**5-2 Milestone Four Enhancement Three Databases**

Mohamed Saleh

Southern New Hampshire University

CS 499: Computer Science Capstone

Prof. Wasim Alim

August 03,2025

Database enhancements for Pet Shelter project are straight forwards in terms of replacement. I created a new MySQL database, imported the CSV file after updated the first column with \_id to avoid unnamed columns in the table structure. I added all needed steps to run the project in README.md file as a reference. I modified different parts in the UI component to make It more presentable.

Database enhancements for the mobile app was quite challenging. I will break it down in few steps as I need to move the application MySQL Database o Firebase and change the current Authentication with firebase Auth.

1. **Google Console**

The first step to support firebae storage, auth we need to use Google Console in order to link the application with Google Services and activate the authentication method. Downloads google-services.json file and include in the project files.

1. **Dependencies**

We need to update the gradle file (Build System for Android) to support Firebase auth, storage.

1. **Code Changes**

I started developing a helper class following singleton pattern to reference Firebase services. Starting with LoginActivity removing InventoryDatabase dependency and refactor onCreate and utilize the new Login method using Firebase Auth. After successfully, I was able to finalize this part. I moved to RegisterActivity and start refactor the existing implementation with Firebase Auth. Taking into consideration the error messages from Google service. I refactored many parts in AddItemActivity to accommodate Firebase, the first issue is I cannot store the product image in bytes, so I must convert to base64 and vice versa while viewing it. After I confirm items saved correctly to Firebase and viewing Item works correctly as well. I moved to InventoryActivity and refactored all functionalities.

1. **Testing**

I faced some challenges testing the app on a physical device due to API versions. I set up multiple virtual devices to test and observe Live updates results.

| **Checkpoint** | **Software Design and Engineering** | **Algorithms and Data Structures** | **Databases** |
| --- | --- | --- | --- |
| **Name of Artifact Used** | **Artifact name:** Company Data Dashboard  **Origin:** CS 340 Client-Server Side Application  **Artifact name:** Inventory Management Android Mobile App  **Origin:** CS 360 Mobile Architect and Programming | **Artifact name:** Company Data Dashboard  **Origin:** CS 340 Client-Server Side Application  **Artifact name:** Inventory Management Android Mobile App  **Origin:** CS 360 Mobile Architect and Programming | **Artifact name:** Company Data Dashboard  **Origin:** CS 340 Client-Server Side Application  **Artifact name:** Inventory Management Android Mobile App  **Origin:** CS 360 Mobile Architect and Programming |
| **Status of Initial Enhancement** | Enhancements completed | Enhancements completed | Enhancements completed |
| **Submission Status** | Submitted waiting on feedback from the instructor | Submitted waiting on feedback from the instructor | Submitted waiting on feedback from the instructor |
| **Status of Final Enhancement** | Finished and waiting for feedback from the instructor | Finished and waiting for feedback from the instructor | Finished and waiting for feedback from the instructor |
| **Uploaded to ePortfolio** | Uploaded to Github without narrative of Git Pages | Uploaded to Github without narrative of Git Pages | Uploaded to Github without narrative of Git Pages |
| **Status of Finalized ePortfolio** | Planned but not yet completed | Planned but not yet completed | Planned but not yet completed |