

Project Design Phase

Solution Architecture

Date	29.10.2025
Team ID	NM2025TMID05816
Project Name	Educational Management System
Maximum Marks	4 Marks

Problem – Solution

Solution Architecture

Goals of the Architecture:

- Provide a centralized digital platform for managing academic and administrative data.
- Automate routine educational operations such as admissions, attendance, and progress tracking.
- Ensure data accuracy, transparency, and accessibility across all users — students, teachers, and administrators.

Key Components:

- **Frontend Interface:** Built using HTML, CSS, and JavaScript to provide a user-friendly and responsive experience.
- **Backend Server:** Developed with Python Flask for managing server-side operations and API communication.
- **Database:** MySQL database used for securely storing and managing student, teacher, and course information.
- **Admin Module:** Controls admissions, attendance, and data management functionalities.
- **Teacher & Student Modules:** Allow easy tracking of performance, communication, and access to academic data.

Development Phases:

- Design user interfaces for admin, teacher, and student dashboards.

- Establish database structure for user profiles, attendance, and performance data.
- Develop Flask backend APIs to connect frontend and database.
- Implement CRUD operations for managing student and teacher records.
- Integrate modules for attendance tracking, progress monitoring, and report generation.
- Test all modules for data accuracy and performance efficiency.

Solution Architecture Description:

The *Educational Management System* is designed to integrate all academic and administrative processes into a unified digital platform. The architecture ensures smooth communication between users and reliable access to data. It follows a three-tier structure — frontend (UI), backend (Flask server), and database (MySQL). The system enables administrators to manage admissions, attendance, and teacher records efficiently, while teachers can track student progress and share academic updates. Students can view grades, assignments, and attendance in real time.

By automating manual operations, this architecture reduces errors, enhances productivity, and promotes digital transformation within educational institutions. It ensures data consistency, secure access, and scalability for future feature expansion such as online examinations or analytics dashboards.

Example – Solution Architecture Diagram: Educational Management System

