Abstract

Optimization of query in distributed database system is one of the dominant subjects in the field of database theory. Depending upon the placement of data a query can be described as centralized or distributed query. The processing of distributed query is entirely different from the centralized query as in the former case the data is distributed over number of sites. Decision Support System Query (DSSQ) is one of the decisive types of distributed query. DSS queries are complex and time consuming in nature. Due to the decentralization of data and the complexity of query, it becomes mandatory to optimize the DSS query in distributed database system. In this work an effort is made to find an optimal DSS sub query allocation plan in distributed environment stochastically using Genetic Algorithm. The queries are designed on the basis of one of the benchmark of DSS query as given by TPC-DS. The DSS queries are
Stochastic Analysis of DSS Queries for a Distributed Database Design

optimized on the basis of Total Cost. The use of Genetic Algorithm has significantly expedited the process of DSS query optimization. The effect of varying communication cost over Total Cost of system resources is also observed.

References

- Nilarun Mukherjee, Synthesis of Non Replicated Dynamic Fragment Allocation Algorithm in Distributed Database Systemquot;, Published in Proceeding of International conference on advances in Comp. Sc., 2010.
- Narasimhaiah Gorla, Suk-Kyu Song, &quot;Subquery allocation in Distributed Database using GAquot;, JCS & T, Vol. 10, No. 1.
- Deepak Shukla, Dr. Deepak Arora, &quot;An Efficient Approach of Block Nested Loop Algorithm based on Rate of Block Transferquot;, IJCA, Vol. 21, No. 3, May 2011.
- Reza Ghaemi, Amin MilaniFard, Hamid tabatabee, &quot;Evolutionary Query Optimization For Heterogeneous Distributed Database Systemquot;, WASET, 43, 2008.
- Johann Christoph Freytag, &quot;The Basic Principles of Query Optimization in Relational Database Management Systemquot;, Internal Report, IR-KB-59, March 1989.
- Rajinder Virk, Dr. Gurvinder Singh, &quot;Optimizing Access Strategies for a Distributed Database Design using Genetic Fragmentationquot;, IJCSNS, Vol 1, No. 6, Jun 2011.
- Clark D. French, &quot;One Size Fits All- Database Architecture Do Not Work for DSSquot;, SIGMOD 95, Published by ACM, USA.
- Rajinder Singh, Dr. Gurvinder Singh, &quot;Optimizing Access Strategies for Distributed Database Design using Genetic Fragmentationquot;, IJCSNS, Vol. 11, No. 6, June 2011.
- TPC Benchmark DS, Version 1.1.0, April 2002 online: www.tpc.org.

Index Terms

Computer Science

Databases

Keywords

DSS Query; Distributed Database; Genetic Algorithm Sub-query Allocation Plan.