

# Mahdi Ali-Raihan

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## EDUCATION

### Columbia University

B.S. Computer Science, 3.68 GPA

New York, NY

Expected May 2025

Relevant Coursework: Data Structure & Algorithm, Advanced Programming in C and UNIX, Advanced Systems Programming, Artificial Intelligence, Introduction to Databases, Natural Language Processing, Computer Graphics

## SKILLS

- Frameworks/Tools: Git, Jenkins, Jira, GTK4, Libadwaita, Blueprint Markup Language (GTK)
- Language Skills: Bash, C/C++, Java, Kotlin, Python, TypeScript, HTML/CSS/JS

## TECHNICAL PROJECTS

### Personal Website | HTML/CSS/JS, jQuery Terminal Emulator, VSCode, Git

June 2024 - Present

- Personal website emulating a terminal with files on my experience, projects, education, etc.
- Implemented file system in an object-oriented fashion, which supports Regular Files and Directory structures
- Created a file explorer structure for the website for smooth and easy navigation
- Commands for the terminal (cd, ls, pwd, etc.) were created by scratch functioning similarly to the commands on a Linux terminal

### Linker | C, x86-64 Assembly, Linux, Vim, Git

April 2024 - May 2024

- Created a simple linker that can link and perform multi-file resolution and relocation on an arbitrary number of object files generated from C or Assembly code
- The generated "a.out" file from the linker displays an appropriately filled out ELF file and can be executed

### Debugger | C, x86-64 Assembly, Linux, Vim, Git

March 2024 - April 2024

- Developed a debugger using ptrace library that operates similarly to GNU Debugger Project, allowing users to dynamically analyze and debug other executable programs
- This debugger features setting breakpoints, performing single or continuous steps, inspecting/editing memory addresses, and displaying a stack backtracing for errors on provided executable

### Single-threaded and Multi-threaded Grep | C, Linux, Vim, Git

February 2024 - March 2024

- Implemented a single-threaded and multi-threaded version of the Linux grep command, which enables user to see all files and lines within the files containing a pattern string match from a provided directory
- Performance of multi-threaded version of grep runs at least 50% faster than the single-threaded version of grep

### TeXiT | C, Bash, GTK4, Libadwaita, Blueprint Language for GTK interface, JSON-C, Vim, Git

June 2023 - August 2023

- Simple UNIX-based text editor application with remote editing capabilities
- Developed file save functionality, tab features, GTK signal handlers for tab pages + file action buttons (e.g. new file, open file, save file), and serialization/deserialization of JSON strings for communication between server and clients
- Created installation shell script of TeXiT as a Desktop application

## EXPERIENCE

### Emerging Leaders in Technology and Engineering

New York, NY

Education Fellow

October 2021 - June 2024

- Lead a class of 20+ students each year in engaging discussions, teaching fundamentals of Python and complementing it with different topics like hardware with the MicroBit and game development in Pygame
- Ensured that students are completing the projects assigned and clarified material through office hours
- Communicated with teachers and other fellows on the progress of the class after each lesson

### CodePath

New York, NY

Student

September 2022 - November 2022

- Developed knowledge in Android Development in Kotlin such as working with Layouts, UI Interaction, RecyclerView, APIs and JSON, Fragments, etc.
- Built several projects in Android Studio: [Wordle](#), [Wishlist](#), and [Latest Popular Movie Library](#) (using TMDb API)

### Ceros

New York, NY

Quality Engineer Intern

June 2022 - August 2022

- Performed manual testing and ticketed issues through Jira and Google Doc that expedited the resolution of bugs and enhanced quality of Ceros' TextPlus tool
- Created end-to-end automated testing scripts using Webdriver IO, Cucumber, and TypeScript, which assisted Ceros in efficiently finding bugs in their TextPlus and Previewer tools
- Actively worked in a cross functional team setting with Software Engineers, UX/UI Designers, and Product Managers through agile meetings