Sri Lanka Institute of Information Technology

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Web-based Educational Institute Management System

Project Proposal Report

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1. Introduction

1.1. Project Overview

The daily operations of our educational institute depend on managing information for students, teachers, and staff. The current system relies heavily on manual tasks and separate documents, such as paper files and spreadsheets. This approach creates several challenges. Key information is often scattered, making it difficult for the management team to get a clear overview of student performance or administrative progress. Staff spend significant time on routine tasks like student registration and updating timetables, which can lead to delays and errors. For teachers, there is no single platform to share class materials or track student marks effectively. Consequently, students and parents lack a reliable, centralized place to find updates on schedules, grades, or fee payments.

This project, **"Learn Mate: A Web-based Educational Institute Management System,"** is designed to solve these issues. We will develop a single, integrated web application to handle these core administrative and academic tasks. The system will provide a centralized platform for all users, aiming to improve efficiency, ensure clear communication, and make daily operations run more smoothly.

1.2. Objectives

• **To Help Management:** Give the Director a simple dashboard to see important information like student attendance, academic results, and fee status efficiently.

• **To Reduce Admin Work:** Automate tasks for the admin staff, such as enrolling new students, managing timetables, and tracking fee payments, to save time and reduce errors.

• **To Support Teachers:** Provide a platform for teachers to easily upload notes, record attendance and marks, and send messages to students and parents.

• **To Inform Students and Parents:** Create a portal where students and parents can check timetables, view results, pay fees online, and receive important announcements.

• **To Support Students Better:** Build a system that can alert support officers when a student has low attendance or poor grades, so they can offer help early.

1.3. Stakeholders

The "Learn Mate" system is designed to serve a diverse group of users within the educational institute. Each user type, or stakeholder, has a specific role and will interact with the system to meet their unique needs. The primary stakeholders for this project are:

- Director (Management)
- Teachers
- Admin Staff
- Parents
- Students
- Student Support Officer

1.4. Scope

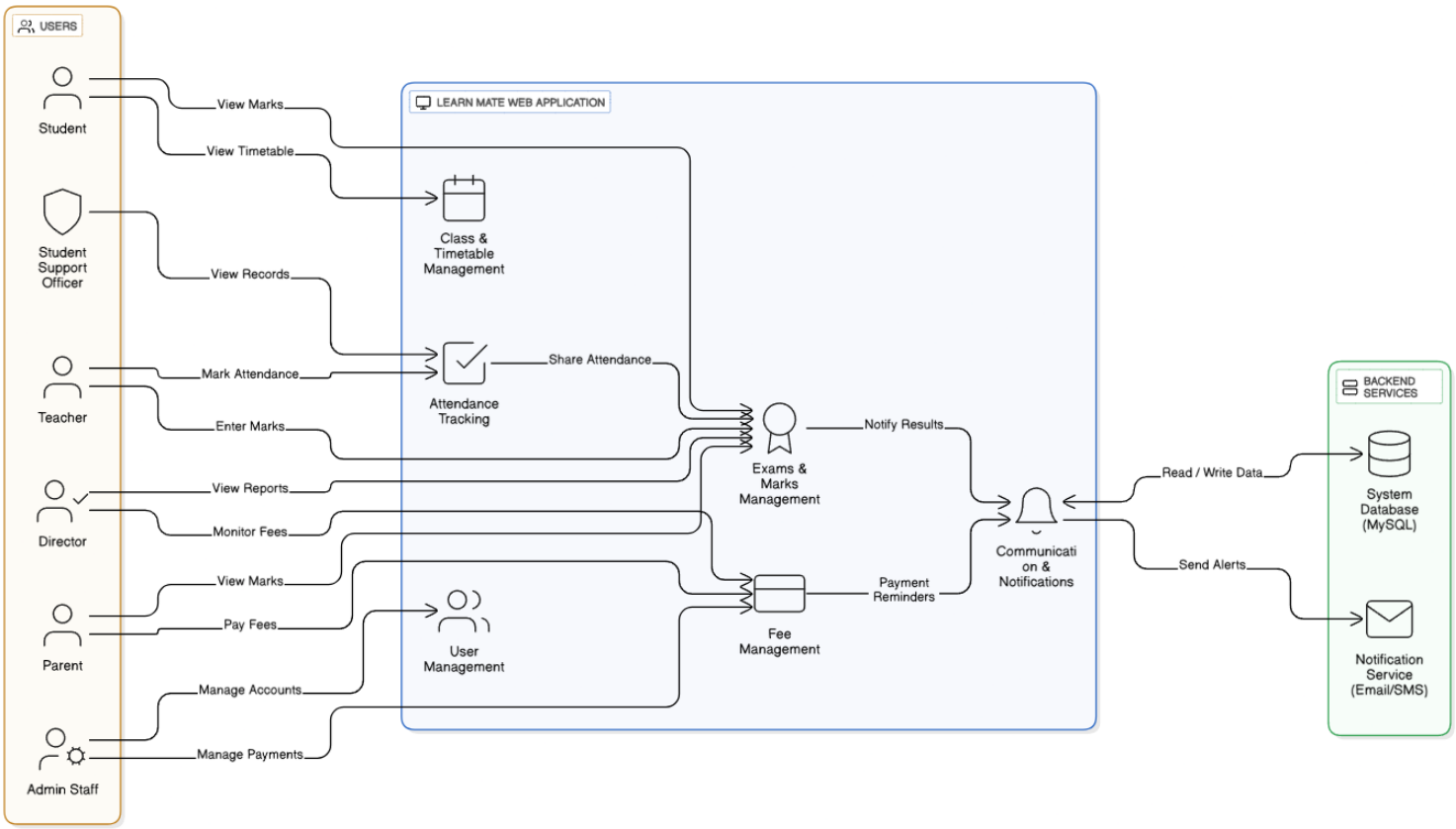
The scope of this project is to design, develop, and deliver a fully functional, Java-based web application named **"Learn Mate."** This system will serve as a central system to connect the core academic and administrative functions of the institute. The application is intended to be a comprehensive management tool, accessible through standard web browsers, with a responsive design that adapts to various screen sizes, including desktops, tablets, and mobile phones.

The project will focus on implementing six essential modules, each tailored to the needs of its specific users:

1. User Management
2. Class & Timetable Management
3. Attendance Tracking
4. Exams & Marks Management
5. Fee Management
6. Communication & Notifications

2. System Overview Diagram

The following diagram provides a high-level overview of the "Learn Mate" system architecture and its user interactions. It illustrates how the six primary user roles (stakeholders) connect with the core modules of the web application to perform their specific tasks. The diagram also shows the system's connection to its backend components, including the MySQL database for data storage and the external notification service for sending alerts. This visual representation clarifies the flow of information and the overall structure of the proposed solution.



System Diagram

3. Functional Requirements

The "Learn Mate" system is designed to perform a specific set of functions to meet the needs of its users. The following functional requirements outline the essential operations the system must support.

- **FR1: User and Access Management:** The system shall allow administrators to create and manage user accounts with role-based permissions (e.g., Teacher, Parent). All users must be able to log in securely to access features relevant to their role.
- **FR2: Timetable Management:** Admin staff must be able to create, update, and publish class schedules. The system will then display personalized daily and weekly timetables for students and teachers.
- **FR3: Attendance Tracking:** The system must provide an interface for teachers to mark and submit student attendance. This data will be accessible for viewing by students, parents, and authorized staff.
- **FR4: Exam and Marks Management:** Teachers shall be able to enter and manage student marks for various assessments. Students and parents must be able to securely view published results through the portal.
- **FR5: Fee Processing:** The system will allow admin staff to manage student fee records. It must also provide a feature for parents to view fee balances and make payments online.
- **FR6: Communication and Announcements:** The system shall provide tools for teachers and admin staff to send messages and post announcements to specific user groups.
- **FR7: Automated Notifications:** The system must automatically send notifications to users regarding important events, such as fee payment reminders, new announcements, or the publication of results.
- **FR8: Report Generation:** The system must be capable of generating summary reports on key institutional metrics, such as student attendance trends, academic performance, and fee collection status, for the Director and other authorized staff.

4. Non-functional Requirements

In addition to the functional requirements, the "Learn Mate" system must adhere to specific quality attributes that define its performance, usability, and reliability. These non-functional requirements are crucial for ensuring a positive user experience and a robust system.

NFR1: Performance: The application must feel responsive to the user. Key pages like the dashboard, timetable, and marks view should load in under 3 seconds on a standard internet connection. Data submission, such as marking attendance, should be processed and confirmed almost instantly.

NFR2: Usability: The system's interface must be clean, simple, and easy to understand. A new user should be able to navigate the site and find important information without needing a manual or extensive training. The design will be consistent across all pages to avoid confusion.

NFR3: Security: Protecting user data is a top priority.

- Authentication: All users must log in through a secure authentication process. Passwords must be stored in an encrypted format in the database.
- Authorization: The system will strictly enforce its role-based access controls, preventing users from seeing or modifying data that does not belong to them (e.g., a student cannot see another student's private information).

NFR4: Compatibility: The web application must function correctly on the latest versions of modern web browsers, including Google Chrome, Mozilla Firefox, and Microsoft Edge.

NFR5: Cross-platform Compatibility: The portal should work smoothly on desktops, tablets, and smartphones.

5. Major Stakeholders

The success of the "Learn Mate" system depends on its ability to meet the needs of its various users. The following stakeholders have been identified as the primary user groups, each with a distinct role and set of interests in the system.

- **Director (Management)**

  Uses the system to monitor the institute's overall performance by viewing summary reports on student attendance, academic results, and fee collection for high-level decision-making.

- **Admin Staff**

  Responsible for the system's operational management. They will handle student registrations, create and update timetables, manage fee records, and post official announcements.

- **Teachers**

  Use the platform for academic management. Their tasks include marking attendance, entering student grades, sharing course materials, and communicating with students and parents.

- **Student Support Officer**

  Focuses on student welfare by using the system to identify at-risk students through alerts on low attendance or poor academic performance, allowing for timely intervention.

- **Students**

  The primary users of the system. They log in to check their personal timetables, view their grades and attendance records, and receive important updates from the institute.

- **Parents**

  Use the portal to stay informed about their child's education. They can monitor their child's academic progress, track attendance, and conveniently pay school fees online.

6. Six Major Functions

The "Learn Mate" system is built around six core functions that address the primary needs of the institute. Each function is assigned to a team member who will be responsible for its development and implementation.

6.1 User Management

- **Assigned Member:** [Dulakshika A.L.S.H]
- **Description:** This is the foundation of the system, responsible for creating and managing all user accounts. It will allow administrators to register new students, teachers, and parents, and assign them the correct roles (e.g., "Teacher," "Student"). This function ensures that every user has secure login credentials and can only access the information and features appropriate for their role, maintaining data privacy and system integrity.

6.2 Class & Timetable Management

- **Assigned Member:** [Bandara R. M. G. L]
- **Description:** This module automates the complex task of scheduling. It will provide a simple interface for admin staff to create, update, and publish class schedules and subject timetables for the entire institute. Once published, the system will automatically display a personalized daily or weekly schedule for each student and teacher, ensuring everyone knows where they need to be and when.

6.3 Attendance Tracking

- **Assigned Member:** [Dilhani W. P. K. A]
- **Description:** This function digitizes the process of recording student attendance. Teachers will be able to quickly mark which students are present or absent for each class directly through the system. This data is stored centrally, creating an accurate, real-time attendance record that can be viewed by parents to monitor their child's punctuality and by support officers to identify potential issues.

6.4 Exams & Marks Management

- **Assigned Member:** [Dahanayake L.K]
- **Description:** This function centralizes the entire assessment process. It will allow teachers to set up exams, enter student marks, and manage grades for various subjects. Once the marks are entered and published, students and parents can securely log in to view their academic results, providing transparent and immediate feedback on performance.

6.5 Fee Management

- **Assigned Member:** [Devinda S. U. V]
- **Description:** This module is designed to simplify the fee collection process. Admin staff will use it to manage student fee records, track payment statuses, and send automated reminders for overdue payments. For parents, this function provides a convenient online portal to view outstanding balances and make secure payments, eliminating the need to visit the office in person.

6.6 Communication & Notifications

- **Assigned Member:** [Disanayaka D.M.C.N]
- **Description:** This function serves as the central communication hub of the institute. It enables teachers and administrators to send important announcements, messages, and alerts to specific groups or to all users. This includes automatic notifications for events like exam result publications, fee deadlines, or unscheduled holidays, ensuring that the entire community stays connected and informed.

7. Minor Functions

- **User Profile Management:**
  This feature will allow all users (students, teachers, parents) to view and update their own personal information, such as contact details, and change their profile picture. This ensures that the data in the system remains accurate and up-to-date without requiring administrative intervention for minor changes.

- **Password Reset:**
  A self-service password reset function will be available on the login page. If a user forgets their password, they can securely reset it by verifying their identity through their registered email address. This reduces the burden on administrative staff to handle password reset requests manually.

- **Search and Filter Options:**
  To help users find information quickly, the system will include basic search functionality. For example, an administrator will be able to search for a specific student's record, or a student will be able to filter announcements by date.

- **Downloadable Reports/Documents:**
  Users will have the ability to download important documents for their records. For instance, parents will be able to download fee payment receipts in PDF format, and students will be able to download their mark sheets.

- **Notification History:**
  A dedicated section will be available for users to view a history of all past notifications and announcements they have received. This ensures that important information is not lost and can be referred to later.

8. System Limitations/Constraints

The development of the "Learn Mate" system is guided by a set of practical limitations and constraints to ensure the project remains focused and achievable within the given timeframe.

Technical Constraints

- **Technology Stack:** The application is constrained to a Java-based web application utilizing a MySQL database, as mandated by the module requirements.
- **External Dependencies:** The functionality of the notification system is dependent on third-party APIs for email delivery. The system's reliability in this area is subject to the performance of these external services.
- **No Offline Functionality:** The system is designed to be entirely web-based and requires a constant internet connection. It will not support any offline access or features.

Project Constraints

- **Development Timeline:** The project is strictly time-bound to the 14-week semester. This deadline dictates the scope and depth of the features that can be implemented.
- **Defined Scope:** The project is limited to the six major functions outlined in this document. Advanced features like a dedicated mobile application, integrated e-learning modules, or comprehensive financial accounting are explicitly out of scope.
- **Single Institute Focus:** The system is being developed for a single educational institute. It is not designed as a multi-tenant application capable of serving multiple schools simultaneously.

9. Sample Timeline

Week(s)	Phase	Key Activities & Goals	Major Deliverable
Week 1-3	Planning & Proposal	Finalize project scope, gather requirements, assign team roles, and prepare proposal.	Project Proposal & Presentation
Week 4-5	System Design	Create system architecture, design the database schema (ERD), and create UI/UX wireframes.	Design Documents
Week 6-7	Development (Sprint 1)	Develop core backend features: User Management and Class & Timetable Management.	Initial Backend Functionality
Week 8-9	Development (Sprint 2)	Develop Attendance Tracking, Exams & Marks Management, and implement the basic User Interface (UI).	Working Prototype with UI
Week 10	Mid-Project Review	Progress presentation and partial testing of implemented modules	Progress Presentation & Demo
Week 11	Development (Sprint 3)	Develop Fee Management and the Communication & Notification system.	Feature-Complete System
Week 12	Testing & Refinement	Conduct integration testing, fix bugs, and refine the user interface based on feedback.	Stable System Version
Week 13	Finalization & Documentation	Complete the final report, prepare for the final presentation, and perform final system tests.	Final Report
Week 14	Final Submission & Viva	Submit all project materials (report and source code) and conduct the final viva.	Final Presentation & Submission

10. Conclusion

The "Learn Mate" project directly addresses the significant operational and communication challenges faced by the educational institute. By replacing outdated, manual processes with a centralized, web-based system, this project will deliver a more efficient, transparent, and connected environment for the entire school community. The proposed system will automate administrative tasks, provide teachers with powerful academic management tools, and empower students and parents with immediate access to important information.

Our team has a clear understanding of the project requirements and has laid out a realistic development plan to be executed within the 14-week semester. The defined scope, structured timeline, and clear assignment of functions ensure that the project is both ambitious and achievable. We are confident that the "Learn Mate" system will provide substantial value to its users and serve as a strong foundation for future digital initiatives at the institute.