BUSINESS REQUIREMENT DOCUMENT

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Contents

1 Project Overview

1.1 Project Title

Edu Learn - A Learning Management System (LMS) Portal

1.2 Project Summary

The LMS portal is a comprehensive digital learning platform designed to facilitate the management of coursework, assignments, sessions, and attendance. It aims to enhance the digital learning experience by providing an intuitive interface for teachers and students, supporting effective communication, and ensuring that educational content is easily accessible.

2 Problem Statement

2.1 Challenges

The transition to digital learning has introduced several challenges, such as maintaining student engagement, managing coursework efficiently, and ensuring timely communication between teachers and students. Students often struggle with managing multiple assignments, keeping track of deadlines, and staying motivated. Teachers need an organized platform to manage their classes, assignments, and track student progress.

2.2 Needs

A Learning Management System that addresses these challenges by providing a structured platform for managing assignments, sessions, materials, and attendance. The system should be intuitive, user-friendly, and accessible to both teachers and students, ensuring that it meets the diverse needs of its users.

3 Project Objectives

- Provide a robust platform for teachers to manage and distribute course materials, assignments, and session details.

- Enable students to access their coursework, submit assignments, manage their class work.

- Simplify student management, allowing teachers to create accounts, manage classes, and monitor student performance.

- Ensure scalability and security, allowing the platform to grow with the needs of its users.

- Offer a digital library feature for students to access educational content and resources.

4 Scope of Work

4.1 Teacher Features

1. Upload PDF files or links as assignments.

2. Provide session details (date, meeting link, title).

3. Upload reference materials and videos (or video links).

4. Mark student attendance (date and status).

5. Create student accounts and provide credentials via email.

6. View submissions of assignments by students.

7. Manage classes, including adding or removing students.

8. Access a dashboard summarizing class statistics, such as the number of assignments given and sessions scheduled.

4.2 Student Features

1. Log in using credentials provided by the teacher.

2. View attendance records.

3. View and submit assignment solutions.

4. Access materials and videos uploaded by the teacher.

5. View session details provided by the teacher.

6. Search and access educational content through the digital library feature.

5 Functional Requirements

- The system must allow teachers to upload and manage assignments, materials, and session details.

- The system must allow teachers to create and manage student accounts, including email notifications.

- The system must enable students to view and submit assignments.

- The system must track and display student attendance.

- The system must include a digital library where students can search for educational content.

- The system must provide a dashboard for teachers with class statistics and a summary of activities.

6   Non-Functional Requirements

- **Performance:** The system should load pages within 2 seconds under normal operating conditions.

- **Scalability:** The system should be scalable to accommodate increasing numbers of users and data.

- **Security:** The system must implement robust authentication and authorization mechanisms.

- **Usability:** The user interface must be intuitive and easy to navigate.

- **Reliability:** The system should maintain an uptime of 99.9% and should recover quickly from failures.

- **Accessibility:** The system should be accessible on multiple devices, including desktops, tablets, and smartphones.
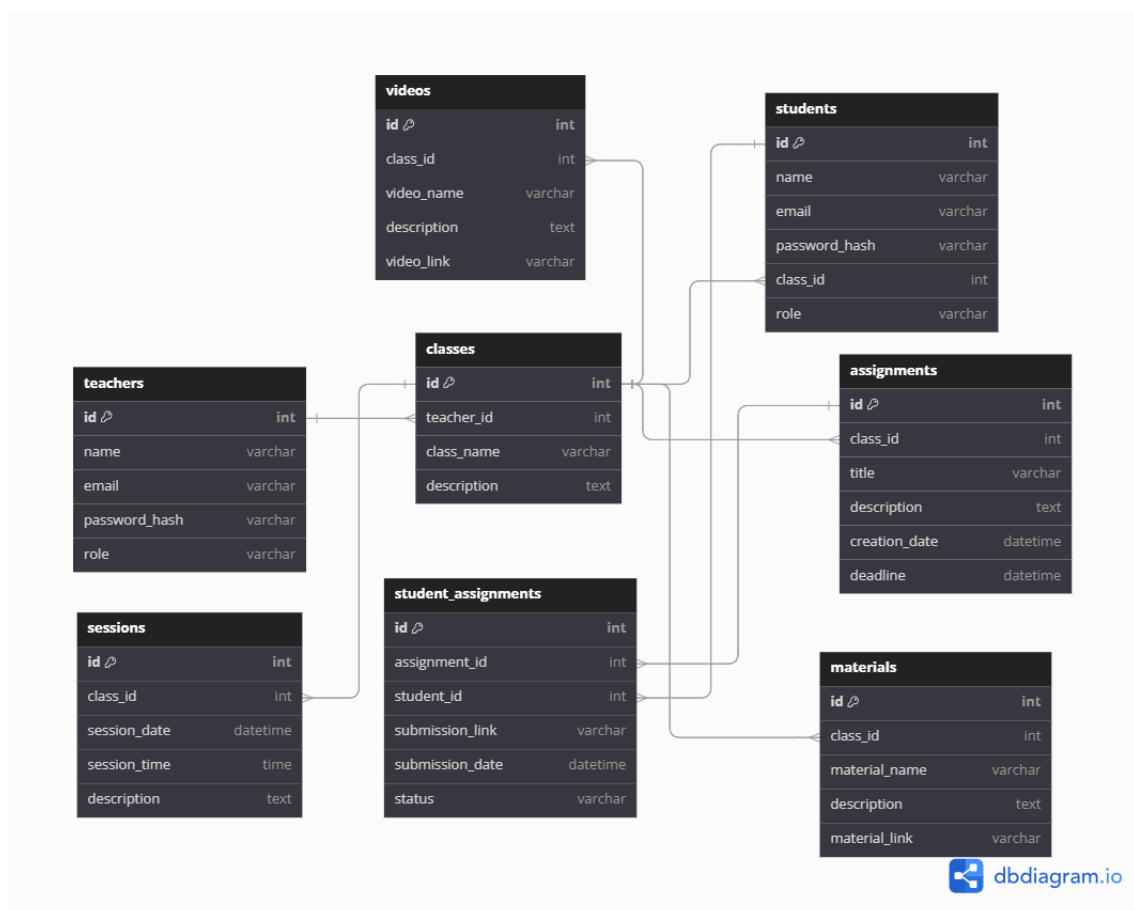
7   Database Architecture

Figure 1: Database Architecture

8 Technical Requirements

8.1 Frontend

- **Technology:** React

- **Functionalities:**

  - Unified login page for teachers and students.

  - Dashboard for teachers to manage assignments, sessions, materials, and attendance.

  - Dashboard for students to view and submit assignments, view attendance, and access course materials.

  - Digital library feature allowing students to search for educational videos and resources.

8.2 Backend

- **Technology:** Spring Boot (Java)

- **Microservices:**

  - **Student Service:** Manages the operation related to the students and contains student data.

  - **Teacher Service:** Manages assignments, sessions, materials, attendance, and all other content providing to students.

  - **API Gateway**: Spring Cloud Gateway for routing requests to the appropriate services.

- **Database:** MongoDB

  - Collections:

    * Users

    * Teachers

    * Students

    * Assignments

    * Attendance

    * Classes

    * Sessions

    * Materials

    * Submissions

8.3 Deployment

- **Hosting:** AWS EC2 for hosting backend and database.

- **CI/CD Pipeline:** Jenkins, GitHub Actions for continuous integration and deployment.

9 User Stories

9.1 Teacher User Stories

- **As a teacher,** I want to upload assignments so that students can access and submit their work.

- **As a teacher,** I want to upload session details so that students can attend classes on time.

- **As a teacher,** I want to create student accounts so that students can access the LMS portal.

- **As a teacher,** I want to view submissions from students so that I can grade their work.

- **As a teacher,** I want to manage class details and view statistics to track overall class progress.

9.2 Student User Stories

- **As a student,** I want to log in using my credentials so that I can access my coursework.

- **As a student,** I want to view my assignments so that I know what work needs to be done.

- **As a student,** I want to submit my assignment solutions so that my teacher can review them.

- **As a student,** I want to view my attendance records so that I can track my class participation.

- **As a student,** I want to search for educational content so that I can supplement my learning.

10 Conclusion

In conclusion, the Learning Management System (LMS) Portal is designed to address the significant challenges posed by the shift to digital learning. By providing a structured platform for managing assignments, sessions, materials, and attendance, the LMS portal supports both teachers and students in maintaining organization, motivation, and engagement. The focus on scalability, usability, and security ensures that the system can grow with the needs of its users, making it a valuable tool in the modern educational landscape.