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CS 499 Capstone

Module 4 “ Career Choice and Artifact Update”

July 22, 2025

DR Troy Hawk

Yes, my career plans have changed over time. I originally wanted to become a Software Engineer because I liked the idea of building full applications and solving technical problems. As I went through my computer science courses and worked on projects, I started leaning toward more specialized roles. I became interested in Database Administration because I enjoyed working with data and managing how it is stored, organized, and queried. Later, I explored Database Analyst roles, and now I am also considering Backend Development positions. All of these roles involve logical thinking and working with data , I am still figuring out which one is the best long-term fit.

My thinking has evolved a lot throughout this program. At first, I thought I would only work with databases, but now I see that I enjoy a wider range of skills, especially logic, data queries, backend development, and connecting systems together. I learned that I do not need to have one fixed job title right away. Instead, I want to build on my strengths, continue learning, and be open to different opportunities that match my skills. Working on my capstone project and going through the Full Stack course really helped me grow and build confidence in more technical areas I was unsure about before.

I have researched several career paths, including Database administrator, database analyst, backend developer, and full stack developer. I have also reviewed job listings and looked into what skills and tools are most in demand, like MongoDB, SQL, Python, REST APIs, and cloud services. This research helped me understand that there are many entry points into tech and that I can continue learning on the job. I have started considering earning a master’s degree after graduation because I want to deepen my knowledge while I look for an internship or job. I feel like continuing my education will help me stay focused and competitive while I gain experience in the field.

I have researched several career paths, including database analyst, backend developer, and full stack developer. Reviewing job listings helped me understand the most commonly requested skills, like SQL, Python, MongoDB, REST APIs, and cloud services. One thing I noticed is that many jobs, even entry-level ones still require some form of real-world experience, many require 2 years and above experience; which can feel discouraging when you are just finishing school. That made me realize how valuable an ePortfolio can be to showcase projects, skills, and problem-solving abilities when formal job experience is still limited. It is a way to demonstrate what I know and what I can do. Because of all this, I have also started considering a master’s degree to continue learning while I look for an internship or job in the field. I am also open to pursuing certifications related to MongoDB, backend development, or cloud tools.

Which course outcomes have you achieved so far, and which ones remain?  
So far, I have achieved the following course outcomes:

1. Outcome 1: I made progress with secure computing by removing exposed credentials and improving my code structure, but I want to learn more about secure APIs, input validation, and authentication.
2. Outcome 4: I demonstrated software engineering techniques by improving my code design—modularizing functions, removing hardcoded values, and improving maintainability.
3. Outcome 5: I used algorithms and data structure logic when building filtering features and handling database queries, especially for filtering by animal breed and color in my project.
4. Outcome 3: I applied computer science theory and development practices while enhancing my capstone project. I used Python, MongoDB, and structured logic to create useful features

The outcomes I am still working toward are:

1. Outcome 2: I am building my ability to communicate technical work clearly. I can document and explain code, but I am still developing confidence when presenting to non-technical audiences or explaining system-level design choices.

**Part 2- Status on Enhancements**

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| --- | --- | --- | --- |
| **Checkpoint** | **Software Design and Engineering** | ***Algorithms and Data Structures*** | ***Databases*** |
| **Name of Artifact Used** | ***Origin:*** *CS 340 Client server development*  ***Artifact Name :*** *Animal Shelter Dashboard*  (Jupyter Notebook and Python) | **Origin:** CS 340 Client server development  **Artifact Name :** Animal Shelter Dashboard    (Filtering Logic and Search Code) | **Origin:** CS 340 Client server development  **Artifact Name :** Animal Shelter Dashboard  (MongoDB CRUD Integration) |
| ***Status of* Initial *Enhancement*** | hardcoded credentials, print statements, lack of modular design | Identified logic repetition in rescue filters and limited input checking | Identified use of Mongo Shell only, direct connection without validation |
| ***Submission Status*** | Submitted | Submitted | Submitted |
| ***Status of Final Enhancement*** | Feedback was applied, and the final polish was applied; Replaced hardcoded credentials with environment variables, used logging instead of print, modularized settings into files | Combined all rescue filter logic into one method, added input validation, used regex for flexible matching | Migrated from Mongo Shell to MongoDB Compass, modularized DB operations into classes, added safe connection handling |
| ***Uploaded to ePortfolio*** | Uploaded revised Code review from Instructor Feedback (redone the video) | Not yet , In process of uploading after refining layout | Not done yet |
| **Status of Finalized ePortfolio** | In progress ( organizing layout and revisioning sections) | Not done yet | Not done yet |