The artifact from category three, databases, is a newly created database designed to manage customer orders, tracking both customer information and product orders. This project originated from the course DAD 220, Introduction to Structured Databases. Unfortunately, the original database was lost since it was developed in a virtual environment. The enhancement plan includes constructing a new database with a sample dataset. Approaching this enhancement as either a recreation or a cloud migration is an effective way to showcase my ability to interpret documentation and transfer a system to a new platform. I selected this artifact because the loss of the original provided an opportunity to build a new version on a different platform, allowing me to acquire new skills. This project highlights my development skills, particularly as I had no previous experience with MongoDB Atlas, demonstrating my capacity to learn new technologies effectively. The database now includes a login feature, requiring users to authenticate with a username and password, which assigns them roles with specific privileges, such as read and write access. Exploring additional database providers and tools forms a critical part of the enhancement strategy, broadening both the functionality of the artifact and my professional skill set.

Throughout the development and modification of the artifact, I gained numerous insights, largely because I was navigating a new process with unfamiliar software. MongoDB Atlas Pro offers a comprehensive suite of services including a fully managed database as a service, advanced monitoring, query optimization, customizable alerts, consultative support, managed backups, and a graphical user interface (GUI) for MongoDB (MongoDB, n.d.). Initially, I was unaware that MongoDB Atlas provided the option to use the MongoDB shell or its GUI for interacting with databases. My first interaction was through the shell, but I soon discovered the GUI's capabilities, which can handle most database tasks. The GUI facilitates a more user-friendly experience, particularly when manipulating and visualizing data or revisiting previous visualizations. During this project, I learned about creating databases, managing user roles, setting up network access for remote computers, installing and logging into MongoDB Shell, loading datasets, managing collections, executing queries, visualizing data, and preserving these visualizations for future reference.

The primary challenge I encountered was related to network access while working from my workplace. Fortunately, the intuitive GUI of MongoDB Atlas quickly identified the issue and guided me to the network access page, where I was able to add the network I was using. This experience demonstrated the tool's user-friendly design and helpful error management. The creation of this artifact has effectively addressed several outcomes of the computer science program. Firstly, it showcased my ability to employ well-founded and innovative techniques, skills, and tools in computing practices. This was evident in the way I adapted to new technologies to implement a computer solution that delivers value and achieves industry-specific objectives. Secondly, the project also helped develop a security mindset by incorporating features like role-based access, which anticipates potential security exploits in software architecture. This approach not only exposes potential vulnerabilities but also mitigates design flaws to ensure the privacy and security of data and resources. Overall, the enhancement of this artifact has successfully met the course objectives outlined in the enhancement plan, demonstrating significant learning and application of computing and security principles.