSS/Angular.js

Projects 5-8: Building a Photo Sharing App using Node.js/MongoDB

Later projects worth more and take more time

15% Midterm Exam - **Wednesday, May 9, 7:30pm – 9:00pm**

Closed book, with limited note pages

30% Final Exam - **Tuesday, June 12, 8:30am – 11:30am**

Closed book, with limited note pages

Course Material and Grading

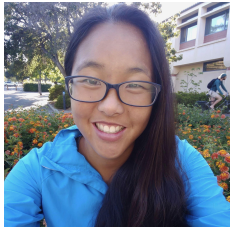
- CS142 is different from introductory programming class
- Lectures cover many more concepts than are addressed in the programming projects
    - Lecture focused on concepts, not directly helping with project coding
- Exams focused on concepts presented in class but not used in projects
    - Possible to do well on all the projects and not get an A in the class

Course Staff

Instructor: Mendel Rosenblum (mendel@cs.stanford.edu)

Course Assistants (cs142-spr1718-staff@lists.stanford.edu)

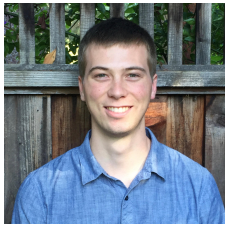
Ellen Blaine



Caitlin Go

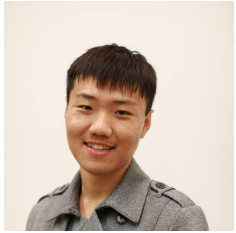
Andrew Han

Don Mai



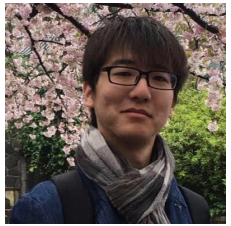
Austin Poore

Jeff Pyke



Hao Wu

Xiaoyan Wu



Yuguan Xing

Course Communication

1. Piazza - https://piazza.com/stanford/cs142

   Good for questions/comments where everyone can see the reply

   Can also posts privately to course staff (Use for post containing code)

2. Email - cs142-spr1718-staff@lists.stanford.edu

   Good for private communication with the course staff (CAs and myself)

3. Mendel Rosenblum - mendel@cs.stanford.edu

CS142 Course Project Evolution

Cs142 started: Ruby on Rails with a SQL relational database

This quarter: MEAN stack

- AngularJS - JavaScript-based browser framework for apps
- Node.js - JavaScript-based server engine
- MongoDB - An object database

For CS140 (OS) and CS143 (Compilers) industry have converged, not for CS142

- MEAN stack is not the end-all.

Project details

1. HTML & CSS
2. JavaScript
3. Browser Document Object Model (DOM)
4. Learn AngularJS - Single page application
5. Photo Sharing App
6. Backend server - Node.js and MongoDB
7. Sessions state and validation
8. Photo App Scrumboard

Discussion sections will be scheduled on Friday, Monday, and Tuesday.

Class software requirements

- A modern web browser

  Chrome is strongly suggested, Internet Explorer (IE) is strongly discouraged

- Node.js

  Installs fairly easily on modern OS environment (Linux, MacOS, Windows)

  npm (in Node.js install) is used for fetching assignments and dependencies

- MongoDB

  Easy to install (for a DBMS) on modern OS environments

Stanford Honor Code

We want you to do the projects individually

Questions?