

CA9195 DATABASE TUNING

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UNIT I FUNDAMENTALS OF TUNING

8

Review of Relational Databases – Relational Algebra - Locking and Concurrency Control – Correctness Consideration – Lock Tuning – Logging and the Recovery Subsystem – Principles of Recovery – Tuning the Recovery Subsystem – Operating Systems Considerations – Hardware Tuning.

UNIT II INDEX TUNING

8

Types of Queries – Data Structures – B tree – B⁺ Tree - Hash Structures – Bit Map Indexes – Clustering Indexes – Non Clustering Indexes – Composite Indexes – Hot Tables – Comparison of Indexing and Hashing Techniques.

UNIT III QUERY OPTIMIZATION

10

Techniques - Tuning Relational Systems – Normalization – Tuning Denormalization – Clustering Two Tables – Aggregate Maintenance – Record Layout – Query Tuning – Triggers – Client Server Mechanisms – Objects, Application Tools and Performance – Tuning the Application Interface – Bulk Loading Data – Accessing Multiple Databases.

UNIT IV TROUBLESHOOTING

10

Query Plan Explainers – Performance Monitors – Event Monitors – Finding “Suspicious” Queries – Analyzing a Query’s Access Plan – Profiling a Query Execution – DBMS Subsystems.

UNIT V CASE STUDIES

9

Transaction Chopping – Time Series Databases – Understanding Access Plans Configuration Parameters: Oracle; SQL Server; DB2UDB – Distributed Database - Implementation.

Total = 45

REFERENCES

1. Dennis Shasha and Philippe Bonnet “Database Tuning, Principles, Experiments, and Troubleshooting Techniques”, Elsevier Reprint 2005.
2. Thomas Connolly and Carlolyn Begg, “Database Systems, A Practical Approach to Design, Implementation and Management”, Third Edition, Pearson Education 2003.
3. M.Tamer Ozsu, Patrick Valduriez and S.Sridhar “Principles of Distributed Database Systems”, Pearson Education 2007.