

17HS044 Data Base Management Systems

Course Objective:

Design & develop database for large volumes & varieties of data with optimized data processing techniques.

Course Outcomes

On completing the subject, students will be able to:

1. Design and model of data in database.
2. Store, Retrieve data in database.

UNIT – 1

INTRODUCTION TO DATABASES: Characteristics of the Database Approach, People who work with databases, Advantages of using the DBMS approach, Data Models, Schemas and Instances, Three-Schema Architecture and Data Independence, Database Languages and Interfaces, The Database System Environment, Centralized and Client/Server Architectures for DBMSs.

UNIT – 2

CONCEPTUAL DESIGN AND DATABASE DESIGN: High-level Conceptual Data Models for Database Design, A Sample Database Application, Entity Types, Entity Sets, Attributes and Keys, Relationship Types, Relationship Sets, Roles and Structural Constraints, Weak Entity Types, Refining the ER Design for the Company Database, ER Diagrams, Naming Conventions and Design Issues, Subclasses, Super classes and Inheritance, Specialization and Generalization, Constraints and Characteristics of Specialization and Generalization Hierarchies, Modeling of UNION Types Using Categories.

UNIT - 3

RELATIONAL DATA MODEL AND SQL: Relational Database Design Using ER-to-Relational Mapping, Mapping EER Model Constructs to Relations, Relational Model Concepts, Relational Model Constraints and Relational Database Schemas, Update Operations, Transactions and Dealing with Constraint Violations, SQL Data Definition and Data Types, Specifying Constraints in SQL, Basic Retrieval Queries in SQL, INSERT, DELETE and UPDATE Statements in SQL, Complex SQL Retrieval Queries, Specifying Constraints as Assertions and Actions as Triggers, Views (Virtual Tables) in SQL

UNIT - 4

DATABASE DESIGN THEORY AND NORMALIZATION: Informal Design Guidelines for Relation Schemas, Functional Dependencies, Normal Forms Based on Primary Keys, General Definitions of Second and Third Normal Forms, Boyce-Codd Normal Form, Multivalued Dependency and Fourth Normal Form, Join Dependencies and Fifth Normal Form, Properties of Relational Decompositions.

UNIT – 5

TRANSACTION PROCESSING, CONCURRENCY CONTROL AND RECOVERY:
Transaction and System Concepts, Desirable Properties of Transactions, Two-Phase Locking
Techniques, Timestamp Ordering, Recovery Concepts, The ARIES Recovery Algorithm

Reference Books

1. Ramez Elmasri and Shamkant B Navathe, "Fundamentals of Data base Systems",
6th edition, Pearson Education, 2010.
2. "Database Management Systems" by Raghu Ramakrishnan, McGrawhill, 2002,
3. Fundamentals of Relational Database Management Systems by S. Sumathi, S.
Esakkirajan, Springer Publications
4. "An Introduction to Database Systems" by Bipin C Desai
5. "Principles of Database Systems" by J. D. Ullman
6. "Fundamentals of Database Systems" by R. Elmasri and S. Navathe
7. "Database System Concepts" by Abraham Silberschatz, Henry Korth, and S.
Sudarshan, McGrawhill, 2010, 9780073523323

Student Activity:

1. Create your college database for placement purpose.
2. Create faculty database of your college with their academic performance scores