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Performance analysis of heterogeneous database management system (DBMS) synchronization using message digest 5

Abstract

Currently, the Database Management System (DBMS) keeps growing and is available on various platforms. The use of various types of DBMS in a system can cause problems with limitations in the synchronization process because each DBMS only provides synchronization methods for similar DMBS. Previous research has examined heterogeneous database synchronization algorithms on mobile devices using the Message Digest 5 (MD5) method. The process of synchronization with this method is done by comparing the hash values of each record data in the source table with the data hash values in the destination table. If a different hash value is obtained, the synchronization process is based on the type of transaction that has been determined. Based on the principle of work, this algorithm requires a long synchronization time for large-scale databases because it has to check the hash values of each data record. This study examined the performance analysis of the DBMS synchronization method using MD5. The testing was performed by observing the parameters of execution time of synchronization ptocess for the MySQL DBMS and PostgreSQL types. The results showed that the execution time of the MD5 synchronization process was proportional to the number of data records that need to be synchronized. This is because the hashing process that must be done on every data record and synchronization mechanism requires all data to be sent to check and compare the hash values of each data record in the destination synchronization database even though the data has not changed.