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Projects

DOCTALK | *React, Nodejs, MongoDB, Tailwind CSS*

Ignition Hacks 2024

- Developed a web application to assist doctors in **recording, transcribing, and summarizing** conversations with patients, aiding in critical decision-making.
- Built the frontend using **React** and **Tailwind**, with **Node.js** and **Express.js** backend connected to **MongoDB** database.
- Implemented **secure** authentication and authorization using **JWT tokens**, ensuring only authorized users can access the app, with **session persistence** and **automatic logout** for enhanced security.
- Integrated **AI** to accurately **transcribe** conversations, identify speakers, and **summarize** key points for better analysis.
- Automated the **generation** of PDFs containing essential patient information for easy access by doctors.

PROGRAMMING LANGUAGE DEVELOPMENT: INTERPRETER AND VM | *Java, C*

Ongoing Project

- Developed a custom programming language named Lox, following a step-by-step approach from the book *Crafting Interpreters* by Robert Nystrom, to gain a deep understanding of language design and implementation.
- Created an **interpreter** in **Java** to handle key concepts such as grammar definition, syntax scanning, parsing, control flow, functions, and classes, enabling comprehensive exploration of high-level language features.
- Designed and built a **bytecode virtual machine** in **C**, focusing on low-level constructs like compiling expressions, memory management, garbage collection, and optimization techniques.
- Implemented **advanced programming concepts** including inheritance, binding methods, variable scoping, and efficient string handling in **Java** and **C**, emphasizing hands-on experience with both high-level and low-level programming paradigms.

REAL-TIME CHAT APPLICATION | *HTML, CSS, JavaScript, Django*

Personal Project

- Developed a **real-time chat application** as a personal project, leveraging **HTML, CSS, JavaScript**, and **Django** framework.
- Utilized Django web framework, coupled with pre-made **HTML** and **CSS** templates, ensure efficient front-end design.
- Integrated **SQLite** database to store user data, chat-room information, and messages.
- Implemented real-time communication features using **Ajax**.

COURSE DASHBOARD | *HTML, CSS, JavaScript, Python*

Hacks Western 9

- Integrated **web scraping** techniques to extract course information from the Western University website, including course details and PDFs of textbooks.
- Utilized **Python** to fetch professor ratings and reviews from RateMyProf.Com, enhancing the dashboard's functionality and providing valuable insights to students.
- Demonstrated full-stack development capabilities by combining front-end and back-end technologies to create a seamless and user-friendly dashboard for accessing course materials and professor information.

ELEMENTAL FLIP | *Godot*

LoJam (London Game Jam) 2024

- Collaborated with a team of 4 to develop a 2D action game in the **Godot** engine, implementing physics-based algorithms for **collision detection** between projectiles, players, enemies, and walls.
- Utilized linear interpolation (**LERP**) to achieve smooth movement for projectiles and enemy characters.
- Integrated sound effects and animations to enhance gameplay immersion.
- Ensured **compatibility** with both keyboard and controller inputs for versatile user experience.

Skills and Interests

Programming Languages: C, C++, Java, Python, JavaScript, Lua, Bash

Web Development: HTML, CSS, Tailwind CSS, JavaScript, React.js, Express.js, Node.js, Django (Python), Vercel, Render

Databases: MySQL, SQLite, MongoDB, NoSQL

Technologies: Git, JUnit, Microsoft Office Suite, VS Code, Eclipse, IntelliJ IDEA, PyCharm, CLion, Godot Game Engine, Figma

Additional Skills: Active Learning, Team Collaboration, Project and Time Management, Strategic Thinking, Problem-Solving

Interests: Linux Distro Customization, Non-Fiction Reading, Human Psychology, Badminton, Mathematics

Education

UNIVERSITY OF WESTERN ONTARIO

London, Ontario

Bachelor of Science in Computer Science (GPA: 3.8+)

- **Relevant Coursework:** Data Structures and Algorithms, Object Oriented Programming, Information Systems and Design, Communications and Multimedia, Software Tools and System Programming, Computer Architecture, Data Science, Statistics and Probability
- **Current Coursework:** Artificial Intelligence, Cybersecurity, Computer Networks, Operating Systems, Computer Organization, Software Development Life Cycle
- **Achievements:** Dean's Honour List 2022-2024