Ben Clarage

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EDUCATION

University of Illinois at Urbana-Champaign   **Expected Graduation:** Spring 2023
Major: Mathematics and Computer Science   **GPA:** *3.96/4.00*
Accolades: Edmund James Scholar, Dean's List

SKILLS

Languages	C, C++, Java, Kotlin, Python, JavaScript, Clojure, Bash
Tools	CMake, makefiles, Git, Android Studio, Emscripten, Leiningen, Selenium, Antlr, Docker

EXPERIENCE

Head Course Staff - *Intro To Computer Science*   **Fall 2021 — Present**
- Work with 3 other Head Course Members to oversee 250 plus staff and individually mentor a group of Course Associates
- Guide and develop goals for a class with more than 1400 students that have lead to near equity in grade performance between new and experienced programmers
- Have held over 1200 individual one to one student help sessions ranging on topics from debugging Android applications in Kotlin and Java to theoretical Big O algorithm runtime

Course Developer - *University of Illinois at Urbana-Champaign*   **Summer 2021**
- Implemented source level code mutation for arbitrary Kotlin code to help develop automatic test generation
- Created cyclomatic complexity counter for Kotlin code to give general code performance feedback compared to an ideal solution

Course Staff Associate - *Intro to Computer Science*   **Spring 2021**
- Develop course content using custom code walkthroughs to teach concepts of object-oriented programming
- Fostered environment for improved learning through running virtual office hours and moderating course forum

PROJECTS

Maze Visualization - *Personal Project*   **Fall 2021**
- N-Dimensional maze generator and solver with a touch interactive 3-dimensional visualization in the browser hosted on Amazon Web Services at *maze.benclarage.com*
- Maze logic written in C++, ported to JavaScript using WebAssembly with Emscripten bindings and visualized with WebGL using three.js

Site Graph - *Group Project*   **Fall 2021**
- Ran an assortment of graph algorithms including PageRank and Tarjan's algorithm for strongly connected components on a graph representation of a website
- Website scraped using a Python Selenium bot that clicks buttons to scrape dynamically loaded pages
- Data processed in C++ using algorithms tested with Catch2 with a visualization constructed with the JavaScript library D3

Clojure Adventure - *Personal Project*   **Fall 2021**
- Variation of the text game adventure with the goal to explore a map to complete tasks
- Written in Clojure using dynamic and function programming techniques with Leiningen for project automation and declarative configuration

AES Visualization - *Personal Project*   **Spring 2021**
- Cross-platform (Windows, MacOS, GNU/Linux) implementation and visualization of the 128-bit, 196-bit, and 256-bit versions of the Rijndael Advanced Encryption Standard Algorithm
- Algorithm written in C++, tested with Catch2 and visualized using Cinder

Summa - *Group Project*   **Fall 2020**
- Implemented a Web App that takes a user provided video and uses a backend rest API to make calls to external APIs to gather information about the video
- Frontend visualized with React using the JavaScript library Axios to connect to a Python backend which utilized flask