Research on the improvement measures of BISLD method in mobile computing

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Abstract. There has been active research on recovery methods through real-time transaction in the mobile computing environment. However, the research on the improvement of the recovery method’s function is relatively inadequate. Consequently, this research seeks to propose measures to improve the functions of the BISLD method out of the mobile recovery methods for uniformity of the database in the mobile computing environment. Keywords: We would like to encourage you to list your keywords in this section.

1 Introduction

Due to the developments in the wireless internet and mobile communication technologies and the consequent rapid increase in the usage of the mobile service, there has been active research on the mobile computing system. \cite{1-2} Also in the mobile computing environment, troubles often occur from communications disruption and when troubles occur, quick transaction recovery and restoring are necessary \cite{2}. However, there is a lack of research on the quick recovery method that fits the mobile computing system. This research seeks to design a new recovery mobile that reinforces the previous BISLD method. The previous BISLD method used B+-Tree and took up much recovery time. Consequently, this research seeks to propose recovery method using the LA-Tree index that is quicker than the previous method \cite{3}.

2 Related Research

2.1 EHPLD Method

This method applied extendible hashing method. The characteristic of this method is reducing I/O using WAL (Write Ahead Log) method and Extendible Hashing Page Log Directory was used to reduce recovery time \cite{4}. The shortfall of the method is that although on-time search is possible when the directory is stored in the memory,
the search period lengthens if the directory exists in the disc so overhead occurs during log analysis.

2.2 BISLD method

This method is BISLD(B+-Tree Index Segment Log Directory) uses B+-Tree to improve the problems of the EHPLD method. This method composes log directory that applies the B+-Tree index and conducts recovery by quickly approaching the log directory [5]. However, when applying this method to the mobile computing environment, overhead occurs in the log analysis time.

3 LA-Tree Mobile Computing System

3.1 Mobile computing system

The mobile computing system is made up of recovery transaction server, mobile client, mobile network, and data base and the recovery transaction server is made up of transaction management and memory buffer.
4 Recovery Model Using LA-Tree

4.1 LA-Tree Recovery Composition

The recovery model using LA-Tree is made up of database, client transaction table, log buffer, LA-Tree, and LA-Tree index.

4.2 LA-Tree Recovery Model Algorithm [3]

The mobile client receives the segment from recovery transaction server and ten sends the results to the recovery transaction server. Algorithm is as follows.

① The mobile client receives the segment from the recovery transaction server to record on the memory buffer.

② Using the segment in the memory buffer, transaction is completed and log record is created then recorded on the log buffer.

③ Before transaction is committed, the redo log is sent to the recovery transaction server.

④ The recovery transaction server receives the redo log record and records on the log buffer

⑤ Index is created using the LA-Tree.

Cronbach's α was used as a confidence coefficient to investigate the stability, consistency, and potential prediction on each item collected through the survey.

5 Conclusion

Please The system environment of this research is made up of mobile client, recovery transaction server, and database. In such mobile computing system environment, data loss occurs due to troubles with communication errors and quick recovery method is vital. The BISLD method used the B+-Tree to form index. In this research, index method using LA-Tree was proposed for quick recovery through quick data recovery and when the proposed LA-Tree index method is applied, recovery time could be shortened.

In the future, we seek to prove the excellence of the LA-Tree index method through performance evaluation of the LA-Tree index method and the existing recovery methods.
References