

Group Details

- Each group must consist of **4 students**.
- **All 4 members must actively participate** in the presentation.
- Each member must have a **clear and separate responsibility**.
- The work should be **properly divided among all group members**.
- Each member must understand the **complete presentation**, not only their assigned part.
- During the presentation and viva, **any member may be asked questions about any part of the presentation**.

Presentation Topics

#	Presentation Topic	Main Concepts
1	Introduction to Databases and DBMS	Database, DBMS, data vs information, advantages, examples
2	RDBMS and Relational Model	Tables, rows, columns, relations, tuples, attributes
3	ERD: Entity Relationship Diagram	Entity, attributes, relationships, cardinality, participation
4	Mapping ERD to Relational Tables	Entity → table, attribute → column, relationships → foreign keys
5	Database Keys and Constraints	Primary key, foreign key, candidate key, composite key, unique key
6	Relational Algebra – Basic Operations	SELECT, PROJECT, UNION, INTERSECTION, JOIN, DIFFERENCE
7	Normalization of Databases	Data redundancy, anomalies, 1NF, 2NF, 3NF
8	From ERD to a Normalized Database	Complete example: ERD → tables → keys → normalization
9	Relationships in Relational Databases	One-to-one, one-to-many, many-to-many, junction tables
10	SQL vs Relational Database Concepts	Tables, queries, SELECT, INSERT, UPDATE, DELETE
11	Database Forms in MS Access	Forms, controls, data entry, navigation
12	Reports in MS Access	Report design, grouping, sorting, summaries, printing
13	Building a Small Database in MS Access	Tables → relationships → forms → queries → reports
14	Database Queries and Joins	Simple queries, filtering, sorting, INNER/LEFT JOIN
15	Database Integrity and Constraints	Entity integrity, referential integrity, validation
16	Relational vs Non-Relational Databases	SQL vs NoSQL, tables vs documents/key-value/graphs
17	Types of NoSQL Databases	Document, key-value, column-family, graph databases
18	Introduction to Vector Databases	Vectors, embeddings, similarity search, AI applications

#	Presentation Topic	Main Concepts
19	Traditional Databases vs Vector Databases	Structured data vs embeddings, exact search vs similarity search
20	Modern Database Applications	RDBMS, NoSQL, cloud databases, vector databases and AI

10-presentation sequence

- **Presentation 1:** Introduction to Database and DBMS
- **Presentation 2:** RDBMS and Relations
- **Presentation 3:** ERD and Relationships
- **Presentation 4:** Mapping ERD to Relations
- **Presentation 5:** Database Keys and Constraints
- **Presentation 6:** Relational Algebra
- **Presentation 7:** Normalization – 1NF, 2NF, 3NF
- **Presentation 8:** Database Forms, Queries and Reports using MS Access
- **Presentation 9:** SQL vs NoSQL Databases
- **Presentation 10:** Introduction to Vector Databases and AI