



COS 333: Advanced Programming Techniques

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COS 333

Course Overview

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Agenda

- **Introductions**
- Description
- Resources
- Topics
- Graded components

Introductions

- Robert Dondero
 - rdondero
@cs.princeton.edu



Introductions

- Graduate student TAs...

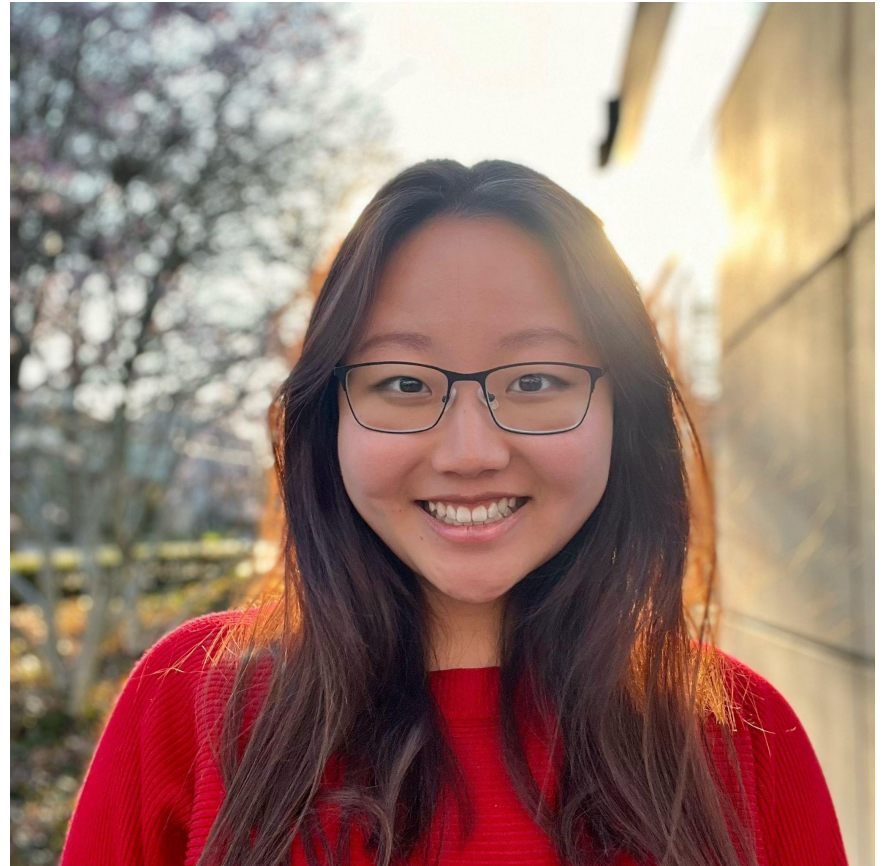
Introductions

- Xinran Bi
 - xb4719
 - @princeton.edu



Introductions

- Jiawei (Ambri) Ma
 - jiaweim
 - @princeton.edu



Introductions

- Samuel Resendez
 - sr4508
 - @princeton.edu



Introductions

- Jinrui (Jocelyn) Wang
 - jw5134
 - @princeton.edu



Introductions

- You! ...

Introductions

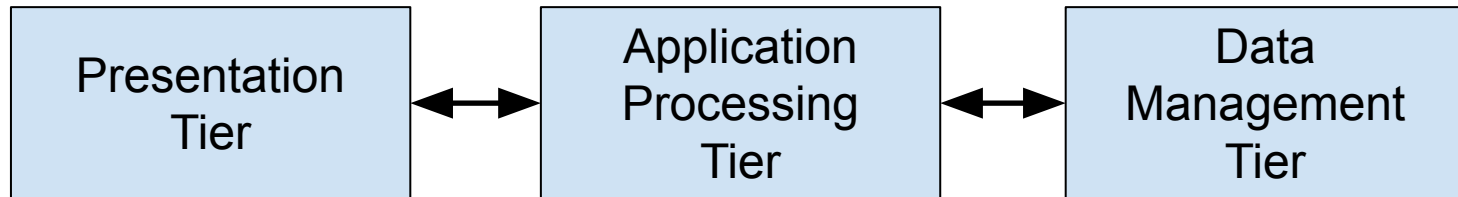
- Survey application
 - <https://cos333survey.cs.princeton.edu>
- **Please complete by Fri 1/31 at 5:00PM**

Agenda

- Introductions
- **Description**
- Resources
- Topics
- Graded components

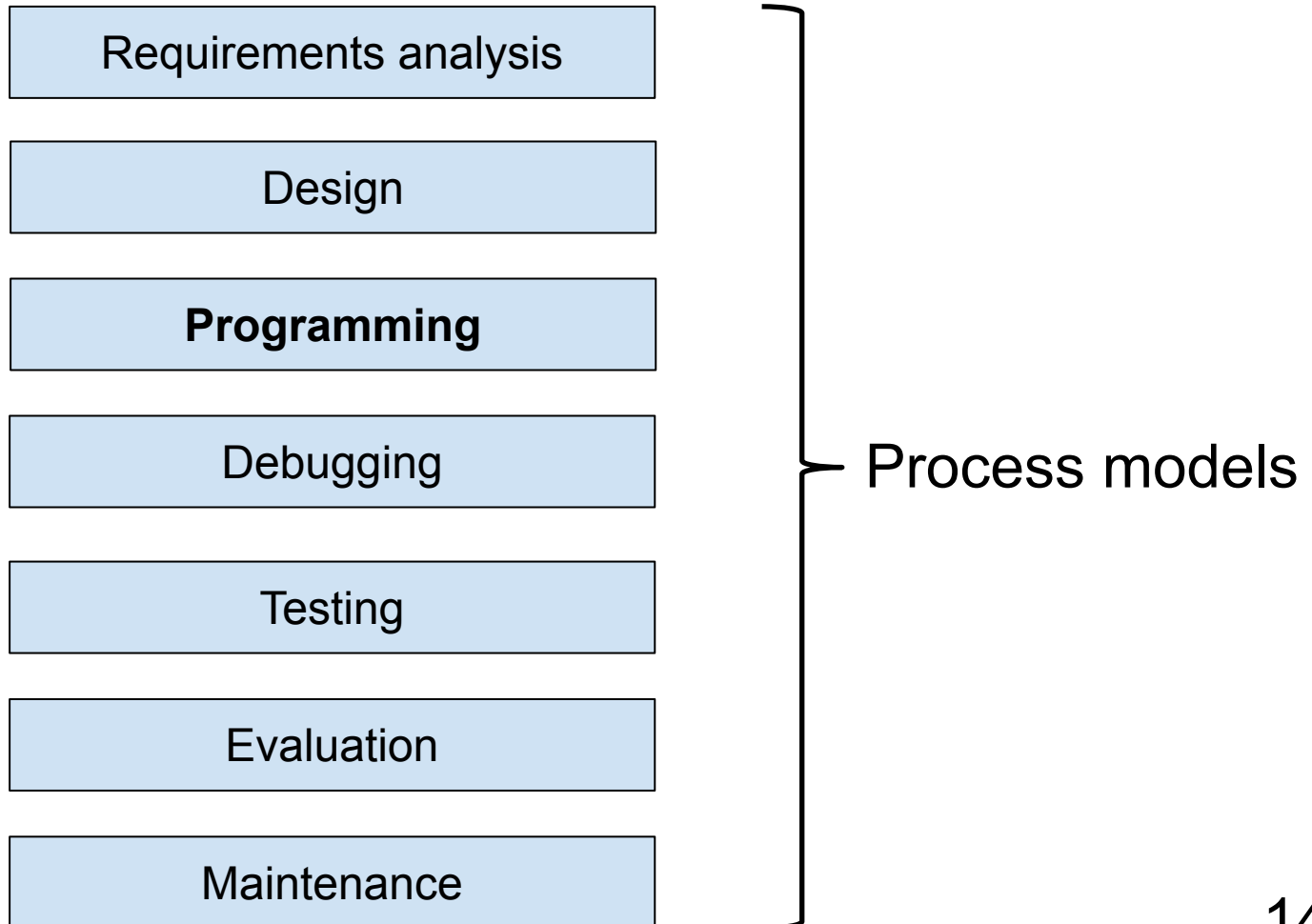
Description

Goal 1: ***Three-tier programming***
Alias ***full stack programming***



Description

Goal 2: *Software engineering*



Description

- How to achieve those goals?
 - Lectures
 - Programming assignments
 - Semester-long project

Description

- Prerequisites
 - COS 217
 - Must have completed successfully
 - COS 226
 - Should have completed successfully
 - Maybe OK concurrently

Agenda

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Resources

(1) Course website

<https://www.cs.princeton.edu/courses/cos333/index.html>

- General information
- Lectures
- Assignments
- Project
- Schedule
- Policies

Resources

(2) Lectures

- Slides, handouts, and code via *Lectures* page

Resources

(3) Ed (EdStem, Ed Discussion)

- Access through Canvas:
 - <https://canvas.princeton.edu>
- Access directly:
 - <https://edstem.org/us/courses/74446/discussion>

Resources

(4) Email

- See *General Information* web page or previous slides for instructor email addresses

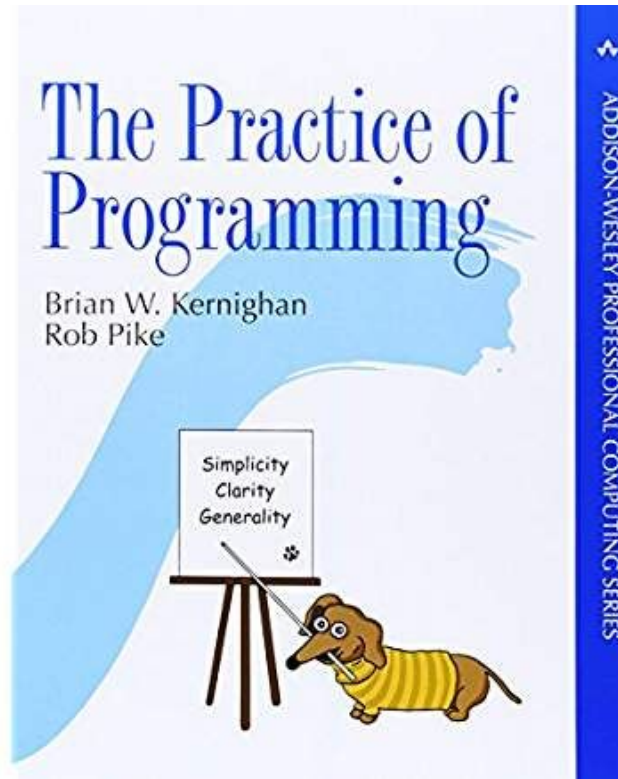
Resources

(5) Instructor meetings

- See *General Information* web page for office hours

Resources

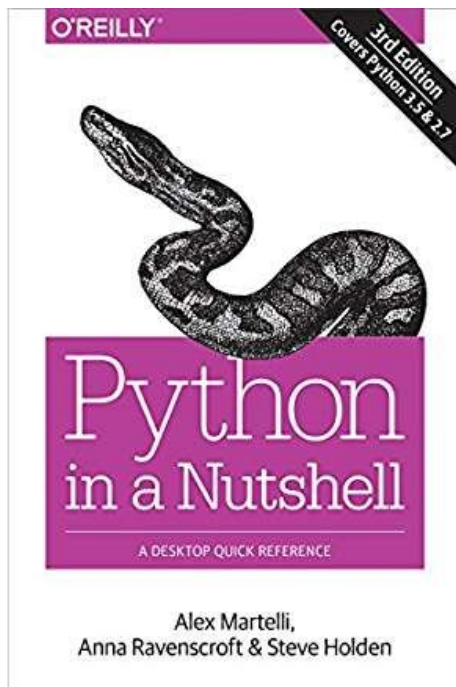
(6) Books



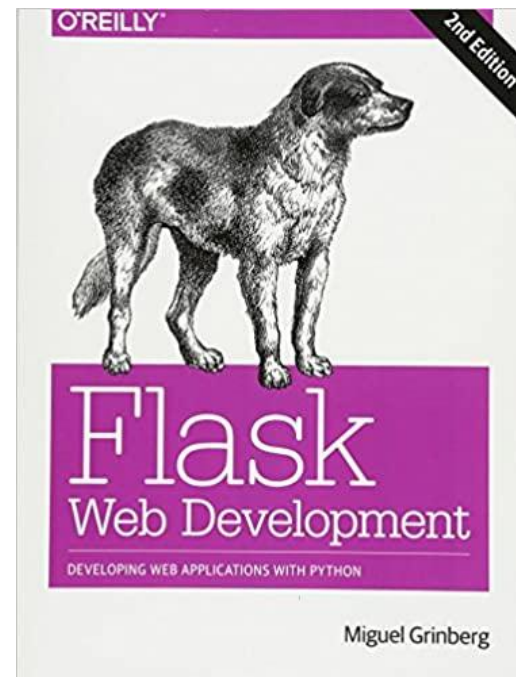
Required

Resources

(6) Books (cont.)



Recommended



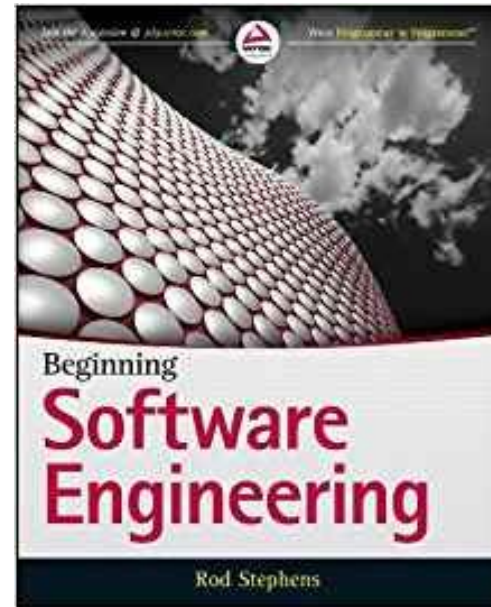
Recommended

Resources

(6) Books (cont.)



Recommended



Recommended

Resources

(7) Other resources

- See links on *Lectures* web page
- Particularly helpful:



Resources

- Resources summary
 - (1) Course website
 - (2) Lectures
 - (3) Ed
 - (4) Email to instructors
 - (5) Meetings with instructors
 - (6) Books
 - (7) Other (e.g., Stack Overflow)

Agenda

- Introductions
- Description
- Resources
- **Topics**
- Graded Components

Topics

- Subject to change...

Topics

- Version Control Systems
 - Material provided, not covered in lectures
 - See *Version Control Systems* lecture slides
 - See *Git and GitHub Primer* document



Topics

- The Python Language



Topics

- Database Programming



Topics

- Network Programming



{JSON}

Topics

- Concurrent Programming



Topics

- Web Programming



Topics

- Server-Side Web Programming: CGI



Topics

- Server-Side Web Programming: Python



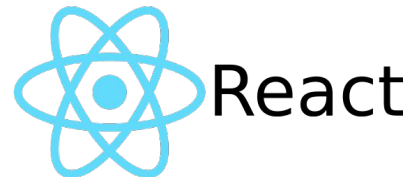
Topics

- The JavaScript Language



Topics

- Client-Side Web Programming:
JavaScript



Topics

- Client-Side Web Programming:
Cascading Style Sheets



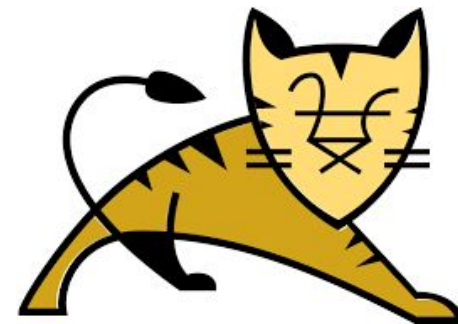
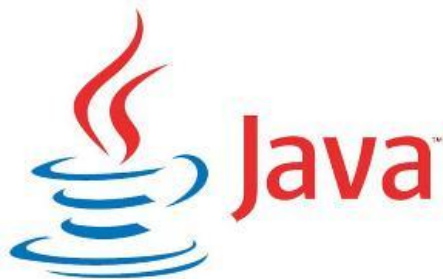
Topics

- Security Issues in Web Programming



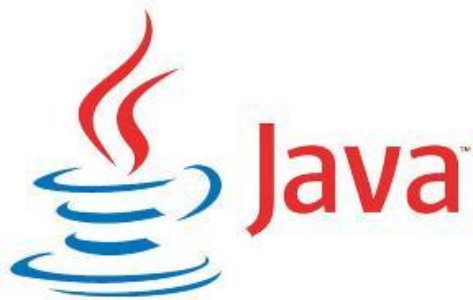
Topics

- Server-Side Options
 - Other options for doing **server-side** programming



Topics

- Client-Side Options
 - Other options for doing **client-side** programming



Topics

- Software engineering
 - Requirements analysis
 - Design (UML, design patterns)
 - Programming
 - Debugging
 - Testing
 - Evaluation
 - Maintenance (profiling, refactoring)
 - Process models

Agenda

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- **Graded components**

Graded Components

Course Component	Approx Grade Weight
Assignments	40%
Project	50%
Participation	10%

Graded Components

Assignments

Num	Assignment
1	Registrar's office: baseline version
2	Registrar's office: networked version
3	Registrar's office: web version 1
4	Registrar's office: web version 2

Graded Components

- **Assignments**

- Recommendations

- Get the modularity right!
 - Work in teams of 2
 - Choose your teammate wisely

- Requirements

- You must understand all aspects

Graded Components

- **Assignments**

- Computing environment

- See document: *A COS 333 Computing Environment*

- <https://www.cs.princeton.edu/courses/archive/spr25/cos333/lectures/01overview/ComputingEnv.pdf>

Graded Components

- **Assignments**

- Policies

- Use any resources you want
 - Constraints:
 - **The work must be essentially your own**
 - **Don't look at solutions by others**
 - **Don't use LLMs**
 - Cite sources

Graded Components

- **Project**

- Teams of 3-5
- Networked three-tier application

Graded Components

Project

When?	Deliverable
Now	Entry in ProjectFinder app
Early	Project approval meeting; <i>Project Overview</i> doc
Mid	Weekly meetings with adviser; weekly updates to <i>Timeline</i> doc; wireframes, prototype, alpha, beta
Late	Project presentation; <i>Grader's Guide</i> doc; <i>Product Eval</i> doc; <i>Project Eval</i> doc; your application

Graded Components

- **Project**

- *ProjectFinder App*

- <https://cos333projs.cs.princeton.edu>

- **Your initial entry is due Sun 2/2 at 5:00PM**

Graded Components

- **Project**

- Policies

- Use any resources you want
 - Constraint:
 - **The work must be essentially your own**
 - Cite sources

Graded Components

- **Project**
 - Notes
 - **Lectures** are aligned with **assignments**
 - **Lectures** are aligned with **your project?**

Graded Components

- **Participation**

- Lecture participation
 - Quantity and quality of answers to questions
 - Must miss a lecture => tell me ahead of time
- Adjustment
 - Were you helpful to the course in some extraordinary ways?
 - Were you detrimental to the course?

In closing...

Action Items

- By Fri 1/31 5:00PM
 - Use ***Survey App*** to express your expertise and interest in course topics
 - <https://cos333survey.cs.princeton.edu>

Action Items

- By Sun 2/2 5:00PM
 - Use ***ProjectFinder App*** to indicate your project status and interests
 - <https://cos333projs.cs.princeton.edu>

Action Items

- Soon
 - Read course website, esp. *Policies* and *Projects* pages
 - <https://www.cs.princeton.edu/courses/cos333/index.html/>

Action Items

- Soon (ideally before 1/30 lecture)
 - Create a COS 333 computing env for assignments
 - <https://www.cs.princeton.edu/courses/archive/spr25/cos333/lectures/01overview/ComputingEnv.pdf>

Action Items

- Soon
 - Make sure you're comfortable with Git and GitHub
 - *Version Control Systems* lecture slides
 - <https://www.cs.princeton.edu/courses/archive/spr25/cos333/lectures/02versionctrl/02versionctrlslides.pdf>
 - *Git and GitHub Primer* doc
 - <https://www.cs.princeton.edu/courses/archive/spr25/cos333/lectures/02versionctrl/GitGitHubPrimer.pdf>

Summary

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