CS301 Database management Systems

Prerequisites: CS201, CS202

Course Contents:

Basic concepts **(5%)**
Database & Database Users, Characteristics of the Database Approach, Database Systems, Concepts & Architecture Data Models, Schemes & Instances DBMS Architecture of Data Independence, Data Base languages & Interfaces

Data Modelling using the Entity – Relationship approach **(10%)**

Relational Model, Languages & Systems **(8%)**
Relational Data Model & Relational Algebra Relational Model Concepts Relational Model Constraints Relational Algebra/Relational Calculus

SQL-A Relational Database Language Data **(12%)**
Definition in SQL. Views & Queries in SQL. Specifying Constraints & Indexes in SQL. A Relational Database Management System

Advanced SQL **(10%)**
Embedded SQL, Dynamic SQL, Triggers and Stored Procedures

Relational Data Base Design **(12%)**
Function Dependencies & Normalization for Relational Database Functional Dependencies Normal forms based on primary keys (1NF, 2NF, 3NF, BCNF) Covers of Functional Dependencies, Canonical covers. Loss less join and Dependency preserving decomposition algorithms.

Physical Database design and Query Optimization **(12%)**
Basic concepts, Indexing and Hashing, Measuring query cost and expression evaluation, Basics of query optimizations.

Recovery Techniques **(10%)**
Concept of a transaction, Recovery concepts, Recovery Techniques.

Concurrency Control **(12%)**

Serialization Locking Techniques Time stamp ordering Granularity of Data items.

Overview of Network Data Model, Hierarchical Data Model and their DML's.

(4%)

Current trends in database

(5%

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Main Reading

1. Korth, Silberchartz, " Database System Concepts" McGrawhill Publication.
2. Elmasri and Navathe, " Fundamentals of Database Systems", Addison Wesley, New Delhi.
3. Database Management Systems –R. Ramakrishnan, J.Gehrke – T.McGraw Hill

Supplementary Reading

1. Desai B., " An Introduction to Database Concepts", Galgotia Publications, New Delhi.
2. Rob,Coronel, "Database Systems (Design, Implementation and Management)"
3. Date C. J. , " An Introduction to Database Systems", Publication House, New Delhi.