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CS 499

Milestone 4

The artifact I selected for the databases category of my ePortfolio is a CRUD (Create, Read, Update, Delete) application that uses an SQLite database. The application allows users to perform basic database operations, such as adding, retrieving, updating, and deleting records, showcasing my understanding of database management and query execution.

I included this artifact in my ePortfolio because it highlights my ability to work with relational databases and write efficient SQL queries. The project demonstrates key skills such as database schema design, data validation, and error handling. To enhance the artifact, I optimized SQL queries for better performance, added input validation to prevent SQL injection attacks, and included detailed error messages to improve debugging. These improvements show my ability to create secure and efficient database applications.

Through this artifact, I achieved several course outcomes. By implementing and optimizing CRUD operations, I met **Outcome 3**, which focuses on designing and evaluating computing solutions. Adding input validation and security features helped me progress toward **Outcome 5**, which involves developing a security mindset. Additionally, the use of SQL and SQLite tools aligns with **Outcome 4**, as it demonstrates my ability to apply innovative techniques and tools in database practices.

The enhancement process was both challenging and rewarding. Optimizing SQL queries taught me how to improve performance, especially when working with large datasets. Adding input validation deepened my understanding of secure coding practices by addressing vulnerabilities like SQL injection. One of the biggest challenges was ensuring data integrity while performing updates and deletions, which required careful planning and implementation. Improving error handling also made the application more user-friendly and easier to debug.

Looking ahead, I plan to add advanced features like search functionality and report generation to further showcase my database management skills. I also aim to explore normalization techniques to enhance the database schema and reduce redundancy. These enhancements will strengthen the artifact and make it a standout piece in my ePortfolio. By incorporating instructor feedback, I am confident this project will demonstrate my skills in building secure and efficient database applications.