GUI with database functionality

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

The artifact is an appointment management system that I created in CS-320, software testing automation and quality assurance. I created it for a project for that class, and it was a terminal based java application that allows users to add, view, and delete appointments. For this most recent enhancement, I have updated it to include a database for storing appointment information. It now includes database support and a search feature that works with the database to manage appointments easily as they scale.

1. 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?

I chose this artifact for my ePortfolio because it shows a transition from console-based logic to a more professional desktop application. With the addition of the database using SQLite, I can showcase to potential employers my ability to integrate software parts into a working application for real world use. This enhancement demonstrates my abilities in database integration as well as user focused functionality application planning.

1. 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?

Yes, I have met the outcomes I set out to achieve in Module One as well as exceeded them. I applied software development fundamentals to integrate the database using SQLite and the required drivers. I also designed modular functions for UI and database logic in a clean and professional way. I incorporated error handling throughout the application by using try-catch blocks in database operations to manage connection failures and execution errors. Additionally, I implemented user input validation in the graphical interface to ensure fields are properly filled before database interaction and provided clear error messages using dialog boxes to guide the user.

This enhancement directly supports the course 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,"* which I planned to meet in my Module One proposal. It aligns with this outcome because the interface was designed with user clarity in mind, the error messages provide meaningful feedback for non-technical users, and the overall functionality is supported by technically sound, well-organized code that communicates the system’s logic clearly. It also aligns with the outcome: *"Apply computer science theory and software development fundamentals to produce computing-based solutions,"* as I used Java, JDBC, and SQL to develop a functional, database-driven desktop application.

Additionally, it supports the outcome: *"Design and evaluate computing solutions that solve a given problem using algorithmic principles and computer science practices and standards appropriate to its solution while managing the trade-offs involved in design choices,"* as I balanced user experience and functionality in my design decisions as well as solved the problem of data storage for this application. This enhancement has expanded my software skills, especially with data handling. Some updates I have planned are to add a recurring appointment feature, as it’s common to have weekly or biweekly appointments for things like chiropractor or physical therapy. Additionally, an appointment tracking system would be helpful where there could be a status of scheduled, completed, canceled, or no-show, and these could be color coded for easy viewing for the user.

1. 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?

This enhancement required me to replace the original method of data storage with a database which meant I had to make some architectural changes to the project. I designed a database helper class to separate the database logic from the user interface logic. I did run into a lot of challenges for this enhancement, and it took significantly longer to achieve a good outcome than previous enhancements. First, I ran into issues with incorporating SQLite into the program, as I had only worked with SQLite a few other times and it was always on a virtual server with all the required drivers installed. It took me some time to properly install the java database connection driver to get SQLite working. Then I had to resolve some file name and compilation issues that was caused by me creating duplicates of classes unintentionally. Deleting the duplicates resolved this issue once I figured out that was the problem. This part of my artifact enhancement has given me more skills in troubleshooting build time and run time errors and taught me how important file structure is and how easily it can get messy and confusing if not properly maintained.

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Module 5 Milestone > src > main > java

Summary of changes:

* AppointmentMangerGUI – Updated search and changed placement for better UI design. Integrated database logic and search logic as well.
* DatabaseHelper – New class that has all of the database setup and CRUD operations.
* DatabaseAppointment.Java – New class for appointment records for the database.