**Rachel Shaw**

**1.3 Assignment**

**10/25/2024**

Relational databases are databases that represent entities and their corresponding attributes in table structures in which entities form relationships with each other. Relationships in relational databases refer to entities that are related to one another. For example, a one-to-one relationship describes a relationship in which two data entities are related to each other, and a one-to-many relationship describes a relationship in which one entity has a relationship with multiple entities (Study Tonight, 2020).

One prominent example of a relational database is MySQL. MySQL offers several valuable features, such as a password and role system that increases the security of databases using the service. MySQL also supports more extensive databases and has been known to host relational databases containing up to 5,000,000,000 rows (MySQL, n.d.).

Relational databases have several advantages, such as the table structure's simplicity and easy data access. Relational databases also follow a fixed structure, with every database using the table format, creating a normalized organization method. However, the fixed structure of relational databases can also become a disadvantage when working with large and complex datasets. While searching for information within a small table is simple, large relational databases take much longer to sift through, increasing query time (GeeksforGeeks, 2024). Relational databases also tend to consume a significant amount of storage and memory (MongoDB, 2024b).

However, the alternative to relational databases, NoSQL databases, minimizes a few disadvantages. NoSQL databases provide a more flexible schema that is better at accommodating larger and more complex databases. NoSQL also has higher performance output because relationships can be defined within documents in the database, removing the time and memory needed to define relationships in relational databases (MongoDB, 2024b). On the other hand, NoSQL databases also come with disadvantages, including a steeper learning curve due to their more complex nature. There are also fewer community resources, such as libraries and integrations dedicated to NoSQL databases (GeeksforGeeks, 2024).

MongoDB was one of the first NoSQL databases to gain traction in the tech industry in 2009. The service offers features such as database triggers that allow users to run code automatically when certain events occur within the database and replication that enables users to create backups across multiple servers, increasing database protection and reducing risk (MongoDB, 2024a).

**References:**

*Data Relationships in MongoDB | MongoDB Tutorial | Studytonight*. (n.d.). Www.studytonight.com. <https://www.studytonight.com/mongodb/relationships-in-mongodb>

GeeksforGeeks. (2024, May 29). *Advantages and Disadvantages of using SQL vs. NoSQL Databases*. GeeksforGeeks. <https://www.geeksforgeeks.org/what-are-the-advantages-and-disadvantages-of-using-sql-vs-nosql-databases/>

MongoDB. (2024a). *MongoDB Features & Key Characteristics | MongoDB*. MongoDB. <https://www.mongodb.com/resources/products/capabilities/features?msockid=18ad04e44a6a60ae1fb110894b4661ef>

MongoDB. (2024b). *What Is NoSQL? NoSQL Databases Explained*. MongoDB. <https://www.mongodb.com/resources/basics/databases/nosql-explained?msockid=18ad04e44a6a60ae1fb110894b4661ef>

MySQL. (n.d.). *MySQL :: MySQL 8.4 Reference Manual :: 1.2.2 The Main Features of MySQL*. Dev.mysql.com. <https://dev.mysql.com/doc/refman/8.4/en/features.html>

Study Tonight. (2020). *DBMS ER Model - Basic Concepts | Studytonight*. Studytonight.com. <https://www.studytonight.com/dbms/er-model-concepts.php>