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Professor Sanford

CS 499 Computer Science Capstone

Milestone Three Narrative

The artifact that was enhanced for this milestone was originally a mock application for Grand Strand Systems. The application had three classes, Appointment, Contact, and Task, which each had their own service classes. These classes provided functionality for adding, updating, and removing the respective items from their service class's list. This application's main purpose was to show my ability to thoroughly test the application with unit testing. This artifact was originally created in November of 2023 while taking CS 320 Test Automation & Quality Assurance at Southern New Hampshire University.

The enhancement I performed on this artifact was implementing several algorithms and data structures into each of the classes mentioned. In the AppointmentService class, I implemented a Quicksort algorithm and binary search algorithm to improve lookup performance. In the ContactService class, I implemented a HashMap to improve performance when inserting, deleting, updating, and accessing the contact list. In the TaskService class, I implemented a priority queue combined with a HashMap to allow for accessing tasks based on their priority. The inclusion of this artifact allowed me to showcase multiple skills. First, this artifact allowed me to demonstrate proficiency with multiple algorithms and data structures. This highlights my ability to use varied approaches to improve the functionality and performance of software. Additionally, this specific artifact allowed me to demonstrate my testing abilities. In this artifact I demonstrate familiarity with both unit testing and performance testing. Testing is an essential skill for a developer to have, thus was another motivator for choosing this artifact. This artifact also allowed me to achieve proficiency in the following course 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.

Enhancing this artifact provided me with more experience working with more complicated algorithms and data structures. While I have worked with most of these algorithms and data structures in the past, this project was a good way of refamiliarizing myself with these concepts. This enhancement also allowed me to learn more about the strengths and weaknesses of the algorithms and data structures used which I was previously unaware of. I also gained experience performing performance testing on the software. Performance testing is a great skill to learn as it can be very helpful for measuring and improving the efficiency of programs. This enhancement was another great experience and will provide another great artifact for my ePortfolio.