Preliminaries

CS 331: Data Structures and Algorithms
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Michael Lee

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- Office: SB 226C
- Hours: Wed/Fri 1-2PM (on Discord/Zoom)
Agenda

- Course overview & Administirivia
  - Prerequisites
  - Topics & Resources
  - Grading
- Dev environment & Class procedures
Data Structures

- How do we store, organize, and retrieve data on a computer?

& Algorithms

- How can we efficiently (in space/time) carry out some typical data processing operations?

- How do we analyze and describe their performance?
Prerequisites

- I assume you are …
  - fluent in some programming language
  - familiar with procedural & OO paradigms
- comfortable with development processes:
  - compilation, debugging, testing
Python

- We’ll use the Python programming language to explore data structures & algorithms
- Easy-to-learn, clean (“one obvious way to do” things), and popular language
- Ton of useful, powerful libraries
Topics

- Python crash course
- Algorithmic analysis
- Linear data structures (Lists, Stacks, Queues)
- Hashing and Hashtables (aka Maps)
- Recursion and Trees
Online resources

1. Course website: moss.cs.iit.edu/cs331
   - static information
   - lecture calendar, slides, external resources, etc.
Online resources

2. Learning platform: **Mimir**
   - interactive lab and lecture notebooks with built-in tests
   - quizzes and exams
Online resources

3. Blackboard
   - Collab Ultra (for labs)
   - Final gradebook
Online resources

4. Discord: discussion forum
- text/voice chat + screen share
- monitored by TAs and myself
- all office hours here!
Teaching Assistants

- Section 01: **Ismael Lopez**
  - Hours: TBA

- Section 02: **Benny Vazquez-Elvir**
  - Hours: TBA

- Section 03: **TBA**
  - Hours: TBA

- Section 04: **TBA**
  - Hours: TBA

- Section 05: **Vincent Tran**
  - Hours: TBA
TA Lab & Office Hours

- Labs will be run on Blackboard Collab Ultra
  - Demos + live QA
- Office hours will be held on Discord
Supplements

- The Python Tutorial (docs.python.org/3/)
- Problem Solving with Algorithms and Data Structures Using Python
Grading

- 35% Machine Problems
- 5% Quizzes / Self-evaluation
- 60% Exams (3 total: 2 midterms + final)
On Exams

- Tentative midterm exam dates published on class website
- Oct 8, Nov 12 — available for 24 hour period on Mimir
Machine Problems

- New programming assignment most weeks
- All assignments are retrieved and submitted on Mimir
- Provided codebase typically covered in preceding lectures
Jupyter Notebook

- In-browser Python development platform
  - “Cells” can contain plain text, code, output (and more)
  - All lecture notes, demos, and assignments will be distributed as notebook files
Jupyter Notebook

- You can optionally install a notebook server on your own computer for convenience

- See http://jupyter.org/install.html — either JupyterLab & “Classic” Jupyter Notebook are fine (with Python3)
Interactive Lectures

- Lecture notebooks released as 0-point “assignments”
  - Open on Mimir (or download into local notebook server) to edit and follow along during class
  - Class is usually one long interactive demo. Bring your laptop to follow along!
- Completed notebooks will be posted on the class website
§ Demo