4-2 Milestone Three: Enhancement Two: Data Structures and Algorithms

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Course Outcome 1:

I employed strategies for building a collaborative environment that enables diverse audiences to support organizational decision-making in the field of computer science by completing all of the following enhancements and adding security to all of my projects. Making sure that all of my projects were protected with user authentication is just one way I ensure that people feel safe giving that application any personal data. Also, making sure that my code was well documented so that anyone can continue or even add on to any of my projects and know exactly what was going on in each document.

Course Outcome 2:

I designed, developed, and delivered professional-quality oral, written, and visual communication that is coherent, technically sound, and appropriately adapted to specific audiences by introducing what the original use of the project was and how exactly I was going to change it. After that I explained what I changed with each document showing code and finished results to prove what that application could do. In both of the projects, there are screenshots of not only code but also of the app working as intended after each enhancement.

Course Outcome 3:

I designed and evaluated computing solutions that solve a given problem using algorithmic principles and computer science practices by implementing a binary search tree into my Mobile Application Project. This search tree used to have a user input a number and have that

number checked through different nodes that would be input using the database. This solves the problem of putting a lot of stress on the database, and also, it is much faster to check to see if a number exists this way rather than having to make a query for that because of the time complexity. The database would have to iterate through every single possible item in the database. In contrast, the binary search tree only looks through the nodes that it is given to check, and only if it is found, there does it go to the database and search through the query to return it to the user.

Course Outcome 4:

I demonstrated my ability to use well-founded and innovative techniques, skills, and tools in computer practices for the purpose of implementing computer solutions that deliver value and accomplish industry-specific goals by using a newer form of web development called Flask. Flask allows the user to connect seamlessly with HTML and CSS to create web applications while using Python's vast library of internal tools to make a thought come to life. Using these tools and languages, I could connect all of them to create a very nice and simple web application connected to MongoDB, where all of the user data is stored in multiple collections. On top of that, I made sure to comment on everything that was happening on the main.py file so that any other developer could go in and continue working on that application without much hassle.

Course Outcome 5:

I developed a security mindset that anticipates adversarial exploits in software architecture and designs to expose potential vulnerabilities, mitigate design flaws, and ensure data and resources' privacy and enhanced security. Knowing that I was working on a project that would potentially be used by banks where all of the data needs to be super secure, I needed to not only make sure that there was user authentication but also to make sure that each user was only going to be able to see only their respective clients. So, on the webpage, it will display if the username and password are wrong or don’t exist. You can register a new account if you do not have one, and also create/delete your clients as needed. Adding these things ensures that users feel secure with using this platform in a financial environment.