

Sylhet Engineering College



Computer Science and Engineering

Course Name: Project

Course Code: CSE 702

{ Project Proposal on Hall Management System }

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Submitted To:

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#01: Title

Hall Management System

#02: Executive Summary

The Hall Management System (HMS) is a comprehensive software solution designed to streamline the management of hostel facilities within our college. It provides a centralized platform for administrators, hall provosts, and students to efficiently manage various aspects of hostel operations.

#03: Letter of Transmittal

March 20, 2024

Abdur Rouf

Principal

Sylhet Engineering College, Sylhet, Bangladesh

Subject: Submission of Hall Management System Project Proposal

Dear Sir,

We're pleased to submit the proposal for the "Hall Management System" (HMS) project. Designed to streamline hostel operations, the HMS aims to enhance efficiency and communication for students and staff.

We believe the HMS will greatly benefit our college community. We look forward to your approval to proceed with the project.

Thank you for your consideration.

Yours Sincerely,

Enamul Hasan, 2019331503

Rejwanul Haque, 2019331512

Saptak Roy, 2019331515

Department: Computer Science & Engineering (CSE)

#04: Introduction

In today's digital era, efficient management of college hostel facilities is essential for ensuring a smooth and conducive living environment for students. With the increasing complexities of hostel operations and the need for enhanced communication and transparency, we propose the development of a comprehensive Hall Management System (HMS).

The Hall Management System (HMS), is designed to address the challenges faced in managing hostel facilities within our college. By providing a centralized platform for administrators, hall provosts, and students, the HMS aims to streamline processes such as room allocation, fee collection, maintenance requests, and communication.

With the HMS, administrators can efficiently manage room assignments and financial transactions, while students can easily access information, submit maintenance requests, and receive timely notifications. By fostering collaboration and transparency, the HMS will contribute to a positive hostel experience for residents and optimize administrative efficiency for college staff.

We believe that the implementation of the Hall Management System will significantly enhance hostel management within our college, ultimately benefiting the entire college community.

#05: Member Introduction

Our team consists of three members.

Name: Enamul Hasan,

Reg No: 2019331503

Name: Rejwanul Haque,

Reg No: 2019331512

Name: Saptak Roy,

Reg No: 2019331515

Department: Computer Science & Engineering (CSE)

#06: Objectives

1. Develop an Intuitive User Interface:
 - Create a user-friendly interface for administrators, hall provosts, and students to navigate the HMS seamlessly.
 - Implement intuitive controls and clear navigation pathways to enhance user experience.
2. Streamline Room Allocation and Management:
 - Automate the room assignment process based on student preferences and availability.
 - Provide efficient tracking and modification capabilities for room allocations.
3. Centralize Student Information Management:
 - Establish a centralized database for storing student profiles, contact information, and other relevant details.
 - Ensure easy access and management of student information for administrators and hall provosts.
4. Facilitate Online Fee Collection and Billing:
 - Integrate online payment gateways for hassle-free fee collection and invoice generation.
 - Provide financial reporting functionalities to track fee collections and expenses accurately.
5. Enhance Maintenance and Complaint Management:
 - Develop a system for residents to submit maintenance requests and track their status.
 - Implement a feedback mechanism for residents to provide feedback on maintenance services.
6. Improve Communication and Notifications:
 - Create a messaging platform for administrators to communicate announcements, notices, and updates to residents.
 - Implement automated notifications for room assignments, maintenance schedules, and fee deadlines.
7. Generate Comprehensive Reporting and Analytics:

- Generate reports on room occupancy, fee collections, maintenance requests, and other key metrics.
 - Provide data analytics tools for identifying trends, patterns, and areas for improvement in hostel operations.
8. Ensure Mobile Accessibility:
- Develop a mobile-responsive web interface or mobile app for residents to access hostel services on-the-go.
 - Optimize user interfaces for administrators to manage hostel operations from smartphones or tablets.
9. Enable Integration and Customization:
- Offer customization options to tailor the HMS to the specific needs and preferences of the college.
 - Provide APIs and developer tools for extending functionality or integrating with third-party services.
10. Ensure Security and Data Privacy:
- Implement robust security measures to protect user data and prevent unauthorized access.
 - Ensure compliance with data privacy regulations and standards to safeguard sensitive information.

These objectives outline the key features and considerations for the development and implementation of the Hall Management System, aiming to enhance hostel operations and improve the overall experience for residents and administrators. Adjustments can be made based on specific project requirements and priorities.

#07: Project features

1. User Management:

In a Hall Management System (HMS) software with different types of user role access such as Student, Hall Provost and Administrator, it's essential to include features that cater to the specific needs and responsibilities of each user role. Here are some key features for each user role:

1. Administrator:

- Responsible for overall management and administration of the HMS.
- Has access to all features and functionalities of the system.
- Can add, modify, or delete user accounts, rooms, facilities, and other system settings.
- Manages financial aspects such as fee collection, budgeting, and expense tracking.
- Generates reports, analyzes data, and makes strategic decisions to optimize hostel operations.

2. Hall Provost/Manager:

- Oversees the management of a specific hostel or hall within the college.
- Responsible for room allocation, maintenance, and security within the assigned hall.
- Manages resident issues, complaints, and requests for facilities and services.
- Conducts periodic inspections of rooms and common areas to ensure cleanliness and compliance with regulations.
- Collaborates with administrators and other stakeholders to implement policies and procedures for hostel management.

3. Students/Residents:

- Occupants of the hostel rooms who reside within the college premises.
- Can access features such as room booking, fee payment, maintenance requests, and complaint submission.

- Manage personal information, preferences, and contact details through their user accounts.
- Follow hostel rules and regulations regarding behavior, visitor policies, and facility usage.
- Provide feedback and suggestions to improve hostel services and amenities.

Additionally, the software should include role-based access control (RBAC) mechanisms to ensure that users only have access to features and data relevant to their role. This helps maintain security and confidentiality while enabling efficient management of hostel operations by respective user roles.

2. Room Allocation and Management:

- 2.1. Automated room assignment based on student preferences, availability, and specific requirements.
- 2.2. Ability to assign, modify, and track room allocations efficiently.

3. Student Information Management:

- 3.1. Centralized database for storing student profiles, including personal details, contact information, emergency contacts, etc.

4. Fee Collection and Billing:

- Online payment gateway integration for collecting hostel fees and other charges.
- Generation of invoices, receipts, and financial reports.
- Automated reminders for overdue payments and notifications of payment status.

5. Maintenance and Complaint Management:

- System for residents to submit maintenance requests, report issues, and track their status.
- Assignment of tasks to maintenance staff, scheduling of repairs, and monitoring of completion.
- Feedback mechanism for residents to rate and provide feedback on maintenance services.

7. Communication and Notifications:

- Messaging platform for administrators to communicate announcements, notices, and updates to residents.
- Automated notifications for room assignments, maintenance schedules, fee deadlines, etc.

8. Reporting and Analytics:

- Generation of reports on room occupancy, fee collections, maintenance requests, etc.
- Data analytics tools for identifying trends, patterns, and areas for improvement.

9. Mobile Accessibility:

- Mobile app or responsive web interface for residents to access hostel-related services and information on-the-go.
- Mobile-friendly interfaces for administrators to manage operations from smartphones or tablets.

10. Integration and Customization:

- Customization options to tailor the software to the specific needs and preferences of the college or university.
- APIs and developer tools for extending functionality or integrating with third-party services.

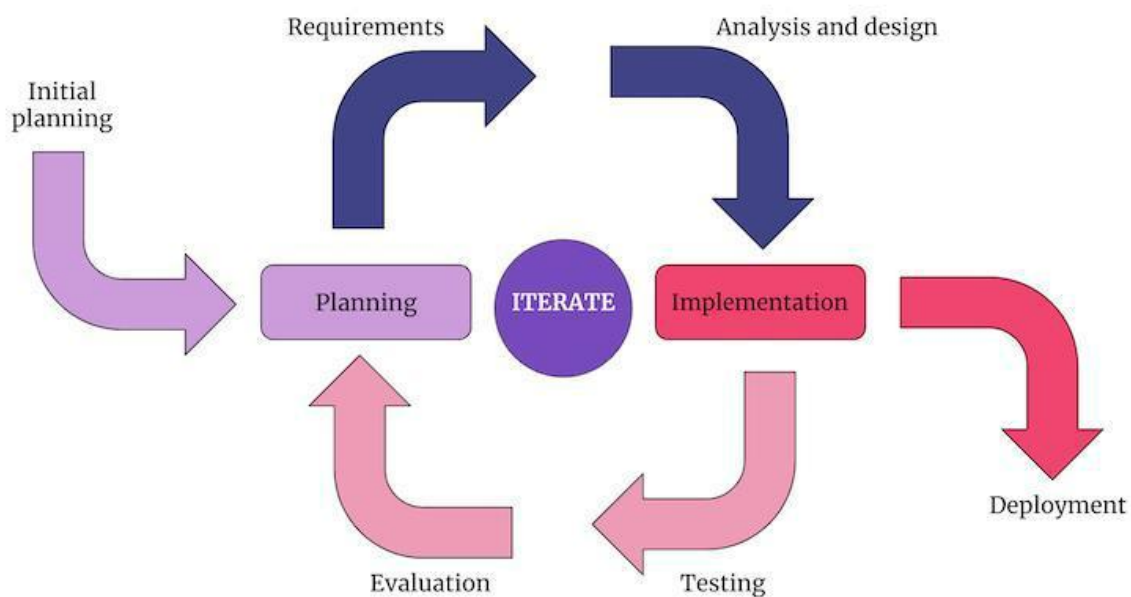
By incorporating these features, a Hall Management System software can effectively streamline operations, enhance communication, and improve the overall experience for administrators and residents alike.

#08: Tools

1. Back-end: Python with Django framework.
2. Front-end: HTML, CSS, Bootstrap, Javascript & JQuery.
3. SQL for Performing Query in Database.
4. SQLite for development / MySQL Database for production.
5. Git and github for version control system.
6. I.D.E: Visual Studio code.

#09: Methodology

The incremental model is a software development process that divides requirements into numerous separate modules during the software development cycle. Each module in this paradigm goes through the processes of requirements, design, implementation, and testing. Every release of the module after then adds functionality to the preceding iteration. The procedure is repeated until the entire system is completed.



#10: Project Planning

The project will be completed over a duration of 10 months, with each month dedicated to specific development tasks and testing phases. A detailed timeline is provided below. We have planned our project with five processes. Those area given below:

1. We will have full basic idea of project and new features within half month.
2. We will start designing database schema changes from the mid of first month to the second month.
3. Then initial design for the project structure in between month one to month two.

4. Then the development of the project will be starting from end of the month two to eighth month.
5. Then features addition will be completed between end of the second month to middle of the week eighth.
6. Then the end of the eighth month to the final month,
 1. We will deploy the project to the test environment and fix any issues if arise.
 2. By the completion of the testing phase, we will submit the project to the supervisor.

Tasks	Time interval	Remarks
Basic idea and Structure	Month 01 Day: 01 - 30	
Database Schema Design	Month 01 Day: 07 - Month 02	ER Diagram Design
Initial Design of Prototype	Month 01 – Month 03	
Development phase	Month 02 – Month 07	Frontend and Back-end development
New Features addition	Month 02 – Month 07	
Bug Fixing phase	Month 08 – Final day	SQA Testing

#11: Feasibility analysis

1. Technical Feasibility:

Resource Availability: The project team has access to the necessary technical resources, including developers proficient in Python with Django framework, front-end developers skilled in HTML, CSS, Bootstrap, JavaScript & jQuery, and database administrators experienced in SQL and SQLite/MySQL.

Technology Stack: The selected technology stack is well-established and widely used in web development, ensuring compatibility, reliability, and scalability.

Scalability: The chosen technologies and architecture are capable of accommodating the expected user load and scalability requirements, with provisions for scaling resources as needed.

Integration: Necessary third-party tools and APIs, such as online payment gateways and social media integrations, are available and can be seamlessly integrated into the system.

2. Operational Feasibility:

User Requirements: User needs and expectations have been thoroughly analyzed through stakeholder consultations and user surveys, ensuring that the HMS features align with user requirements.

User Engagement: Market research and competitor analysis have been conducted to assess the website's potential to attract and engage users. Strategies for fostering user engagement, such as personalized notifications and social sharing features, are integrated into the system.

Content Moderation: Operational processes for content moderation, user management, and enforcing community guidelines are defined to ensure a safe and positive user experience. Moderation tools and procedures are implemented to address any inappropriate content or user behavior.

Scalability Planning: The project includes plans for handling increased traffic and user-generated content, such as scalable hosting solutions and efficient database management practices.

3. Schedule Feasibility:

Project Timeline: A well-defined project timeline has been developed, outlining key milestones and deliverables for each phase of the project, including requirements gathering, design, development, testing, deployment, and maintenance.

Resource Allocation: Human resources, including developers, designers, testers, and project managers, are allocated according to the project schedule, ensuring optimal resource utilization and timely completion of tasks.

Milestones: Key project milestones and deadlines are established to track progress effectively and monitor project timeline adherence. Regular progress reviews and status updates are conducted to identify and address any deviations from the schedule.

4. Risk Assessment:

Risk Identification: Potential risks and challenges, such as technical complexities, resource constraints, and changes in project scope, have been identified through risk analysis workshops and stakeholder discussions.

Risk Mitigation: Strategies and contingency plans have been developed to mitigate identified risks, including proactive risk monitoring, stakeholder communication, and adaptive project management practices. Risk mitigation measures are integrated into the project plan to minimize the impact of unforeseen events on project delivery.

5. Sustainability and Growth:

Long-term Sustainability: The project considers long-term sustainability, including ongoing maintenance, updates, and feature enhancements, to ensure the HMS remains relevant and effective in meeting user needs over time. Sustainability strategies, such as regular software updates, bug fixes, and user feedback mechanisms, are implemented to maintain system performance and usability.

User Growth: Strategies for attracting and retaining users, such as targeted marketing campaigns, user engagement initiatives, and community building efforts, are outlined to ensure the HMS achieves sustainable user growth and

remains competitive in the market. Continuous user feedback and data analytics are leveraged to identify opportunities for improvement and innovation, driving user satisfaction and loyalty.

#12: Conclusion

In summary, the Hall Management System project aims to revolutionize hostel management within our college, providing a comprehensive software solution to streamline processes, enhance communication, and optimize administrative efficiency. Through this project, we have gained valuable technical expertise and hands-on experience in web development tools and system integration. We believe that the implementation of the HMS will mark a new era in hostel management, offering enhanced transparency, efficiency, and user experience for residents and administrators alike.