CAP200:DATABASE MANAGEMENT SYSTEMS

L:3 T:0 P:0 Credits:3

Course Outcomes: Through this course students should be able to

- Discuss the normalization theory and apply such knowledge to normalization of a database.
- Develop refined queries to fetch information from large datasets.
- Analyze the fundamental differences between logical and physical database design.

Unit I

Basic Concepts : Components of DBMS, Purpose of database systems, DBMS Architecture, Different Data Models, Data Independence, Various types of constraints

Unit II

Structure of Relational Databases : Relational Databases, Relational Algebra, Views, DDL statements in SQL, DML statements in SQL, JOINS

Unit III

Database Design : Design guidelines, Relational database design, Pitfalls in Relational Database Design, Second Normal Form, Third Normal Form, Forth Normal Form, Fifth Normal Form, First Normal Form, Types of dependencies

Unit IV

Transaction Processing : Transaction concept, Desirable properties of transactions, Schedules and Recoverability, Serializability of schedules

Unit V

Concurrency Control and Recovery : Lock-Based Protocols, Deadlock Handling, Multiple Granularity, Timestamp-Based Protocols, Validation-Based Protocols, Failure Classification, Buffer Management, Failure with Loss of Nonvolatile Storage, Log based recovery, Shadow paging

Unit VI

Distributed Databases : Distributed Databases, Client /Server Databases, Data Fragmentation, Replication and Allocation Techniques, SemiJoin, Homogeneous and Heterogeneous Databases, Distributed Data Storage, Distributed Transactions, Cloud-Based Databases

Text Books:

1. DATABASE SYSTEM CONCEPTS by HENRY F. KORTH, S. SUDARSHAN,ABRAHAM SILBERSCHATZ, MCGRAW HILL EDUCATION

References:

1. AN INTRODUCTION TO DATABASE SYSTEMS by C.J. DATE, ADDISON-WESLEY

2. FUNDAMENTALS OF DATABASE SYSTEMS by ELMASRI AND NAVATHE, PEARSON