

# DATABASE MANAGEMENT SYSTEM UE23CS351A

## Experiential Learning: Level 2 (Orange problem) - 10 Marks

In this task students have to build a complete database application with **a team of two members**. The objective of this task is to design and build a deployable application that works seamlessly with the **relational database**.

The primary tasks involve creation and modification of database tables using CRUD SQL commands that are embedded in the application. CRUD is an acronym for create, read, update, delete and refers to the four operations developers perform on database tables to manipulate the data. As a database application developer, the student will:

1. Design ER diagram, relational database schema and create dashboards accordingly.
2. Create complex functions and stored procedures based on the functionality of the application.
3. Analyze queries, and enable data access from the front end as per the application constraints.
4. Write complex queries for applications and extract valuable insights from the data.
5. All applications must be demonstrated as standalone or web-based applications.

Students are strongly encouraged to choose a topic which is really needed for PESU and its society or some good applications which are customized according to the current trend of business. Students should seek approval from the respective professor before finalizing the problem statement.

### Key Highlights:

**Team Size:** 2 students per team

- Host Google form for team and title registration – 18th Aug 2025
- Finalise the title and team by 22nd Aug 2025

### Review-1:

- Finalize the User Requirement Specification.
- Evaluation of Design document (ER and Relational Schema)
- Complete review - 1 by 2<sup>nd</sup> week of September.

### Review – 2:

- Review the tables created, with all constraints specified in ER diagram and User Requirement Specification.
- Conduct viva on DDL and DML

**Review – 3:**

- Review Triggers, procedures and Functions
- Conduct viva on Triggers, procedures and Functions

**Review – 4:**

- Final evaluation of the project as per the rubrics – Nov 11<sup>th</sup> to 15<sup>th</sup>

**User Requirement Specification** should include:

- Purpose of the project - in a paragraph or two
- Scope of the project – in a paragraph or two
- Detailed description: In detail describe the project – similar to the case study given to draw the ER diagram in lab session

**List down the Function Requirements:**

- System Functionality 1 with its description in a line or two
- System Functionality 2 with its description in a line or two

and so on..... (list down all)

**Deliverables:** Report comprising of:

1. Title of the problem statement with Team details (Cover page)
2. Description about the statement (Short abstract)
3. User requirement specification in detail (prepared for review-1)
4. List of Softwares/Tools/Programming languages used
5. ER Diagram
6. Relational Schema
7. DDL Commands
8. CRUD operation Screenshots
9. List of functionalities/features of the application and its associated screenshots using front end
10. Triggers, Procedures/Functions, Nested query, Join, Aggregate queries
11. Code snippets for invoking the Procedures/Functions/Trigger

12. SQL queries(Create, Insert, Triggers, Procedures/Functions, Nested query, Join, Aggregate queries ) used in the project in the form of .sql file

13: Github repo link

### Evaluation Rubrics:

| Topic                                      | 2 Marks                    | 1Mark                         | 0 Mark                   |
|--|----------------------------|-------------------------------|--------------------------|
| ER Diagram                                 | --                         | 4 to 5 Entities               | 1 to 3 Entities          |
| Relational Schema                          | --                         | Correct Mapping               | Incorrect Mapping        |
| Normal Form                                | --                         | 3NF                           | 2NF or 1NF               |
| Users Creation/Varied Privileges           | With GUI                   | Without GUI                   | NO Users                 |
| Triggers                                   | With GUI                   | Without GUI                   | NO Triggers              |
| Procedures /Functions                      | With GUI                   | Without GUI                   | NO Procedures /Functions |
| Create operations                          | All tables created         | Half number of tables created | NO tables Create         |
| Read operations                            | --                         | With GUI                      | Without GUI              |
| Update operations                          | --                         | With GUI                      | Without GUI              |
| Delete operations                          | --                         | With GUI                      | Without GUI              |
| Queries based on Application functionality | 1 Nested Query with GUI    | 1 Nested Query with out GUI   | NO Queries               |
|  | 1 Join Query with GUI      | 1 Join Query without GUI      | NO Queries               |
|  | 1 Aggregate Query with GUI | 1 Aggregate Query without GUI | NO Queries               |