Part 1: Basic Concept of DBMS (Chapter 1) updatable

- ✔ Terminologies: DB, DBMS, DBA

- ✔ DB vs DBMS vs DBA

- ✔ Characteristics of DBMS

- ✔ DB admin functions

- ✔ DBMS Architecture: 3 tier architecture

- ✔ Database Schema

    - o Physical, Logical, view Schema
    - o 3 Layers of Schema

- ✔ Database Instance

- ✔ Schema vs Instance

- ✔ Data Independence

    - o Logical DI
    - o Physical DI

Part 2: Entity Relationship Model (Chapter-7,8)

- ✔ Entity Relationship Model

    - o Entity (Regular/Strong entity and weak entity)
    - o Entity vs Entity types
    - o Attributes, type of Attributes
    - o Relationship, relationship set
    - o Entity set and Keys (Super Key, Candidate key, primary key, foreign key)
    - o Degree of Relationship
    - o Types of Relationship (Mapping Cardinalities)
    - o Participations
    - o ERM representation
    - o Generalization, Specialization, Inheritance

- ✔ ERD Construction

    - o Constructing ERD for a given problem
    - o Generating Table/schema from ERD
    - o Drawing schema from ERD or generated table

Part 3: Normalization and FD (Chapter 8)

✔ Functional dependency (FD)

- o Basic
- o Trivial and non-trivial dependency
- o Super key, candidate key, prime attribute, non-prime attribute
- o Finding functional dependency
- o Equivalence of FD

✔ Closure set of Attributes

✔ Canonical Cover

✔ Finding Candidate keys, prime and non-prime attributes based on FD

✔ Normalization

- o Why normalization? What problems solve it?
- o Prime and non-prime attribute
- o Dependencies needed in Normalization
- o 1NF, 2NF, 3NF, BCNF (3.5NF)

Part 4: Transaction and Indexing (Chapter-10,11,14)

✔ ACID properties,
✔ Transaction States,
✔ Concurrency problems,
✔ Schedules,
✔ serializability,
✔ Exercises and
✔ other topic discuss in the class.
✔ Indexing basic,
✔ Dense and sparse indexing,
✔ Primary, Secondary and clustering indexing
✔ Multilevel indexing: B+ tree and their operations (like-insertion, deletion)—Self study

Part 5: SQL and Relational Algebra (References: Chapter-2,3,4)

✔ See chapter 2 for Relational algebra

✔ Chapter 3 and 4 for SQL