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Assignment 1.3

The world of databases is as diverse as the data they store and understanding the key differences between relational databases and NoSQL databases is vital for data management in this digital age. In this writing, I will dive into the concepts of relationships in relational databases, explore their advantages and disadvantages, and then proceed to do the same for NoSQL databases. Additionally, we will identify two distinctive features of MySQL and MongoDB.

When speaking of relational databases, relationships signify the connections between tables where data is organized in a structured manner. These relationships define how data in different tables is interrelated. The most common types of relationships include one-to-one, one-to-many, and many-to-many. For example, in a library database, the "Authors" and "Books" tables exhibit a one-to-many relationship, as a single author can produce multiple books, but each book is authored by a single individual.

There are many advantages to using a relational database such as data integrity. Through the use of constraints and normalization, they prevent duplication and inconsistencies in data, helping to guarantee the reliability of information. Another advantage is that relational databases are ACID compliant. Simply put they contain the 4 properties that define a transaction: atomicity, consistency, isolation, and durability which aid in the reliability and integrity of the data. Lastly, is SQL (structured query language) relational databases leverage SQL, for querying and manipulating data. SQL provides a standardized and efficient way to access and manage information.

On the other side of the coin, you have NoSQL databases. NoSQL databases are better for scalability, flexibility, and high performance. Since there is no set structure it allows for changes to data structures without predefined structures. NoSQL databases excel in read and write operations, especially in scenarios where data is distributed across multiple nodes or servers. Some of the disadvantages of NoSQL include lack of ACID compliance and complex querying due to the lack of structure.

Sources

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