MEMBER 6: DATABASE & JDBC LAYER

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Main Responsibility

Develop and manage the **database structure** and **Java–database connectivity** using **JDBC and SQL**.
This member acts as the **bridge between Java code and the database**.

Role Overview

All modules (Student, Subject, Attendance, Marks, Backlog) store and retrieve data from the database.
Member 6 ensures:

- Data is stored correctly
- Data is fetched efficiently
- Java and database communicate smoothly

Without this module, **no data can be saved permanently**.

Responsibilities (Java + SQL Development Tasks)

1. Database Schema Design

- Design database tables for:
    - Students
    - Subjects
    - Attendance
    - Marks
    - Results
    - Backlogs
- Define:
    - Primary keys
    - Foreign keys
    - Relationships between tables

Purpose:
To create a well-structured and normalized database.

2. JDBC Connection Class

- Create a Java class for JDBC connectivity
- Manage:
    - Database URL
    - Username and password
    - Connection handling

Purpose:
To establish secure communication between Java application and database.

3. DAO (Data Access Object) Classes

- Create DAO classes for each module
    - StudentDAO
    - SubjectDAO
    - AttendanceDAO
    - MarksDAO
    - BacklogDAO

Purpose:
To separate database logic from business logic.

4. SQL Query Implementation

- Write SQL queries for:
    - Insert operations
    - Update operations
    - Select operations
- Optimize queries for performance

Purpose:
To store, modify, and retrieve data efficiently.

5. Data Consistency Management

- Ensure:
    - Referential integrity
    - No duplicate records
    - Valid data relationships

Purpose:
To prevent data corruption and maintain accuracy.

6. Database Security Handling

- Secure database access using:
    - Restricted credentials
    - Controlled query access
- Prevent unauthorized data modification

Purpose:
To protect sensitive academic data.