Individual Assessment Essay
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Over the course of these 2 semesters, my primary contribution to the Hackademia project was building and refining the 'Dynamic Call Stack' module. This involved a complete redesign and implementation of features that allowed users to input C code, display the deconstructed Assembly code, and visualize how data moves through the stack and registers step-by-step. I applied my skills in frontend development, particularly using Bootstrap to enhance the UI by replacing the previous table layout with responsive card components for each register. I also contributed to redesigning the user interface by integrating the C code and Assembly components into a single cohesive display with persistent tab-like toggles. These changes improved the usability and accessibility for students navigating between code views.

This project really let me apply and grow the skills I've been developing since last fall—especially in UI/UX design, systems understanding, and collaborative development. One of the biggest challenges I faced was figuring out how to animate register and memory behavior in a way that made sense to users. It took a lot of iteration and feedback to get it right, but in the end, I created something that clearly visualizes the data movement. I also gained a deeper understanding of how frontend and backend work together to create an educational tool, and I feel much more confident in my ability to take ownership of a feature from design through implementation.

As a group, our team successfully upgraded a learning platform that introduces students to various cybersecurity and low-level computing concepts in an interactive way. Our team was split up into frontend and backend roles. I was on the frontend team, while the backend team handled converting C to Assembly and interpreting that data to get the register and stack information for each step using the iced-x86 library. This separation of responsibilities helped each of us specialize and dig deeper into our areas, while still working toward a shared goal. Together, we built an interactive learning module for the 'Dynamic Call Stack'.

Working with the team taught me a lot about communication and coordination across roles. Dividing the project between frontend and backend worked really well, but we still had to make sure both sides stayed in sync, especially when it came to data formats and how information was passed between components. Everyone brought something unique and valuable to the table, and I think we balanced independence with teamwork effectively.