

ABSTRACT

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COMPARATIVE ANALYSIS OF SQL AND NOSQL DATABASE CAPABILITIES ON CUSTOMER DATA AT THE STATE ELECTRICITY COMPANY (PLN)

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The objective of this study is to compare the performance, flexibility, and scalability of relational (SQL) and non-relational (NoSQL) databases in the context of meter reading at Electrical City. As a large energy service provider, Electrical City faces challenges in storing and managing vast and complex data. During meter readings, the collected data includes various information such as customer details, reading times, consumption levels, and more. Therefore, selecting the appropriate database system is crucial to ensure real-time data availability, the ability to accommodate rapid data growth, and optimal system performance. The research findings indicate that MongoDB, as an example of a NoSQL database, outperforms MySQL, a representative of SQL databases, in terms of insert, select, and delete operations. This advantage is attributed to MongoDB's flexible architecture, which allows for more efficient management of diverse data on a large scale. On the other hand, MySQL excels in delete operations due to its more organized structure, enabling efficient data management in traditional schemas. Moreover, MongoDB offers greater flexibility in storing data with various structures, making it easier to adapt to changing business needs, whereas MySQL is more limited in this regard. From a scalability perspective, MongoDB also proves superior due to its sharding capability, which allows for horizontal data distribution across multiple servers, making it more suitable for handling large volumes of data and high demand. Based on these findings, MongoDB is deemed the more appropriate choice for meter reading applications at Electrical City.

Bibliography (2013 -2024)