# DBMS Project Synopsis Format

Emphasis should be on backend implementation using SQL and PL/SQL.

**1. Title Page**

- **Project Title**
- Course Name & Code: *UCS310 – Database Management Systems*
- Degree & Year: *B.Tech (2nd Year)*
- Department / Institute Name
- Group Members (2–3 students) with Roll Numbers
- Lab Instructor Name
- Academic Year

**2. Introduction**

- Brief introduction to the application domain (e.g., Student Information System, Inventory Management, etc.)
- Motivation for selecting the problem
- Importance of using a Database Management System instead of a file-based system

**3. Problem Statement**

- Clear definition of the real-world problem being addressed
- Limitations of the existing/manual system
- Scope of database usage in solving the problem

**4. Objectives of the Project**

List 4–6 objectives, such as:

- To design a database using E–R data modeling
- To convert ER model into relational tables
- To apply normalization (up to 3NF/BCNF)
- To implement the database using SQL
- To use PL/SQL constructs like procedures, functions, triggers, cursors
- To ensure data consistency using constraints and transactions

**5. Scope of the Project**

- Functional boundaries of the system
- Types of users involved (e.g., admin, staff, user)
- Modules covered (with backend focus)

**6. Proposed System Description**

- Overall working of the proposed database system
- Key features and functionalities
- How the system improves efficiency, consistency, and data integrity

**7. Database Design**

**7.1 Entity–Relationship (ER) Diagram**

- Identification of:
    - Entities
    - Attributes
    - Relationships
    - Cardinality & constraints

- ER diagram (to be attached later in final report)

**7.2 Relational Schema**

- Conversion of ER diagram into tables
- Primary keys and foreign keys
- Table relationships

**8. Normalization**

- Identification of functional dependencies
    - Normalization process:1NF, 2NF, 3NF / BCNF (as applicable)
- Final normalized table structure

**9. Database Implementation**

**9.1 SQL Implementation**

- DDL commands (CREATE, ALTER, DROP)
- DML commands (INSERT, UPDATE, DELETE)
- SELECT queries:
    - Joins
    - Subqueries
    - Aggregate functions
    - GROUP BY, HAVING
    - Views

**9.2 PL/SQL Components**

- Stored Procedures
- Functions
- Triggers
- Cursors
- Exception handling

**10. Transaction Management & Concurrency (Optional but Recommended)**

- Use of transactions (COMMIT, ROLLBACK, SAVEPOINT)
- Ensuring ACID properties
- Brief mention of concurrency control (locks, consistency)

**11. Tools & Technologies Used**

- DBMS Software (Oracle / MySQL / PostgreSQL, etc.)
- SQL / PL-SQL
- Any interface tool (optional): SQL Developer, MySQL Workbench

**12. Expected Outcomes**

- Successful creation of a normalized database
- Efficient data retrieval using SQL queries
- Automation using triggers and procedures
- Improved data consistency and integrity