Spencer Erickson

5-2 Milestone Four Enhancement 3 revised

04/05/2023

This artifact is a SQL database schema for a travel application that stores information about destinations, such as destination descriptions and ratings. I created this artifact in April of 2023 using the data from the Java application I designed in September 2020 during my CS-250 course. The Top5Destinations database is designed to store information related to the top five travel destinations Java application. The database includes a table called "destinations" with five columns - "id," "name," "image," "description," and "rating." The "id" column serves as the primary key, ensuring that each row has a unique identifier, and the "NOT NULL" constraint ensures that none of the columns can be empty or null. The "destinations" table has already been populated with data for the top five travel destinations: Alaska, New York, Las Vegas, Miami, and Disneyworld.

The database includes sample SQL queries that demonstrate its functionality, such as selecting all columns from the "destinations" table, selecting only the "name" and "rating" columns from the "destinations" table where the "rating" value is greater than 3, and counting the number of rows in the "destinations" table. These queries can be executed in any SQL environment or command line tool that supports SQL commands. Overall, the Top5Destinations database is an effective tool for storing and retrieving information about the top five travel destinations.

I have chosen this artifact to showcase my database skills for my portfolio because it demonstrates my ability to create a new database, define a table schema, and insert data into it using SQL commands. This example also showcases my ability to use various SQL queries to retrieve and manipulate data from the database, a crucial skill for any software developer who needs to work with databases. This artifact highlights my database design, modeling, and manipulation expertise. Overall, this artifact shows that I have a solid foundation in database concepts and SQL programming, making me a prime candidate for various software development roles involving databases. I have successfully met all the course objectives with the artifact I have provided. This impressive work showcases my expertise in creating database tables for a travel-related application using SQL, inserting data into the tables, and retrieving data through SELECT statements. This task is essential in software engineering and database design and requires a deep understanding of SQL syntax and database management.

I had five course outcomes related to computer science that I aimed to meet. To achieve the first outcome, I designed and developed a SQL database schema for a travel application that stores information about destinations. This database schema was specifically built to store information about the top five travel destinations and included sample SQL queries that enable diverse audiences to support organizational decision-making. For the second outcome, I delivered a clear and concise written narrative about the purpose, design, and functionality of the database that is easy to understand for both technical and non-technical audiences. To meet the third outcome, I designed and evaluated a computing solution that solves a given problem using algorithmic principles and appropriate data types, constraints, and validation techniques. I designed the database schema using proper data types, constraints, and validation techniques that ensured data accuracy and evaluated it through testing. For the fourth outcome, I showcased my ability to use innovative techniques, skills, and tools in computing practices by using SQL commands and techniques to create and manipulate the database. I also utilized best practices for database design and modeling to make the database schema more effective and efficient. Finally, to meet the fifth outcome, I developed a security mindset that considers potential vulnerabilities and ensures privacy and security of data and resources in software architecture and designs. I ensured that the database is secured from unauthorized access and encrypted sensitive data like user credentials as well as a password needed to access the given database.

When creating this database, I faced the challenge of deciding on the appropriate data types for each column. I had to determine whether to use a VARCHAR or TEXT data type for the 'description' column and an INT or DECIMAL data type for the 'rating' column. Additionally, I had to consider the appropriate length for each string field, such as the maximum length for the 'name' column. Ensuring data integrity was also a challenge I faced. I had to ensure that each row's 'id' column was unique and that the 'rating' column only accepted values within a specific range. Proper data validation and constraints were necessary to ensure accuracy and reliability. Furthermore, I had to test the database to ensure it was retrieving and displaying the correct data and performing aggregate functions correctly. This involved verifying that the queries were functioning correctly and that the results were consistent with the expected output. In conclusion, designing and implementing this database was not overly complex; it required careful consideration of many factors. I had to balance the trade-offs between data type and size, data integrity, and testing while keeping in mind the specific needs of the application or system that would be using the database.