CS142 - Web Applications
http://cs142.stanford.edu

Mendel Rosenblum
mendel@cs.stanford.edu
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 to do?
- What kind of computing environment do I need?
- Do I need to buy a textbook?
- Are the course lectures recorded 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)
   Optional "MERN" stack available (React.js Node.js Express MongoDB)
Full Stack Web Application Architecture

Web Browser

Web Server / Application server

Storage System

Internet

HTTP

LAN

CS142 Lecture Notes - Intro
CS142 Technologies and Concepts

- HTML/CSS/JavaScript - Markup, separation of content & style, reuse
- Document object Model (DOM) - Document structure
- Angular.js/React.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 1/18, last due 3/14)
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, February 13, 7:30pm – 9:00pm
Closed book, with limited note pages

30% Final Exam - Thursday, March 21, 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-win1819-staff@lists.stanford.edu)

Andrew Han  Kesler Tanner  Neel Ramachandran  Sam Reamer  Sho Arora
Course Communication

   Good for questions/comments where everyone can see the reply
   Can also post privately to course staff (Use for post containing code)

2. Email - cs142-win1819-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

Largely driven by trends in industry

Cs142 started: Ruby on Rails with a SQL relational database

Winter 2016: CS142 switched projects to the MEAN stack
  AngularJS - JavaScript-based browser framework for apps
  Node.js   - JavaScript-based server engine
  MongoDB  - An object database

Winter 2019: Lot's of new trends more happening than MEAN stack
  Frontend frameworks: Angular/React.js/Vue.js
  Other technologies: GraphQL, Serverless, Golang
Project details

1. HTML & CSS
2. JavaScript
3. Browser Document Object Model (DOM)
4. Learn AngularJS/React.js - 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?