**CS 499 Milestone Four: Narrative**

**Category Four: Databases**

**Artifact Description**

The artifact I selected is the Inventory Management Mobile Application originally developed for CS 360. This Android application enables users to manage inventory items, organize them into categories, and track quantities. When originally created, the application utilized a local SQLite database for all data persistence, storing user accounts, inventory items, and categories directly on the device.

**Justification for Inclusion**

I chose this artifact for my ePortfolio because it let me tackle a real-world database challenge. The original app used SQLite, which worked fine but only on one device. By migrating to Firebase, I made the app more useful and modern while learning industry-relevant database skills.

Here's what I accomplished:

* **Cloud Migration**: I moved everything from SQLite to Firebase, which meant redesigning how the data was organized
* **Real-time Sync**: The app now automatically updates across all your devices
* **Better Security**: I set up rules so each user can only see their own data
* **Easy Login**: Added both email and Google login options

**Course Outcomes Achieved**This project successfully met my goals for two key outcomes:

**Outcome 4:** I gained practical experience with cloud databases by implementing Firebase Firestore. I learned how to structure data for the cloud, optimize queries, and handle real-time updates across devices.

**Outcome 5:** I focused heavily on security, making sure users can only access their own data through proper database rules and authentication systems. This taught me to think about potential security risks from the start.

The project also touched on Outcome 3, as I had to make smart trade-offs between SQLite's simplicity and Firebase's power, balancing performance with functionality.

**Reflection on the Process**

This project taught me that migrating to the cloud is more complicated than it seems. I had to completely rethink how to organize my data since Firebase works very differently from SQLite. Instead of using tables that connect to each other, I had to design standalone collections that made sense for how users would actually interact with the app.

The real-time sync feature was harder than I expected. I ran into issues with network connections and making sure data stayed consistent across devices. I ended up building the app step by step: first getting Firebase connected, then moving the basic features over, and finally adding the real-time updates and login system.

In the end, I learned how to build a secure, multi-user app that works across any device. Setting up the security rules was especially educational. I had to make sure users could only access their own data. The final app feels much more professional and gave me real experience with cloud databases used in the industry today.