Software Requirements Specifications Document

Learning Management System (LMS)

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1. Introduction

1.1 Purpose

This SRS document specifies the functional and non-functional requirements for an Online Learning Management System (LMS) designed to manage courses, batches, users, and learning materials. The system will automate course delivery, performance monitoring, and communication, replacing the current manual processes involving WhatsApp and separate links for tests and videos.

1.2 Scope

The LMS will:

- Manage courses, batches, and users.
- Allow Super Admins to create, assign, and manage courses.
- Enable Admins to edit their own courses, upload materials, and monitor student performance.
- Allow Users (Students) to access assigned courses, learning materials, and view performance analytics.
- Automate the delivery of tests, videos, and reports previously managed through WhatsApp and external links.

1.3 Definitions, Acronyms, and Abbreviations

- **LMS** : Learning Management System
- **Super Admin** : System Owner / Manager
- **Admin** : Teacher / Instructor
- **User** : Student
- **Batch** : Group of students for a specific year/month

2. Overall Description

2.1 Product Perspective

The LMS will be a centralized, web-based system accessible via browsers. It will support:

- **Super Admin**: Full control over courses, batches, and user assignments.
- **Admin** : Manage own courses, upload materials, monitor student performance.
- **User** : Access learning materials, view analytics, attempt tests.

2.2 Product Functions

Super Admin:

- Create and delete courses.
- Assign teachers to courses and batches.
- Monitor system-wide activities and analytics.

Admin :

- Edit own courses and materials.

- Upload videos, tests, and other resources.
- View student scores, analytics, and performance reports.

User :

- Access assigned courses and materials.
- View personal performance analytics.
- Attempt tests and assessments.

2.3 User Characteristics

User Role	Characteristics
Super Admin	System owner, manages overall platform.
Admin	Responsible for course delivery and student monitoring.
User	Learner, accesses materials and assessments.

2.4 Constraints

- Web-based application; requires internet access.
- Secure authentication for all users.
- Scalability for multiple batches, courses, and users.
- Integration of test and video delivery within the system.

2.5 Assumptions and Dependencies

- Internet connectivity is required.
- Cloud hosting and storage are used for scalability.
- Existing tests and videos will be migrated into the LMS.

3.Functional Requirements

3.1 User Roles and Permissions

The system shall support three types of users:

Super Admin: Can create, manage, and delete courses, assign teachers (admins), and assign students to batches.

Admin (Teacher): Can manage their own courses, create assignments/tests, upload learning materials, monitor student performance, and access reports.

User (Student): Can view assigned courses, access learning materials, submit assignments, take tests, and view their own scores and performance reports.

3.2 Course and Batch Management

- The system shall allow the Super Admin to create, monitor, and delete courses.

- The system shall allow the Super Admin to assign teachers (Admins) to specific courses.
- The system shall allow the Super Admin to assign students (Users) to specific batches based on the year and month of admission (e.g., B1, B2, B3).
- The system shall allow the Super Admin to define n number of batches per year/month.

3.3 Learning Materials Management

- The system shall allow Admins to upload learning materials such as PDFs, videos, presentations, and external resource links for their respective courses.
- The system shall allow Users to access and download/view course materials for their enrolled courses.
- The system shall organize learning materials under relevant courses and batches for easy access by students.

3.4 Assignment Creation and Management

- The system shall allow Admins (Teachers) to create assignments in different formats such as exams, essays, projects, and presentations.
- The system shall allow Admins to upload or define a grading rubric for each assignment, ensuring students understand how their work will be evaluated.
- The system shall allow the Super Admin to assign specific assignments to batches, courses, or students.
- The system shall allow Users to access their assignments, instructions, deadlines, and submission options for enrolled courses.

3.5 Assessment and Test Management

- The system shall allow Admins (Teachers) to create online tests/assessments.
- The system shall allow Admins to add questions, correct answers, and allocate marks for each question.
- The system shall generate analytics and reports such as total scores, highest and lowest marks, averages, and performance graphs.
- The system shall allow Students to view their own scores and feedback after test completion.
- The system shall allow Admins to monitor student submissions and performance, provide feedback, and access detailed reports.

3.6 Performance Analytics and Reports

- The system shall allow Admins and Super Admins to view performance analytics for each batch, course, and student.
- The system shall generate graphs, charts, and summary reports showing trends such as average scores, top performers, and areas of improvement.
- The system shall allow Students to view their own performance analytics including scores, grades, and feedback.

3.7 Automation of Tests, Videos, and Materials

- The system shall replace manual processes (e.g., sharing links via WhatsApp) by integrating test links, video links, and learning materials directly into the LMS platform.
- The system shall provide an easy-to-navigate interface where students can access their tests and videos in a structured and centralized manner.

4. Non-Functional Requirements

4.1 Performance Requirements

- The system shall be capable of supporting simultaneous access by multiple users (Super Admins, Admins, Students) without significant performance degradation.
- The system shall ensure that course materials, assignments, and test results load within 2-3 seconds under normal network conditions.
- The system shall handle at least 100 concurrent users without performance issues in the initial release, with scalability for higher loads in the future.

4.2 Scalability Requirements

- The system shall be scalable to accommodate an increasing number of users, batches, courses, and learning materials over time.

4.3 Security Requirements

- The system shall implement role-based access control to ensure Super Admins, Admins, and Students have access only to their respective functionalities.
- The system shall encrypt sensitive data, including user credentials and personal information, using industry-standard encryption.
- The system shall implement secure authentication mechanisms (e.g., username-password login, session management).
- The system shall protect against common web application vulnerabilities such as SQL Injection.

4.4 Reliability and Availability

- The system shall ensure 99.9% uptime during standard operating hours.
- The system shall have backup mechanisms to recover data in case of system failure.

5.System Features

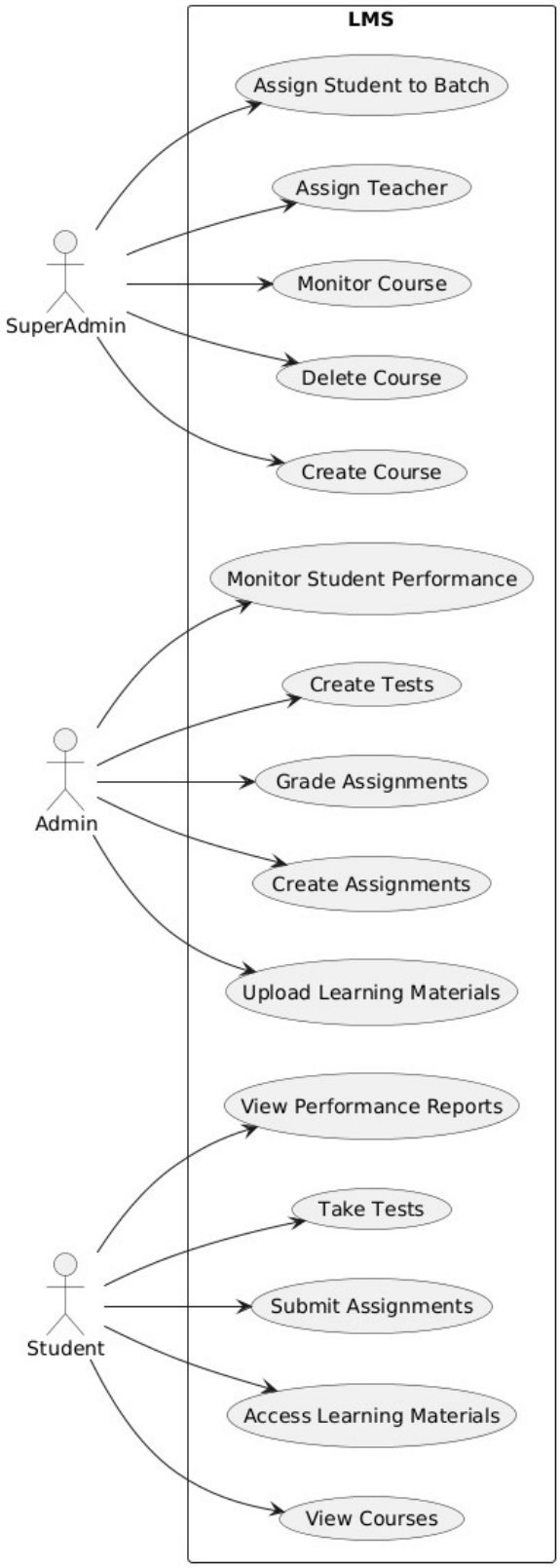
- The system shall support three types of users: Super Admin, Admin (Teacher), and User (Student).
- The Super Admin shall be able to create, monitor, and delete courses.
- The Super Admin shall be able to assign teachers (Admins) to specific courses.
- The Super Admin shall be able to assign students (Users) to specific batches based on the year and month (e.g., B1, B2, B3).
- The system shall allow multiple batches (B1, B2, B3) per year and month, created and managed by the Super Admin.
- The Admin (Teacher) shall be able to upload and manage learning materials such as PDFs, videos, presentations, and external resource links for their respective courses.

- The User shall be able to view and access learning materials posted by their teachers.
- The User shall be able to submit assignments and take tests within the LMS system.
- The system shall generate performance analytics and reports for students and teachers, including scores, graphs, and data visualizations.
- The system shall allow Admins to monitor the performance of students and generate reports.
- The system shall allow Students to view their own scores, feedback, and performance trends.

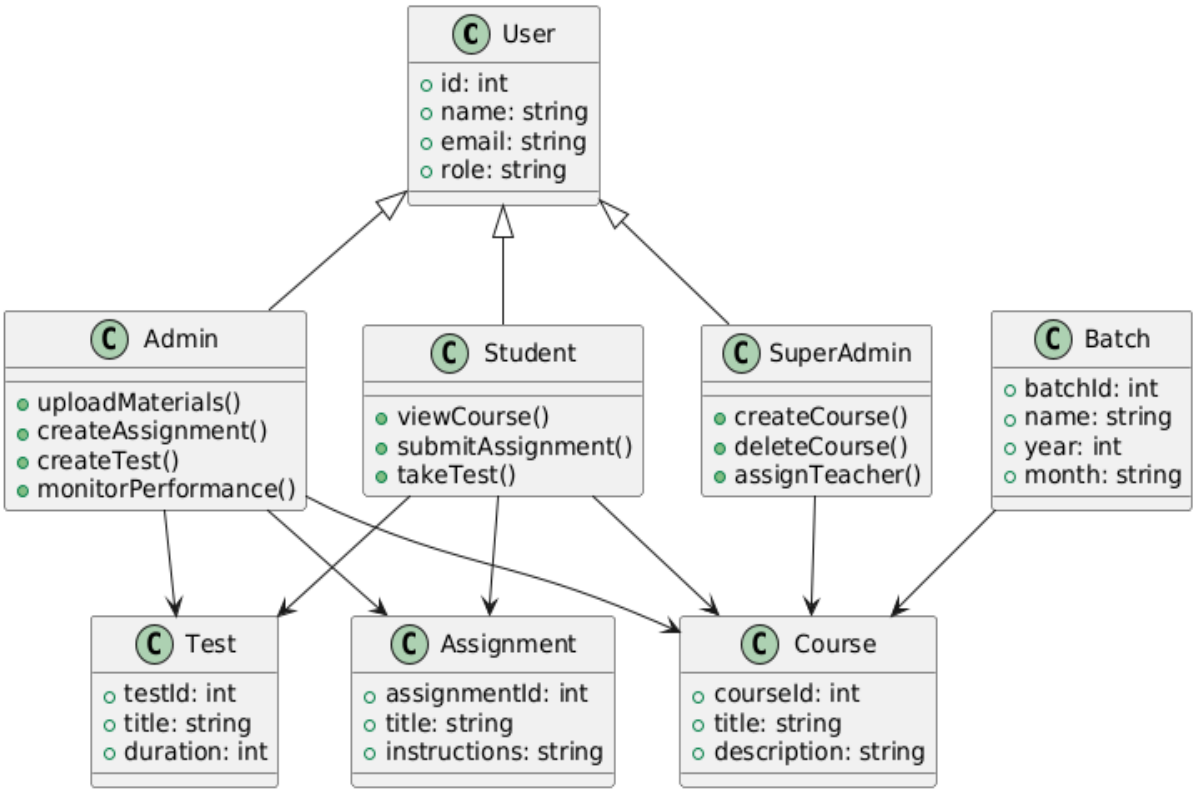
6. **Other Requirements**

- **Security**: Follow OWASP Top 10 guidelines for web application security.
- **Backup**: Daily backups of database and files.
- **Scalability**: System must support multiple courses, batches, and concurrent users.
- **Accessibility**: WCAG 2.1 compliance for inclusive access.
- **Performance**: Optimized loading times for media content.

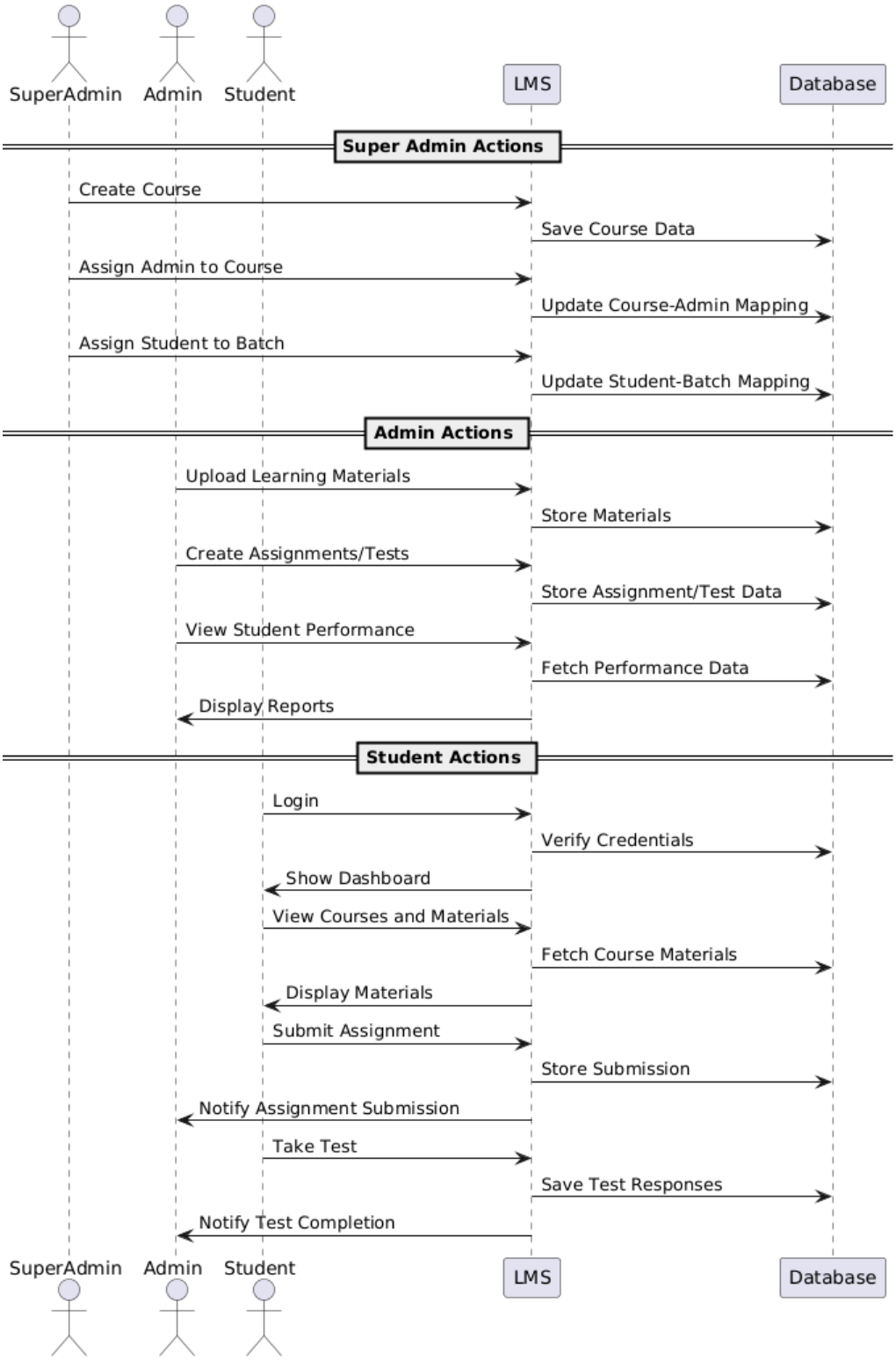
7. Use Case


LMS
Assign Student to Batch
Assign Teacher
Monitor Course
Delete Course
Create Course
SuperAdmin
Monitor Student Performance
Create Tests
Grade Assignments
Create Assignments
Upload Learning Materials
Admin
View Performance Reports
Take Tests
Submit Assignments
Access Learning Materials
View Courses
Student

8. Class Diagram



9. Sequence Diagram



10. Conclusion

This Software Requirements Specification (SRS) document outlines the functional and non-functional requirements, as well as the system features and diagrams for the Learning Management System (LMS). The system is designed to streamline learning activities by enabling Super Admins, Admins (Teachers), and Students to interact within a centralized platform. By automating course management, content delivery, assessments, and performance tracking, the LMS aims to enhance the overall learning experience, eliminate manual processes, and provide a scalable solution for educational institutions.