**CS 499 Artifact Three Enhancement: QuantigrationUpdates Database**

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**Description of Artifact:**

The original project from which the artifact enhancement was taken was called “DAD 220 Project One”, which I created for an assignment back in August of 2020. The goal of this project was to create a database called “QuantigrationUpdates” with three tables called “Customers”, “Orders”, and “RMA”, query their records, update their records, delete their records, and download the records from the “Orders” table onto a csv file using MySQL. My enhancement to this artifact was creating a similar database, also called “QuantigrationUpdates”, with three collections that contain the same fields, use similar queries, updates, deletions, and a download while using MongoDB commands on a MongoDB shell. My enhancement also included adding two levels of user accounts to provide extra security to the database. This enhancement was completed in the last week of July 2022.

**Why This Artifact Was Chosen:**

I chose this artifact because it allowed me to show a range of CRUD skills with Databases using MongoDB, a popular NoSQL programming language. By using MongoDB commands, I was able to create a database for a fictional business with three collections, each containing multiple fields of data, as well as create a view of one of the collections. I was also able to add records to each database using correct commands, display records with queries, update specific records using query and update commands, and delete records using query and delete commands. I was also able to export a collection to a csv file with a MongoDB command. I was also able to go beyond the functionality of the original project by adding password secured user accounts.

**Course Objectives:**

While working on this artifact enhancement, I was able to employ strategies for building collaborative environments that enable diverse audiences to support organizational decision making in the field of computer science. My enhanced artifact zipped file is open for anyone to download and view for themselves from my public GitHub page. This file contains the three csv files used in the artifact’s enhancement, as well as a txt file containing all the MongoDB commands used, so that anyone who wishes to reconstruct the database themselves and conduct the same or different queries can do so. Also, if someone wishing to work with these MongoDB commands needs more information about what the commands are meant to accomplish, there is a word document with screenshots of the commands being used with written explanations for them located in the same zipped file. Also, the public GitHub page that this artifact enhancement can be found on grants others the opportunities to ask questions and propose suggestions pertaining to this and all the other projects and files located on the page.

While working on this artifact enhancement, I was able to design, develop, and deliver professional-quality oral, written, and visual communications that are coherent, technically sound, and appropriately adapted to specific audiences and contexts. In terms of oral communication for this artifact, this was the last artifact covered in the code review video, where I went over screenshots of each of the MySQL commands used and discussed their purpose and potential areas of change. In terms of written communication, the zipped file for this artifact contains a short readme describing the other five files that are contained in the zipped file, one of which is a word document, which contains screenshots of the MongoDB commands used and their output, along with explanations for the commands. I’ve also written this accompanying narrative to describe the original artifact, explain my enhancements, and justify why the enhancements where made. In terms of visual communication, I constructed two UML diagrams, on for the original MySQL QunatigrationUpdates database, and the other for the enhanced MongoDB database so that others can visualize the structure of these databases.

While working on this artifact enhancement, I was able to 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. Some of the well-founded techniques and skills that were used during this enhancement was a full display of CRUD operations, as I created a database using MongoDB commands, queried the collections of that database to find specific information, updated and added several fields in that database, and deleted some fields. The tools that I used during this artifact enhancement include a MongoDB Enterprise Server 6.0 and a MongoDB Shell, which I downloaded to my local device, and a Microsoft command prompt that was used to access the MongoDB Shell and perform MongoDB commands.

While working on this artifact enhancement, I was able to 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. I demonstrated this by creating two password secured user accounts, one of which was an administrative account that was granted read/write access to all databases in the server, and the other was a user account that was granted read/write access to the QuantigrationUpdates database. I would also note that, after running each MongoDB command, a message displaying either a warning for errors or the task that was completed by the command is displayed. You can see these message outputs after the commands I used in the word document containing screenshots marked “CS 499 Artifact Three”, which is located in this artifact enhancement’s zipped file.

**Reflection:**

Since I’d already learned how to use MongoDB commands previously, much of the new knowledge I gained from working on this enhancement has been while adding a local Mongo shell, Mongo Server, and other necessary tools to my computer. This was also the main source of the challenges that I had in completing this project, as I have never downloaded and used MongoDB tools on my local device before. However, after seeking help from tech support, the internet, and some trial and error, I was able to use my own working MongoDB shell and server to complete this artifact enhancement.