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CS 499

Milestone Four: Enhancement Three: Databases — Narrative Paper

# 1. Briefly describe the artifact. What is it? When was it created?

The artifact I chose for this enhancement is from CS 340: Client/Server Development, created on December 18, 2024. It is a database for sheltered dogs and cats that stores and retrieves pet information using a MongoDB database.

# 2. Justify the inclusion of the artifact in your ePortfolio. Why did you select this item? What specific components of the artifact showcase your skills and abilities in software development? How was the artifact improved?

This artifact demonstrates the importance and practical use of databases. It was an ideal choice for my ePortfolio because it highlights how to design, set up, and integrate a database with a user interface. My enhancements for this project were extensive: I added a more advanced search tool for locating animals, implemented tests for CRUD functions, and improved database connectivity using both a standalone Jupyter notebook and Visual Studio Code. Since the original program was developed on the Apollo remote desktop, I had to port everything to my local machine and modify the code to ensure it worked properly. I also streamlined the CRUD2.py script by applying the best coding practices, making the code more secure and concise. Additionally, I enhanced the user interface to create a more user-friendly experience.

# 3. Did you meet the course outcomes you planned to meet with this enhancement in Module One? Do you have any updates to your outcome-coverage plans?

I achieved my goal of meeting the following objectives:  
  
- Designed and evaluated computing solutions that solve a given problem using algorithmic principles and computer science standards, while effectively managing design trade-offs.  
  
- Demonstrated the ability to apply well-founded and innovative techniques, skills, and tools in computing practices to deliver solutions that provide value and meet industry-specific goals.  
  
 Through this project, I used best practices to enhance algorithms for better sorting and pet management, and I improved communication between the dashboard and database in a way that is both intuitive and meaningful.

# 4. Reflect on the process of enhancing and modifying the artifact. What did you learn as you were creating it and improving it? What challenges did you face?

Working with MongoDB on my personal computer and configuring the local database connection was challenging because the original project was designed for a remote learning environment. I had to adjust some commands to ensure they worked on my local setup. Additionally, I had to recreate database users and assign appropriate permissions, which reinforced my understanding of the importance of user roles and access control. Debugging these issues took considerable time, but overall, the project was a success and strengthened my skills in database management and secure development practices.