Module 6 Journal

The first technology I'm going to talk about is something in the Cryptography side of cyber security. More specifically, Post-Quantum Cryptography or PQC for short. When talking about PQC, it typically refers to cryptographic algorithms that are designed to be secure against attacks from quantum computers. As quantum computers become more and more researched and developed, their ability to solve certain mathematical problems grows exponentially faster. Quantum computers threaten the security of encryption methods like RSA and ECC. Hash based cryptography aims to future proof digital security by resisting quantum decryption capabilities.

PQC has a major impact on software development practices, especially in environments where security is critical. Industries like finance, healthcare and other government spaces will face major hurdles with quantum computers becoming better. As someone who has read a lot about cryptography, understanding and implementing PQC will be vital for building secure applications and migrating already deployed systems to have quantum safe algorithms. Overall, the transition period will require many companies and infrastructures to be upgrading their cryptographic libraries, network protocols and how they store encrypted data.

The impact effects humans, communities and the world. PQC adoption will ensure long term privacy of personal communication and stored data. Many companies who offer online "communities" like banks, hospitals or government services will benefit from their data being encrypted hopefully to the point where it cannot be retroactively decrypted. Globally, PQC can help prevent a lot of attacks that follow something called "harvesting". This is where attackers will harvest tons and tons of encrypted data and decrypt it at a later date.

The other technology I chose was SASE or Secure Access Service Edge. SASE is a cybersecurity framework that combines wide area networking with cloud native security services into a unified service model. It is typically delivered to clients through the cloud. It integrates capabilities like secure web gateways, cloud access security brokers, firewalls as a service, and a zero-trust access model like I had mentioned last week. The goal of SASE is to provide secure, optimized access to applications and resources regardless of a user's location.

SASE changes how applications are deployed and accessed, favoring a cloud-first approach. For me, who plans to become a cybersecurity professional, this means designing applications or APIs that integrate seamlessly with cloud security layers, ensuring compliance, salable, and consistent user experiences. Knowledge of SASE architectures will be in high demand for cloud engineers, network architects and software developers.

For individual users, SASE enables secure remote work without sacrificing much performance. Organizations help communities by maintaining secure operations across distributed teams, reducing the overall exposure to attacks like phishing and malware. Overall, SASE adoption supports the digital economy by enabling secure, remote collaboration.

(course outcome stuff below)

So far, the course outcomes I've achieved are the following:

1. Design and evaluate computing solutions using algorithmic principles and computer science practices. We achieved this through implementing trend calculations, percent change algorithms and optimized chart data processing.
2. Demonstrate innovative techniques, skills and tools in computing practices. We achieved this through refactoring the entire application to MVVM, integrating Room persistence and applying LiveData and MPAndroidChart.
3. Develop a security mindset in software design. We achieved this through applying secure DAO queries, considered data validation and structuring our application to minimize vulnerabilities.

I am currently working on ticking off a few more outcomes, I just haven't had much time this week. I would like to update the UI, and just overall finish some polishing stuff like a settings page to change goal weight and what not.

Checkpoint	Software Design and Engineering	Algorithms and Data Structures	Databases
Name of Artifact Used	Android Weight Tracking App (CS360 final project)	Android Weight Tracking App (CS360 final project)	Android Weight Tracking App (CS360 final project)
Status of Initial Enhancement	Completed – Refactored to MVVM, implemented	Completed – Implemented percent change calculation	Completed – Integrated Room persistence, optimized queries,

	repository pattern, LiveData integration	and weight trend chart	added deletion capability
Submission Status	Submitted	Submitted	Submitted
Status of Final Enhancement	Basically done, I just have to polish some UI stuff and add a settings page	Finalized – Fully functional, handling edge cases	Finalized – Fully functional and optimized
Uploaded to ePortfolio	Pending final review before upload	Pending final review before upload	Pending final review before upload
Status of Finalized ePortfolio	Not yet finalized	Not yet finalized	Not yet finalized