CS499 Module 6 Journal

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One disruptive technology that continues to shape the field is cloud computing. The ability to access scalable, on-demand computing resources via platforms like AWS, Azure, or Google Cloud has completely changed how software is built and deployed. Instead of being tied to physical machines, developers can now launch services globally, scale up or down in seconds, and offload much of the infrastructure management. As someone aiming for a career in backend or full-stack development, this directly impacts my path. Understanding cloud environments and how to build applications that live in them is almost a requirement now. I plan to explore this more after graduation, possibly even getting certified in a major cloud platform. That would be highly relevant and applicable to any number of career paths or side-projects I plan to build.

Another disruptive tech is augmented reality (AR). Personally, I have a lot of fun interacting with AR in my Oculus Headset. But AR does blur the line between the physical and digital world with applications ranging from entertainment and education to healthcare and manufacturing. As the hardware (like AR glasses) becomes more accessible, the demand for immersive, real-time software will likely only grow. Even though I’m not actively working with AR in my current project, the concept of creating interactive, user-friendly systems still applies. I have entertained the idea of making some AR apps. If I ever pivot toward mobile or game development, AR would definately be a space worth exploring, especially for its potential to engage users in new ways!

These technologies aren’t just changing software development, they’re changing how people interact with the world and each other. Cloud services bring critical infrastructure to underserved communities. AR could revolutionize learning for students across the globe. It’s inspiring to think how the code I write might one day contribute to that kind of progress! Fun times to be alive and learning how to code.

So far, the course outcomes I have achieved are:

*“Design, develop, and deliver professional-quality oral, written, and visual communications that are coherent, technically sound, and appropriately adapted to specific audiences and contexts.”* This was accomplished by creating the code review documentation, presentation video and voice that was submitted in module two. This is also an ongoing outcome as each module has needed documentation for improvements.

*“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)”* This is an outcome in multiple phases as the initial codebase. So far, the transition from Java to Python has been completed and the solutions I planned have been fleshed out in the codebase. The database is now up and running and I'm very happy with it so far! Still needs a bit of testing and cleaning up of the UI just to put on the finishing touches, but the app is fully functional.

*"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 (data structures and algorithms)"*

In module 3 I have added sort, search and a full working menu in a clean, modular and scalable way. In this final enhancement, these have taken their final form through a working SQLite database with CRUD operations. All of the functions on the menu are fully functional and tested as well as logged in the app.log doc, including intended failure messages!

*"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"*

This has now been implemented with the addition of the SQLite database. The program is designed to protect the database from the most common forms of SQL injection attacks by santizing the data before it calls the database.

*"Employ strategies for building collaborative environments that enable diverse audiences to support organizational decision making in the field of computer science"*

While this outcome is a bit harder on a solo project, I do aim to design and implement code in a way that is user friendly across all who might interact with the program. I do consider my professor as a collaborator, since he is helping guide me in this project, providing meaningful feedback and monitoring my overall progress.

**Artifact Progress Update:**

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| --- | --- | --- | --- |
| **Checkpoint** | **Software Design and Engineering** | **Algorithms and Data Structures** | **Databases** |
| **Name of Artifact Used** | CS145 Animal Shelter | CS145 Animal Shelter | CS145 Animal Shelter |
| **Status of Initial Enhancement** | Completed port to Python. Full program with dog, monkey, main and rescue\_animal class created. All working logic and functional program. Logging logic created and functional. The try/except blocks help to prevent crashes from invalid user input. SQL injection attack prevention has been implemented into the input paramateres. Need to clean up menu/output for user-friendliness. | Implemented dictionary for faster lookups. Implemented ability to search for animal by name, availability, breed and country. Added option for sorting animals alphabetically by name or country. Some of the sorting methods need to be fixed, current bugs.  The database is created through SQLite, and all function calls adjusted to interact with database | The SQLite database has been created. CRUD operation: User is able to add animal to database, read the database through print functions, update the record by reserving an animal, and delete and animal record. |
| **Submission Status** | Submitted Initial enhancement. | Submitted Final enhancement. | Submitted Final enhancement. |
| **Status of Final Enhancement** | Not Finished | Finished | Finished |
| **Uploaded to ePortfolio** | No | No | No |
| **Status of Finalized ePortfolio** | Not Finished | Not Finished | Not Finished |