

EEY4189: SOFTWARE DESIGN IN GROUP

THE OPEN UNIVERSITY OF SRI LANKA
FACULTY OF ENGINEERING TECHNOLOGY
DEPARTMENT OF ELECTRICAL AND COMPUTER
ENGINEERING BACHELOR OF SOFTWARE
ENGINEERING

Project Proposal Report Submission

OU-HOSTEL MANAGEMENT SYSTEM

Group members: -

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Supervisor Approval Page

I have reviewed the project proposal and approve its content.

Supervisor's Name:

Ms. Kirushika Jeyachandran

Signature:

A handwritten signature in black ink, appearing to read 'S. Kirushika', written in a cursive style.

Date:

13.09.2024

Introduction

University students, particularly those from remote villages, face significant difficulties in securing hostel accommodation upon their arrival at the university. The lack of a reliable, efficient hostel management system leads to confusion and inconvenience for both students and hostel administrators. Currently, students struggle with the availability of accurate information regarding room availability, and hostel staff face challenges in managing room allocations and tracking occupancy rates.

A streamlined hostel booking system can alleviate these challenges by offering real-time room availability, a simplified booking process, and better communication between students and hostel administrators. Our project aims to address these issues by developing a comprehensive hostel booking system that leverages modern technology to enhance the overall experience for university students and improve the efficiency of hostel management.

Problem Statement and Project Objectives

Problem Statement:

University students face significant challenges in finding available hostel rooms upon their arrival. The current hostel management system lacks transparency and efficiency, leading to confusion and inconvenience for both students and hostel administrators.

Challenges Faced:

1. **Limited Availability Information:** Students lack a reliable method to check room availability before arriving at the university, leading to last-minute accommodation issues.
2. **Inefficient Booking Process:** The existing system doesn't offer a centralized way for students to book rooms, resulting in manual processes prone to errors and delays.
3. **Room Utilization Management:** Hostel staff struggle to track real-time room occupancy, causing underutilization or overbooking.
4. **Communication Gaps:** Lack of timely notifications and updates for students regarding their bookings and hostel-related information.
5. **Payment Hassles:** Without a streamlined payment system, students face difficulties in paying for bookings or deposits.

Project Objectives:

1. To develop a user-friendly hostel booking system that provides real-time availability checks, an efficient booking process, and an integrated payment gateway.
2. To create an admin dashboard for hostel staff to manage room allocations, track occupancy rates, and send automated notifications, ensuring efficient utilization of hostel resources.

Introduction to Similar Type of Systems

Several hostel and accommodation management systems are currently in use, each offering various features to improve booking and management processes. Examples include:

1. **Dormitory Management Systems:** These systems offer features like room assignment, maintenance tracking, and occupancy monitoring. They often lack real-time availability checks and integrated payment systems.
2. **Hotel Booking Systems:** Popular hotel booking platforms such as Booking.com and Airbnb provide comprehensive booking processes, real-time availability checks, user reviews, and secure payment gateways. However, they are tailored for short-term stays rather than long term student accommodations.
3. **University Housing Portals:** Many universities have their own housing portals for students to apply for on-campus housing. These portals typically provide application processes and information about available rooms but may lack real-time updates and advanced booking features.

Our proposed system aims to combine the best features of these existing systems while addressing the specific needs of university hostel management.

Proposed Solution (Including high-level use case diagram)

Proposed Solution:

Our project aims to develop a comprehensive hostel booking system that addresses the challenges faced by university students and hostel administrators by providing:

1. **Real-time Availability Checks:** Students can easily check room availability online before their arrival, ensuring a smoother transition and reducing last-minute accommodation issues.
2. **Efficient Booking Process:** A user-friendly platform where students can book rooms with specified preferences, streamlining the booking process and reducing administrative workload.
3. **Room Management Tools:** An admin dashboard for hostel staff to manage room allocations, track occupancy rates, and ensure efficient utilization of hostel resources
4. **Automated Notifications:** Automated notifications and alerts for students regarding their bookings, check-in reminders, and any changes or cancellations, improving communication and reducing confusion.
5. **Feedback Mechanism:** A feedback system for students to provide their hostel experience feedback, enabling continuous improvement and addressing any issues promptly.

High-level Use Case Diagram



Technology Planning to Use - Backend / Frontend

Our project will use Bootstrap Studio for front-end design and Firebase for backend services to create a modern, scalable hostel booking system.

Frontend:

1. Bootstrap Studio

Responsive UI Design: Create user-friendly interfaces with a drag-and-drop tool, generating HTML, CSS, and JavaScript code.

Backend:

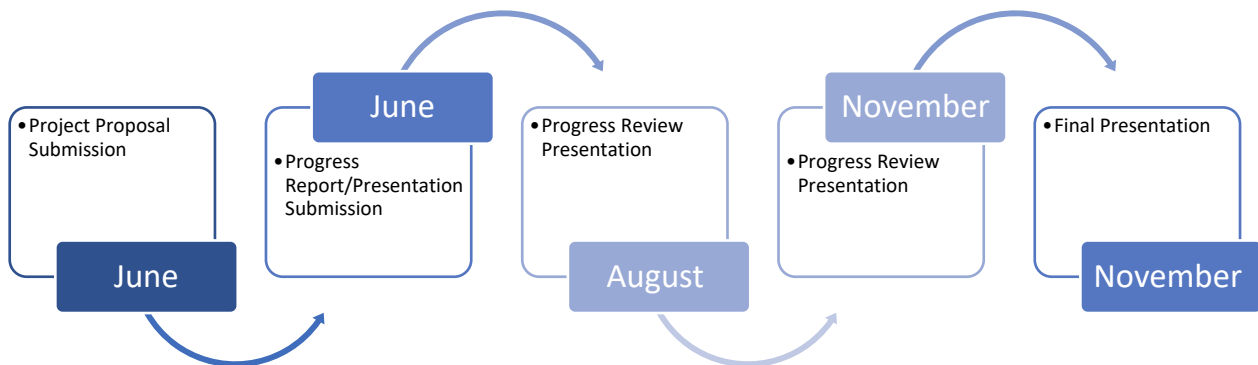
1. Firebase Database

Realtime Database: NoSQL JSON database for real-time data synchronization.

2. Firebase Authentication

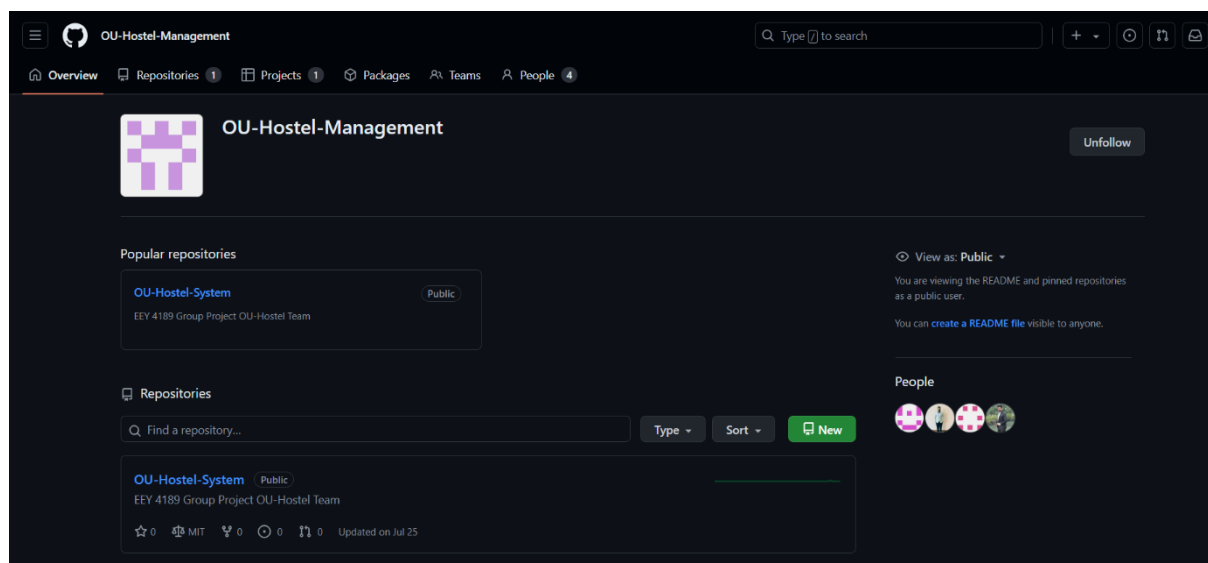
User Management: Handles sign-up, login, password reset, and user roles securely.

Project Timeline and Conclusion



Git Repository

<https://github.com/OU-Hostel-Management>



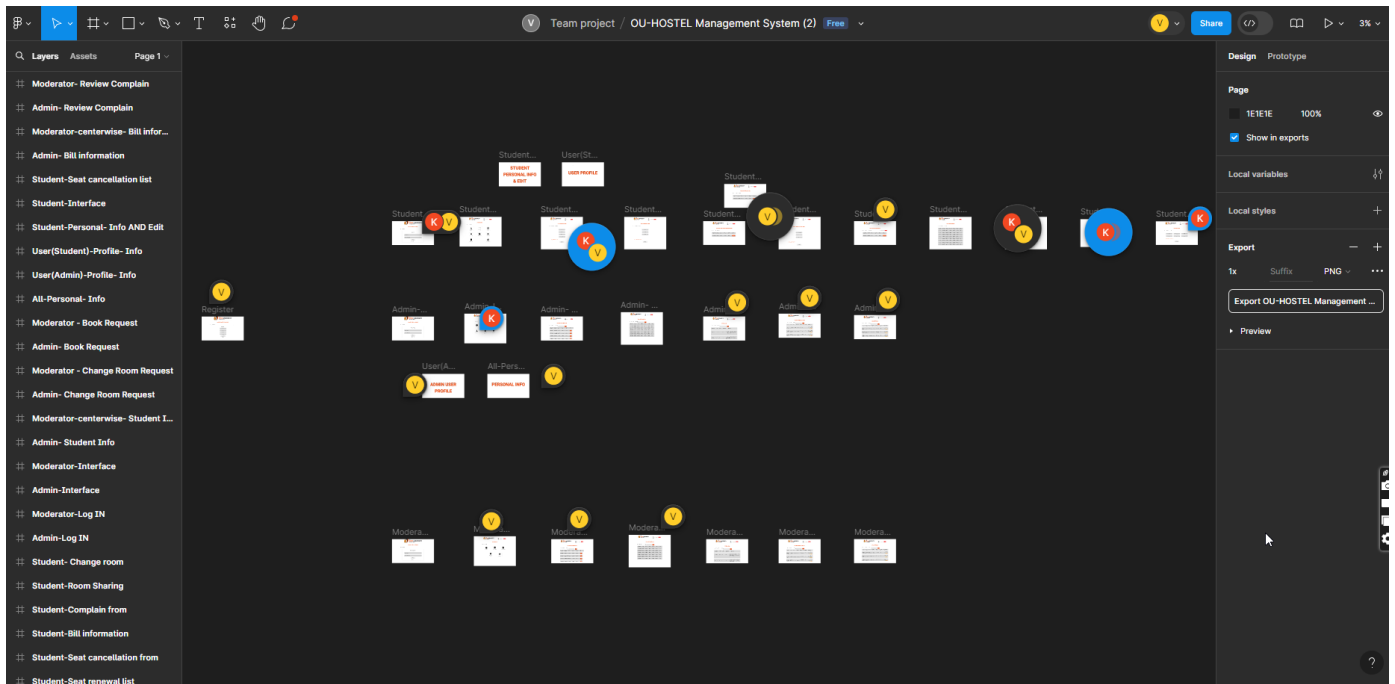
Progress Summary

As a group, we have made significant progress on our Hostel Management System project:

- **UI Interfaces:** We successfully designed the entire user interface for the application. While the interfaces are not yet coded, the wireframes and design layouts are complete, providing a clear visual guide for the next steps in frontend development.
- **Backend Logic:** We have thoroughly reviewed and developed the backend logic of the system, ensuring that it aligns with the project's functional requirements. This backend structure will support essential operations such as user management, room assignments, and payment processing.
- **GitHub and Trello Board:** We have set up a GitHub repository for version control and have started actively managing our project on Trello. Our team is regularly updating both platforms, tracking our progress, assigning tasks, and maintaining organization throughout the development cycle.

This progress sets a solid foundation for the next phase of the project, where we will focus on integrating the frontend with the backend and finalizing all functionalities.

Screenshot Of UI Interfaces.



Here are the OU Hostel project UI interfaces we've been developing using Figma, showcasing the collaborative efforts of all team members. Below are some examples of the UI designs.

Register

THE OPEN UNIVERSITY OF SRI LANKA

HOSTEL PORTAL REGISTER

HOME > USER REGISTRATION

Registration

id

Full Name

Department

User Type

REGISTER

FORGET PASSWORD



THE
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HOSTEL PORTAL LOG IN

HOME > STUDENT LOG IN

Log In Portal



Enter your ID

Enter your password

LOG IN

FORGOT PASSWORD?



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Y11902018 | Md. Hasan

LOG OUT

DASHBOARD

HOME > HALL MANAGEMENT



Student Info



Bill Information



Review Complaint



Personal Info



Room Change
Request



Book Request





COMPLAINS

[HOME](#) > [HALL MANAGEMENT](#) > [REVIEW COMPLAIN](#)


Search

Student ID	Hall	Level	Room/Seat	Complain
191902069	Hall-01	Level -7	E-707	A student named (*****) id : 191**** has been bullying all the students and threatening to hurt them if they don't ovey him. he also smoke.
191902069	Hall-01	Level -7	E-707	A student named (*****) id : 191**** has been bullying all the students and threatening to hurt them if they don't ovey him. he also smoke.



DASHBOARD

[HOME](#) > [HALL MANAGEMENT](#)


Student Info



Bill Information



Review Complaint



Personal Info

Room Change
Request

Book Request

We've added some UI interfaces above, but not all, as we are currently making updates based on recent backend logic changes discussed in our project meetings with the group.

CMMI meeting minutes

Project : OU-HOSTEL MANAGEMENT SYSTEM

Date : 25th of Aug 2024

Time : 10:00 AM - 11:00 AM

Location : Zoom Meeting

Attendees :

W.K.V.P Randunu	-: Lead Developer
W.M.U.M.Wijerathna	-: UI/UX Designer
P.G.R.K.E. Peramuna	-: Quality Assurance
K.A.M.S.Kumarasinghe	-: Database Administrator

Agenda :

1. Review of current project status.
2. Discuss CMMI Level 2 practices.
3. Identify risks and mitigation strategies.
4. Assign action items for the next sprint.

Discussion Points :

1. Project Status Update :

Randunu provided an overview of the current progress. The backend and database structure are will be Start, and the Several UI designs are completed. The team is on track with the development timeline.

2. CMMI Level 2 Practices :

Requirements Management : Randunu emphasized the importance of managing user requirements effectively. The team discussed setting up a dedicated document repository to track changes in user requirements.

Project Planning : Randunu suggested refining the project plan to include more detailed milestones and deliverables.

Configuration Management : Kumarasinghe proposed using GitHub for version control to ensure proper configuration management and traceability of code changes.

3. Risk Identification and Mitigation :

Risk : Potential delays due to unexpected bugs in the backend.

Mitigation : Peramuna suggested integrating regular code reviews and automated testing to catch bugs early.

Risk : Possible UI/UX design conflicts with functionality.

Mitigation : Wijerathne and Randunu agreed to collaborate closely during the integration phase to ensure that design and functionality are aligned.

4. Action Items :

Randunu : Set up the document repository for tracking user requirements (Due: August 30, 2024).

Kumarasinghe : Configure GitHub repository with proper branching strategy for version control (Due: August 29, 2024).

Wijerathne : Finalize the UI/UX design and share it with the development team (Due: September 1, 2024).

Peramuna : Develop a testing plan for the backend and frontend integration (Due: September 2, 2024).

Decisions Made :

The team agreed to follow CMMI Level 2 practices for requirements management, project planning, and configuration management.

Regular code reviews and automated testing will be implemented to mitigate risks.

Next Steps :

The next meeting will be on September 7, 2024, to review progress and address any challenges encountered during the sprint.

Meeting Adjourned : 11:00 AM

Conclusion

By implementing the proposed hostel booking system, we aim to enhance the overall experience for university students and improve the efficiency of hostel management. The system will provide real-time availability checks, a streamlined booking process, room management tools, automated notifications, an integrated payment gateway, and a feedback mechanism. These features will create a more transparent, user-friendly, and organized system for all stakeholders involved, ultimately addressing the challenges faced by students and hostel administrators.