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CS 499

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Milestone Three

This artifact was a project that I created in CS 320 which was completed in June 2024. This artifact plays a key role in the development and management of backend services, it utilizes data structures like classes and services. This artifact manipulates data structures by updating, adding, and deleting items from them. I planned to enhance this artifact by refactoring it to improve performance and scalability. I planned to optimize data structures, which would improve system performance. The enhanced version of this artifact shows my ability to make adjustments to the code to enhance scalability, performance, and maintainability.

In this artifact I made changes that improved many things with this project. This artifact highlights my skills in backend services. I ensured there was validation which enforces constraints early and consistently. I also added HashMap storage which allows for a fast and scalable lookup time (O(1) time). I ensured there was encapsulation in the fields to allow for protection and the ability to change it safely. I made sure there was ID immutability to prevent accidental corruption of references in the system. I also added getter methods which help support integration and testing. I then also added a search function to the Appointments, Tasks, and Contacts. This allows the user to search for certain appointments in the system. I also made the code more easily readable, adding comments where appropriate.

Yes, I did meet the course outcomes that I had planned in module one, which was course outcome 3. Although I met course outcome 3, I believe I also met course outcome 1. Course outcome 3 is 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. Course outcome 1 is employ strategies for building collaborative environments that enable diverse audiences to support organizational decision-making in the field of computer science. I was able to add comments and keep my code clean to where diverse audiences could look at the code and know exactly what is going on. This would further improve the organization decision-making in what exactly they want for their backend services.

I ran into a few problems when enhancing this artifact. One was how I could make it more efficient. I decided on utilizing HashMaps for the services, this allows for very fast lookup times compared to other methods. Ensuring the methods work was also difficult, I had to ensure I made detailed Junit testing to ensure everything worked properly. Throughout this process, I learned that there are almost always ways to enhance a program.