

# Mobile Mind Course Forum: Database Fundamentals Project Report

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## 1. Project Overview

Project Title: Course Forum App

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Module: Mobile Computing & Database Fundamentals

Due Date: 1 June 2025

## Project Description

The Mobile Mind Course Forum is a discussion platform for Mobile Computing students to post questions and responses, similar to Stack Overflow. It includes user authentication, question and comment posting, up/down voting, and soft deletion of data.

## 2. System Processes / Procedures

Process	Description
User Registration	Users register with student number, name, email, and password.
Login	Users log in using credentials.
Post Question	Users create a post with title and question text.
View Questions	Questions listed by votes; only active ones shown.
Comment	Users comment on a specific question.
Vote	One vote per post/comment per user (up/down).
Delete	"Soft delete" by marking posts/comments as

	`inactive`.
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### 3. Business Rules (Bidirectional)

Rule	Bidirectional Statement	
One user can post many questions	Each question is posted by one user	
One post can have many comments	Each comment belongs to one post	
One user can vote on many items	Each vote belongs to one user	
Each user logs in through the authentication table	Each login entry links to one user	

### 4. Initial ER Diagram (ERD)

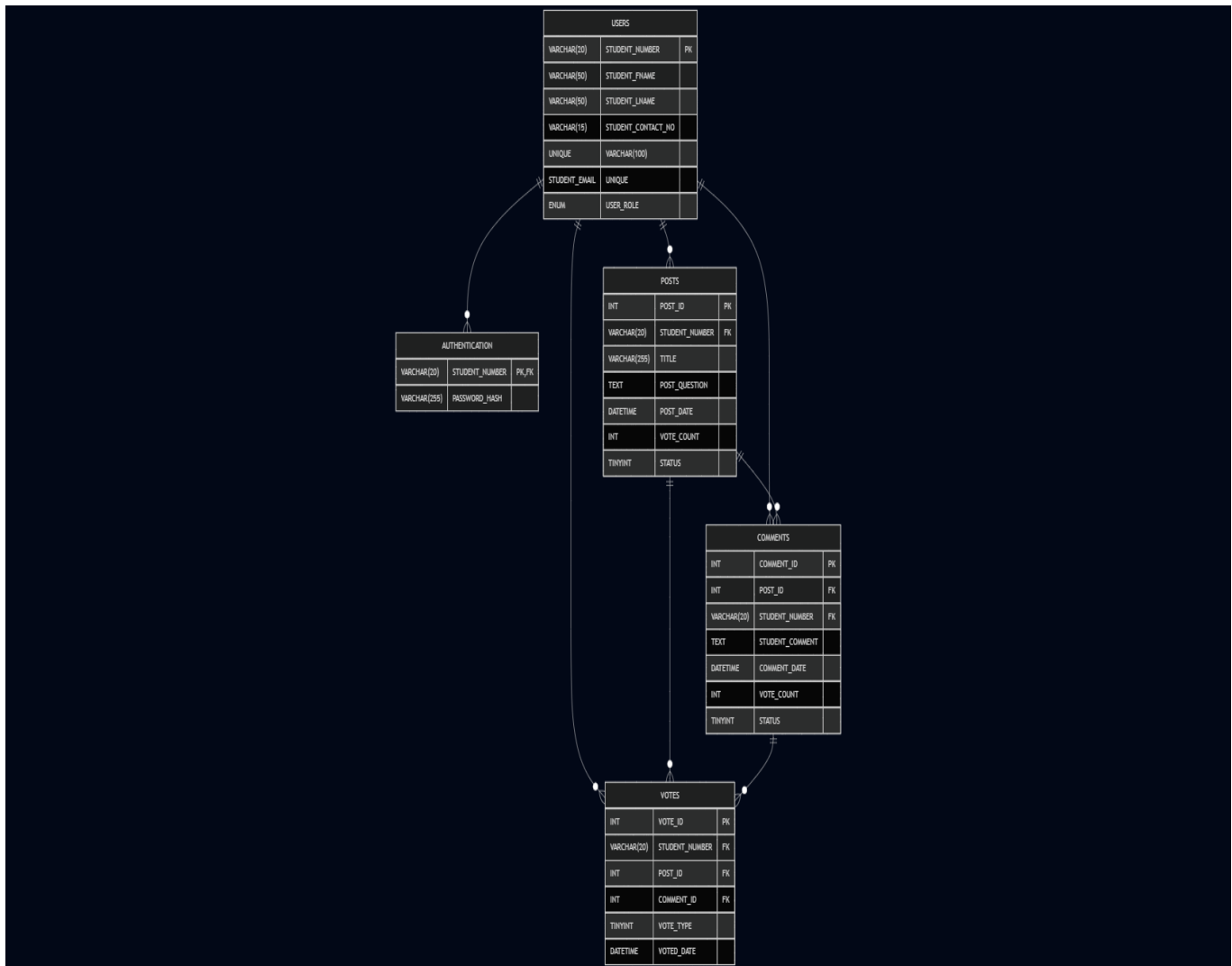
Attach original ERD with basic tables (USERS, POSTS, COMMENTS, VOTES), Ask Tshilidzi to resend the picture

### 5. Design Issues Identified

Issue	Resolution
M:N (Users ↔ Votes)	Introduced VOTES table as a junction table
NULLs	Allowed only where necessary (e.g., optional comment fields)
Multivalued attributes	Normalized tables (e.g., no multiple votes in one row)
Deletion problems	Introduced `STATUS` field for soft delete

### 6. Final ER Diagram

Attach updated ERD showing all final fields (STATUS, VOTE\_TYPE, AUTH table, etc.). Use the site Tshilidzi recommended(forgot the name of it though)



## 7. Table Implementation

✂ SQL Snippets used to create tables:

- USERS
- AUTH (passwords)
- POSTS (with STATUS)
- COMMENTS (with STATUS)
- VOTES (with VOTE\_TYPE)

## 8. Views, Functions & Triggers

### Views:

CREATE VIEW ActivePosts AS

```
SELECT * FROM POSTS WHERE STATUS = 1;
```

```
CREATE VIEW TopVotedPosts AS
```

```
SELECT * FROM POSTS WHERE STATUS = 1 ORDER BY VOTE_COUNT DESC;
```

### Trigger:

```
CREATE TRIGGER IncrementPostVote AFTER INSERT ON VOTES
```

```
FOR EACH ROW
```

```
BEGIN
```

```
IF NEW.POST_ID IS NOT NULL THEN
```

```
    UPDATE POSTS SET VOTE_COUNT = VOTE_COUNT + 1 WHERE POST_ID = NEW.POST_ID;
```

```
END IF;
```

```
END;
```

## 9. Demo Video

📌 Include a link to the video or QR code to a Google Drive or YouTube video.

## 10. Conclusion

This project provided valuable insight into the design and implementation of a functional, scalable database system for a real-world application. The Mobile Mind Course Forum App was structured to support the academic engagement of Mobile Computing students through a question-and-answer platform that promotes interaction and collaboration.

Throughout the development process, we identified key challenges such as managing many-to-many relationships, enforcing voting restrictions, ensuring data integrity, and handling deletions in a user-friendly way. We addressed these issues by applying proper normalization techniques, using junction tables, creating soft-delete mechanisms with status flags, and leveraging database triggers and views to maintain consistency and usability.

The final database design not only meets the requirements for user authentication, posting, commenting, and voting but also lays the foundation for future enhancements, such as moderator roles or analytics. This project has strengthened our understanding of relational databases, SQL implementation, and the importance of aligning database structure with business rules.

We believe the Course Forum database is a solid backbone for the application and demonstrates our competence in database fundamentals.