Category One Artifact Narrative – Databases

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

My artifact is part of my CS-260 course (Data Structures and Algorithms). I worked on it about a year ago, that takes bids from a CSV file and allows the user to sort the bids using quicksort algorithms that sort the data by using while loops and comparing the highest and lowest bids per loop.

So far updates to this artifact are that it has been made into a modular Python application, which allows the user to display the CSV data and sort it by different parameters such as date, title, and amount. The user can also add new bid data to the data frame.

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 project was perfect to build onto when it comes to databases. The user could add a bid by inputting the proper attributes, but the data wasn't stored anywhere so it was lost once the program was shut. By implementing a database to hold all the added bids, the user now has a saved store of the new data through SQL Lite to load all the stored data back and sort it. In doing this I was able to showcase my ability to add a database to an application, then I was able to sort through the data stored in the database which is what DAD 220 taught me to do.

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

Through my enhancements, I met these course outcomes:

I believe I met the outcome: *"Design, develop, and deliver professional-quality oral, written, and visual communications that are coherent, technically sound, and appropriately adapted to specific audiences and contexts."* by properly implementing a database through SQL Lite and having the function work seamlessly with the GUI. The added functionality is visually coherent with the GUI and can be adapted to many scenarios.

I believe I have met the outcome: *"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)."* By properly adding database functionality to my code. My code is built in a way that meets industry-specific goals and can be implemented into many businesses that need to track and view their data statistics. Since a database is now included, companies will be able to add data to not just one locations system, but companywide. Expansion to this will be using a server hosted online so everything will be updated automatically in that case.

I have met: *"Employ strategies for building collaborative environments that enable diverse audiences to support organizational decision making in the field of computer science."* By pushing my changes to the git repository. By commenting out all the code I also leave room for improvement, and I created TO-DO's that have been completed that also would be beneficial in a team environment.

I have met *"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"* by hosting the database locally to ensure that it is secure automatically before expanding onto new changes. I have also made sure to comment out all the code and review it deeply to make sure it isn't easily exploitable. Looking forward to implementing more change such as permissions and users.

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?

One of the challenges with databases was coming up with a way to implement data from a database as well as the CSV file when loading bids. Once that worked the next issue was that the data types were not matching, so when sorting the values would return as "nan". A choice that took a lot of consideration was choosing which database management system would be best for security, using SQL Lite turned out to be the most secure when using this app.