**Enhancement One Narrative**

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1/24/2025

For this first enhancement, I have recreated the core functionality of previous project into a JavaScript/TypeScript full-stack application. The original artifact, the Graziosos Salvare Animal Shelter Dashboard, was a Python written program to display a collection of animals from different animal shelters in the Austin Texas area, in which animals could be filtered through based on their candidacy for certain rescue animal operations. This artifact was created over a year ago, and included a data table that displayed a list of all animals (or certain animals if a filter was selected) within a database, a map component that displayed the location of an animal selected on the data table, and a pie chart to list the count of each breed shown in the data table. This artifact also included server-side CRUD functionalities to create, read, update, and delete entries from the connected database, however, only the read function was used in the client-side dashboard. All of these features (except for the filtering, which was implemented in the third enhancement) have been introduced into the enhanced application to replicate the original functionality of the artifact.

I selected this item to be enhanced and put into my ePortfolio as while it did fulfill its purpose at the time it was created, I believed that it was very basic, and it had the potential to be a more universal shelter dashboard that could be used by a wider audience of users that were looking for suitable animals to adopt in addition to the more niche (yet still very important) audience of rescue animal trainers. Additionally, I wanted to demonstrate my skills in being able to replicate a program in a different language (in this case, from Python to JavaScript), which in turn would demonstrate my skills in writing JavaScript and in understanding both Python and JavaScript so I could replicate the core functionalities. These skills were showcased in the JavaScript code I made to connect to and manipulate a database with the basic CRUD principles and in the multiple angular components I created for the front-end that each replicate a certain component from the original artifact. These concepts from this artifact were improved upon by separating the different components into individual modules, such that they are no longer in just two files, making the code better organized and making each component easier to maintain without necessarily affecting other components. This artifact was also further improved upon with updated comments and improved error handling to allow code to be further maintainable while preventing simple user mistakes (such as forgetting to include all required fields for a data entry) from causing the application to stop abruptly.

The two course outcomes I had planned to meet with this enhancement were outcomes 4 and 5:

Demonstrate an ability to use well-founded and innovative techniques, skills, and tools in computing practices for the purpose of implementing computer solutions that deliver value and accomplish industry-specific goals (software engineering/design/database)

Develop a security mindset that anticipates adversarial exploits in software architecture and designs to expose potential vulnerabilities, mitigate design flaws, and ensure privacy and enhanced security of data and resources

From the enhancements I have performed, I believe I have exceptionally fulfilled the 4th outcome as I have utilized my skills learned from previous courses and external tools I have researched to produce a full-stack program in a different language that replicates the core features and functionality of the original program. However, as the front-end does not manipulate the connected database besides from simply reading entries (there was no direct front-end database manipulation in the original artifact either), I did not put much focus into data security besides from error handling to prevent unexpected app terminations, so I would not say I completely fulfilled the 5th outcome from this first enhancement. Though as I returned to this artifact for the third enhancement, which I implemented improved database features that includes incorporating security, I was able to fulfill the 5th outcome there.

The process to enhance this artifact came with plenty of challenges, and I have learned quite a bit throughout this process. As I had to rebuild this artifact into a different language, including creating a new database to be able to store and manage data, this process involved me creating an API that implemented the CRUD component to allow for a database to be connected and controlled via different API calls. After having the server-side component remade, I had to create the client-side services and components to interact with the database API calls and to display the different features that were implemented in the original project. This is where the majority of the challenges and learning occurred, as not only did I need to find tools/libraries necessary to replicate each component, but I needed to figure out how to connect them with the data they needed so they could be functional and dynamic. With some research and experimentation, I was able to learn about different JavaScript tools that function almost the same as the tools used in the original project in addition to how these tools can be set up and programmed to be able to properly receive and manipulate data to be displayed in the same way they were before. By understanding how to properly implement and utilize these tools for my purposes, I was able to create a successor program that replicated the functionality and features of the original artifact.