



GOKARAJU RANGARAJU INSTITUTE OF ENGINEERING AND TECHNOLOGY

DATABASE MANAGEMENT SYSTEMS

Course Code: GR15A2063
II Year I Semester

L:3 T:1 P:0 C:4

Prerequisites

- Fundamentals of File Systems and Storage Structures

Course Objectives

- To expose the student to the basic concepts involved in designing and building a database management system
- Learn how to use the Structured Query Language (SQL)
- Understand the relational model and relational database management system.
- To provide detailed knowledge of Transaction, concurrency and recovery strategies of DBMS
- To know how normalization is important for DBMS and different normalization Techniques

Course Outcomes

- Students are expected to design a Database based on given requirements.
- Students are expected to make projects with knowledge of subject provided to them.
- Students are expected to Use Standard Query Language and its various versions.
- Students are expected to apply normalization techniques on given database.

Unit-I

Data base System Applications: Data base System VS file System, View of Data, Data Abstraction, Instances and Schemas, data Models: the ER Model, Relational Model, Other Models, Data base System Structure, Data base Users and Administrator, Transaction Management, Data base design and ER diagrams, Attributes and Entity sets, Relationships and Relationship sets, Design Issues, Extended ER Features, Concept Design with the ER Model

Unit-II

Relational Model: Introduction to the Relational Model, Basic Structure, Database Schema, Keys, Relational Algebra, Relational Calculus. Data on External storage, File organization and Indexing, cluster Indexes, Primary and Secondary Indexes, Index data structures, Hash based Indexing.



UNIT-III

Form of Basic SQL Query, Database Languages, DDL, DML, database Access for applications Programs, Examples of Basic SQL Queries, Introduction to Nested Queries, Correlated Nested Queries, Set Comparison Operators, Aggregative Operators, NULL values, Comparison using Null values, Logical connectivity: AND, OR and NOT, Impact on SQL Constructs, Outer Joins, Disallowing NULL values, Integrity Constraint over relations, Introduction to Views, Destroying /altering Tables and Views.

Unit-IV

Schema refinement: Problems Caused by redundancy, Decompositions, Problem related to decomposition, reasoning about FDS, FIRST, SECOND, THIRD Normal form, BCNF, Lossless join Decomposition, Dependency preserving Decomposition, Schema refinement in Data base Design, Multi valued Dependencies, Fourth Normal Form.

Unit-V

Transaction Concept: Transaction State, Implementation of Atomicity and Durability, Concurrent Executions, Serializability, Recoverability, Implementation of Isolation, Testing for serializability, Lock based Protocols, timestamp based protocols, validation based protocols, Multiple Granularity Recovery and Atomicity, Log based recovery, Recovery with concurrent transactions, Buffer Management.

Teaching Methodologies

1. Power Point presentations
2. Tutorial Sheets
3. Assignments
4. Lab experiments with Oracle Software

Text Books

1. "Data base Management Systems", Raghurama Krishnan, Johannes Gehrke, TATA Mc Graw Hill 3rd Edition
2. "Data base System Concepts", Silberschatz, Korth, McGraw hill, V edition.

Reference Books

1. "Introduction to Database Systems", C.J.Date Pearson Education.
2. "Data base Systems design, Implementation, and Management", Rob & Coronel 5th Edition. Thomson.
3. "Database Management Systems" P. Radha Krishna HI-TECH Publications 2005.
4. "Data base Management System", Elmasri Navate Pearson Education.
5. "Data base Management System" Mathew Leon, Leo.