GATE DA
DATABASE MANAGEMENT AND WAREHOUSING

About Me

VENKATESH E

🎓 Master's in AI from IIT Hyderabad

💼 MLE-3 at PayPal (ex-Qualcomm)

🏅 3+ years of Machine Learning Engineering experience

📚 Taught GATE Data Science on RBR Sir's platform (Gate DA - 2024)

📝 Published research papers in AAAI 2021 & ACL 2023

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📘 GATE Official Syllabus Breakdown

- ✅ ER-model
- ✅ Relational model: relational algebra, tuple calculus
- ✅ SQL
- ✅ Integrity constraints
- ✅ Normal forms
- ✅ File organization
- ✅ Indexing
- ✅ Data types
- ✅ Data transformation: normalization, discretization, sampling, compression
- ✅ Data warehouse modelling: schema for multidimensional data models
- ✅ Concept hierarchies
- ✅ Measures: categorization and computations

📝 Database Management and Warehousing Chapter Breakdown

1️⃣ Introduction to Databases and ER Model (8 hours)

Covers: What is a Database, DBMS vs RDBMS, Real-Life Applications, ER Diagrams, Entities, Attributes, Relationships

2️⃣ Relational Model and Algebra (7 hours)

Covers: Relational Model Basics, Schema, Tuples, Keys, Relational Algebra Operations (Selection, Projection, Joins, Division, Set Operations)

3️⃣ SQL: The Language of Databases (10 hours)

Covers: SQL Basics, DDL, DML, DCL, TCL, Subqueries, Joins, Aggregate Functions, Constraints, Views, GATE-Level Queries

4️⃣ Integrity Constraints and Normalization (8 hours)

Covers: Primary Key, Foreign Key, Candidate Key, Super Key, Functional Dependencies, 1NF to BCNF, Lossless Decomposition, Dependency Preservation

5️⃣ File Organization and Indexing (7 hours)

Covers: Storage Structures, Heap File, Sequential File, Hashing, B+ Trees, ISAM, Clustered vs Non-clustered Index

6️⃣ Data Transformation (6 hours)

Covers: Normalization (for Warehousing), Discretization (Binning, Clustering), Sampling (Random, Stratified), Compression Techniques

7️⃣ Data Warehouse Modelling (7 hours)
Covers: Star Schema, Snowflake Schema, Fact and Dimension Tables, Multidimensional Data Models, OLAP Operations (Roll-up, Drill-down, Slice, Dice)

8️⃣ Concept Hierarchies and Measures (5 hours)
Covers: Concept Hierarchies for Dimensions, Measure Categorization (Distributive, Algebraic, Holistic), Measure Computations (Sum, Count, Min, Max, Average, Median, Mode)

9️⃣ Problem Solving & GATE PYQs (6 hours)
Covers: Basic, Intermediate, and Advanced GATE Problems on ER Models, SQL, Normalization, Indexing, and Warehousing