Basic Comparison of Relational vs. NoSQL Databases

Amanda Sherman

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Database Development and Use

Bellevue University

Basic Comparison of Relational vs. NoSQL Databases

In the context of relational databases, what are relationships? Provide an example.

Relationships are the connection between the information that is stored in the databases. Relational databases are modeled representing data in tables, where each row is labeled with a distinct id, or key. The columns in the table usually hold attributes of the data and has a value for each. This makes it easy to identify the relationships between data in these tables (*What is a relational database?* 2021).

What are the advantages of relational databases? What are the advantages of NoSQL databases?

A relational database is a simple model, and does not need complex structuring or querying processes. There is no chance for duplication because there can be multiple tables related with the use of primary and foreign key concepts, and the accuracy is more than any other database system. The data in a relational database system is easy to access and is easily modified, inserted, or deleted based on the conditions provided, because the data is held in separate tables based on categories (*Relational database advantages: 8 advantages of Relational database* 2021).

NoSQL databases can adapt and change requirements easily which makes them preferred for agile development. The data is able to be stored in a way that is more intuitive. There is less downtime with NoSQL, as the databases can take full advantage of the cloud. NoSQL is very flexible, unlike SQL databases which are stored in a rigid predefined structure (*Why do developers prefer NoSQL databases?* 2020).

What are the disadvantages of relational databases? What are the disadvantages of NoSQL databases?

Relational databases can be costly to set up and maintain because of the need to purchase special software, and depending on the size of the database, hiring a programmer to create the database, and someone to maintain it once it is built. The relational database can become isolated, like an island of information that is hard to get too such as a hospital billing department. It may be difficult and costly, yet necessary for one to talk to the other (Martin, 2022).

NoSQL has not been around as long as other database systems, therefore does not have as much support and stability. There are more security issues because of the lack of maturity of NoSQL. Because of the lack of standardization, the learning curve is steeper which could be a disadvantage (*The limitations of NoSQL database storage: Why NoSQL's not perfect* 2016).

Identify at least two features of MySQL and two features of MongoDB, and describe what they are and how they are used.

MySQL has the feature of (read/write) table locking. This is used to restrict unauthorized access of the data in the table. It prevents modification of the table during a specific period (*MySQL table locking - javatpoint* 2021).

MySQL has a trigger feature, which is a special type of stored procedure that is invoked automatically in response to an event. This is different from a stored procedure because it is called automatically and cannot be called directly. Triggers can reduce the client-side code and save time and effort (*MySQL Trigger - javatpoint* 2021).

MongoDB supports Master Slave replication which is where a master can perform reads and writes and a slave only copies data from the master,

and then can only use that for reads or back up (*MongoDB features - javatpoint* 2022).

MongoDB has text indexes that support text search queries on string content. Using the $text operator, phrases can be searched for and documents that include that phrase will be matched (*MongoDB text search - javatpoint* 2020).

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