Significant projects I've undertaken include a cybersecurity initiative and two software development efforts. For the cyber security, I worked on Advanced File Security project, I designed and implemented file encryption/decryption using the OpenSSL CLI within a Seed Labs environment. This involved applying symmetric encryption (AES, ChaCha20), managing keys/IVs securely, validating data integrity with MACs, and employing strong random number generation. Crucially, I simulated vulnerabilities like ECB pattern leaks and replay attacks to demonstrate cipher mode misuse risks. And some of the key challenges included mastering OpenSSL's complex syntax for diverse ciphers, safely simulating exploits without system instability, and preventing key exposure during testing. Outcomes encompassed successful validation of work-flows across cipher modes, documented proof-of-concept attacks revealing critical flaws (e.g., ECB predictability), and a significantly strengthened understanding of cryptographic best practices and mitigation techniques. In software development, I built Chanoly Noodles Management System as a Full-Stack Developer. This web application, using REST.js (backend) and Typescript (frontend), featured admin CRUD operations for inventory and customer ordering. Challenges involved ensuring seamless cart/order synchronization for concurrent users, debugging REST API edge cases under simulated load, and resolving Git merge conflicts. The outcome was a stable, user-friendly platform with secure role segregation and enhanced API/state management skills. Additionally, I developed a Student Internship Management System as a Mobile/Backend Developer (Kotlin/Jetpack Compose for Android, Node.js backend). It provided admin CRUD controls and student dashboards with application status notifications. Overcoming challenges like ensuring real-time notifications across platforms, optimizing UI for diverse Android devices, and mid-project database schema redesign for scalability. GitHub was used for version control throughout these projects and u can find the projects on the link attached below.