基于三级存储器的Join算法

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Received 2002-03-04; Accepted 2002-12-24

Abstract
The Join algorithms of massive relations in relational databases based on tertiary storage are studied in this paper. At present, Hash-Based Join algorithms are the best ones. However, the effect of tape locate time is not taken into consideration in these algorithms. It has great influence on the time complexity of the Join algorithms to locate positions on tertiary storages. For this reason, two new Join algorithms of massive relations in relational databases are proposed based on tertiary storage, Disk-Based-Hash-Join algorithm and Tertiary-Only-Hash-Join algorithm. Adopting disk buffer technique and the method of storing hashed data concentratedly, the cost of the random position locating on tertiary storage is much lower than other algorithms so that the proposed Join algorithms are more efficient. The analysis and experimental results show that the performance of this algorithms is superior to others, and thus they are suitable for massive database management.

摘要
研究了基于三级存储器的海量关系数据库的Join算法.目前,在所有磁带数据Join算法中,基于Hash思想的算法是最优的.但是,这些算法没有考虑从第三级存储器中读取数据时,磁带定位时间对算法性能的影响.磁带的磁头随机定位耗时大,是影响基于三级存储器的数据操作算法时间复杂性的关键因素.针对这个问题,提出了两种新的基于三级存储器的海量关系数据库连接算法,即Disk-Based-Hash-Join算法和Tertiary-Only-Hash-Join算法.这两种算法采用了磁盘缓冲技术和散列数据集中存储方法,降低了算法的磁带磁头随机定位时间复杂性,提高了基于三级存储器的连接算法的性能.理论分析和实验结果表明,提出的基于三级存储器连接算法的性能高于目前所有同类算法的性能,可以有效地应用于海量数据管理系统.

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