Lecture Plan : DATABASE MANAGEMENT SYSTEMS **CSE 202 B**
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Unit 1:

DBMS an overview, Advantages of DBMS, Network, Hierarchical and Relational Model, Levels of abstraction, Data Independence, Data Models, Instances and schemes, Data independence Structures of a DBMS, Application Programmers & Data Base administrators – their function, Transaction Management Entity Relationship Model: Entities, Attributes and Entity Sets, Relation and Relationships sets, mapping and participation constraints, Aggregation, Specialization and Generalization, Features of ER Model.

Unit 2:

Relational Model: Introduction to relational model, Integrity constraints over relations, Enforcing Data Integrity, Integrity Constraints, Relational Data, Logical Data Base Design, Reduction of E-R Diagrams to relations, Introduction to views, Querying Relational Algebra and Relational Calculus, Operations on Relational Algebra, Operations on Relational Calculus, Tuple Relational Calculus, Domain Relational Calculus

Unit 3:

Database Design, Data Redundancy, Introduction to Schema Refinement, Functional Dependencies, Normal Forms-First , Second, Third, Boyce code, Fourth and Multivalued Dependencies Structured Query Language:Basic SQL Queries, Nested Queries, Aggregate operator, Null Values, implementation of Various Relational Algebra operations, Embedded SQL

Unit 4:

Transaction management: ACID Properties, Transaction states, Concurrency control: Concurrency Control –Overview, Concurrency control problems, Locks, Locking Protocols, Deadlocks, Serializability, Recovery System: Types of Failures, Recovery Techniques, ARIES

OBJECTIVES OF COURSE :

This course is intended to provide you with an understanding of the current theory and practice of database management systems. To help you more fully appreciate their nature, the course provides a solid technical overview of database management systems, using a current database product as a case study. In addition to technical concerns, more general issues are emphasized. These include data independence, integrity, security, recovery, performance, database design principles, and database administration.

At the completion of this course, students should be able to do the following:

1. Understand the role of a database management system in an organization.

2. Understand basic database concepts, including the structure and operation of the relational data model.

3. Construct simple and moderately advanced database queries using Structured Query Language (SQL).

4. Understand and successfully apply logical database design principles, including E-R diagrams and database normalization.

5. Design and implement a small database project using Microsoft Access.

6. Understand the concept of a database transaction and related database facilities, including concurrency control, journaling, backup and recovery, and data object locking and protocols.

7. Describe and discuss selected advanced database topics, such as distributed database systems and the data warehouse.

8. Understand the role of the database administrator.

COURSE PLAN :

LEC 1	DBMS an overview, Advantages of DBMS
LEC 2	Network, Hierarchical and Relational Model
LEC 3	Levels of abstraction, Data Independence, Data Models
LEC 4	Instances and schemes, Data independence Structures of a DBMS,.
LEC 5	Application Programmers & Data Base administrators – their function,
LEC 6	Transaction Management
LEC 7	Entity Relationship Model: Entities, Attributes and Entity Sets,
LEC 8	Relation and Relationships sets, mapping and participation constraints,
LEC 9	Aggregation, Specialization and Generalization,
LEC 10	Features of ER Model.
LEC 11	Relational Model: Introduction to relational model,
LEC 12	Integrity constraints over relations, Enforcing Data Integrity
LEC 13	Integrity Constraints, Relational Data, Logical Data Base Design,
LEC 14	Reduction of E-R Diagrams to relations
LEC 15	Introduction to views, Querying Relational Algebra and Relational Calculus,
LEC 16	Operations on Relational Algebra,
LEC 17	Operations on Relational Calculus,
LEC 18	Tuple Relational Calculus, Domain Relational Calculus
LEC 19	Database Design,
LEC 20	Data Redundancy, Introduction to Schema Refinement
LEC 21	Introduction to Schema Refinement, Functional Dependencies,
LEC 22	Normal Forms-First , Second, Third, Boyce code, Fourth and Multivalued Dependencies
LEC 23	Normal Forms-First , Second, Third, Boyce code, Fourth and Multivalued Dependencies
LEC 24	Structured Query Language:Basic SQL Queries
LEC 25	Nested Queries, Aggregate operator, Null Values
LEC 26	implementation of Various Relational Algebra operations
LEC 27	Embedded SQL
LEC 28	Transaction management: ACID Properties, Transaction states,
LEC 29	Transaction management: ACID Properties, Transaction states,
LEC 30	Concurrency control: Concurrency Control –Overview,
LEC 31	Concurrency control problems, Locks, Locking Protocols
LEC 32	Deadlocks, Serializability,
LEC 33	Recovery System: Types of Failures,
LEC 34	Recovery Techniques, ARIES