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标题: Parallel XPath query based on cost optimization

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摘要: The performance of XPath query is the key factor to the capacity of XML processing. It is an important way to improve the performance of XPath by making full use of multi–threaded computing resources for parallel processing. However, in the process of XPath parallelization, load imbalance and thread inefficiency often lead to the decline of parallel performance. In this paper, we propose a cost optimization–based parallel XPath query method named coPXQ. This method improves the parallel processing effect of navigational XPath query through a series of optimization measures. The main measures include as follows: first, by optimizing the storage of XML node relation index, both storage and access efficiency of the index are improved. Secondly, load balancing is realized by a new cost estimation method according to the number of XML node relations to optimize parallel relation index creation and parallel primitive execution. Thirdly, the strategy of determining the number of worker threads based on parallel effectiveness estimation is utilized to ensure the effective use of threads in query. Compared with the existing typical methods, the experimental results show that our method can obtain better parallel performance.

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