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Abstract
Due to the improvement of information technologies and popularization of computers, collecting information becomes easier, rapider and more convenient than before. As the time goes by, database cumulates huge and hiding information. Therefore, how to correctly uncover and efficiently mining from those hiding information becomes a very important issue. Hence the technology of data mining becomes one of the solutions. In the technologies of data mining, association rules mining is one of the most popular technology to be used. Association rule mining explores the approaches to extract the frequent itemsets from large database. Further, derives the knowledge behind implicitly. The Apriori algorithm is one of the most frequently used algorithms. Although the Apriori algorithm can successful derive the association rules from database, the Apriori algorithm has two major defects: First, the Apriori algorithm will produce large amounts of candidate itemsets during extracting the frequent itemsets from large database. Second, frequently scanning whole database lead to inefficient performance. Many researches try to improve the performance of the Apriori algorithm, but still not escape from the frame of the Apriori algorithm and lead to a little improvement of the performance.

In this paper we propose QDT and ICI which escape the frame of Apriori algorithm, and it only needs to scan whole database once during extracting the frequent itemsets from large database. Therefore, the QDT and ICI algorithm can efficiently reduce the I/O time, and rapidly extract during extracting the frequent itemsets from large database, and make data mining more efficient than before.
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