

Smart Hostel Management System

Project Proposal



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Team Members

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Requirement Provider (RP)

Ms. Nida Sultan Nahra
(Hostel Warden, Namal University)

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1 Requirement Provider Agreement

This agreement confirms the collaboration between the student team and the Requirement Provider (RP) for the Smart Hostel Management System project. The goal of this agreement is to formalize the RP's role in providing requirements, feedback, and acceptance testing during milestone reviews.

Agreement Terms

- The RP (Ms. Nida Sultan Nahra) agrees to act as the primary user and subject matter expert for the Smart Hostel Management System.
- The Team agrees to meet the RP at least once every two weeks (physically or virtually) and to maintain meeting minutes for each meeting.
- The Team will produce the Milestone-1 deliverables (project proposal in LaTeX, meeting minutes template, and a recorded first meeting) and incorporate RP feedback in later milestones.
- The RP acknowledges that the current deliverable is a software model/proposal; later work may convert the model to a deployed online system.

Signatures

Team Representative:

Name: Muhammad Ahmad

Sign:

Date: November 8, 2025

Requirement Provider:

Name: Ms. Nida Sultan Nahra

Sign:

Date: November 8, 2025

2 Introduction

Hostel's are a main part of Namal University. Both male and female live in the same hostel area but they are separated by secure boundaries. They share some common areas in the hostel as like the cafeteria where both girls and boys can go for meal.

There is a problem that a lot of tasks are still done by hands. These tasks includes marking attendances, verify for the visitors permissions, rooms Division and the mess complaints. Students mark their attendances on a biometric machines by 10:00 pm, and then wardens have to verify these attendance by hands. There is no automatic system to track the absence students or to easily confirm leaves , which can helpful in tracking and overlooked absent students.

That's why we are creating Smart Hostel Management System (SHMS). It will help with attendance, room allocation, gate passes and even mess complaints. The goal is to make hostel life more organised and efficient. The project is being led by Ms. Nida Sultan Nahra, who is a hostel warden and en English lecturer. She is working with students to develop the system and in this way it will be a big help to everyone involved.

3 Problem Statement

Namal University follows basically a manual hostel management system, which reflects how delays and errors are part of daily life. For attendance, permission to exit, room allocation, and messing, different and inconsistent methods are in place. For example, girls' attendance is taken manually; boys have different systems with biometric working for them, while the exit permissions depend on slip papers, causing inconvenience and security hazards.

Also, there is no proper digital system for tracking visitors or day scholars; room records and mess records are managed manually, creating total confusion. The problems demand the need for a centralized automated hostel management system, which will digitally handle the keeping of attendance, exit, room allocation, and mess usage information in real time with efficiency, transparency, and safety for the students and staff.

4 Project Objectives

Smart Hostel Management System will be used to:

- Digital attendance tracking and automatic informing absentees using biometric data integration.
- Allows for online gate passes and has the option to submit applications as digital proof before exiting the hotel/university and notifications.
- Manage hostel room allocation according to the capacity and availability for students.
- Introduce digital mess management for online payments, debit using student accounts, mess menus, and also complaint handling.

- Create an integrated student database that updates the hostel and university system to improve management.
- Reduce the administrative burden on the warden and improve transparency for all stakeholders.

5 Stakeholder Identification

- **Requirement Provider (RP):** Ms. Nida Sultan Nahra, Hostel Warden and Lecturer who identified real-world issues.
- **Hostel Warden and Assistants:** End-users for attendance verification, approvals, and room assignments.
- **Students (Residents):** Main users who will request gate-passes, report maintenance issues, and mark attendance.
- **Mess Committee / Staff:** Users who will post menus, handle payments, and record complaints.
- **Security Guards:** Personnel responsible for validating approved passes and monitoring movements.

6 Software Development Methodology

An **Agile (Scrum-inspired)** approach will be used for this system because this allows iterative progress and also frequent feedback from the RP. Each of its milestones will serve as a sprint focusing on new modules such as attendance, gate pass, room management, and mess operations.

- Its short sprints include design, feedback, and refinement stages.
- Meetings with RP will be held biweekly for demonstrations and review.
- Documentation and the prototype will be the updated version controlled on GitHub.

7 Tools and Technologies

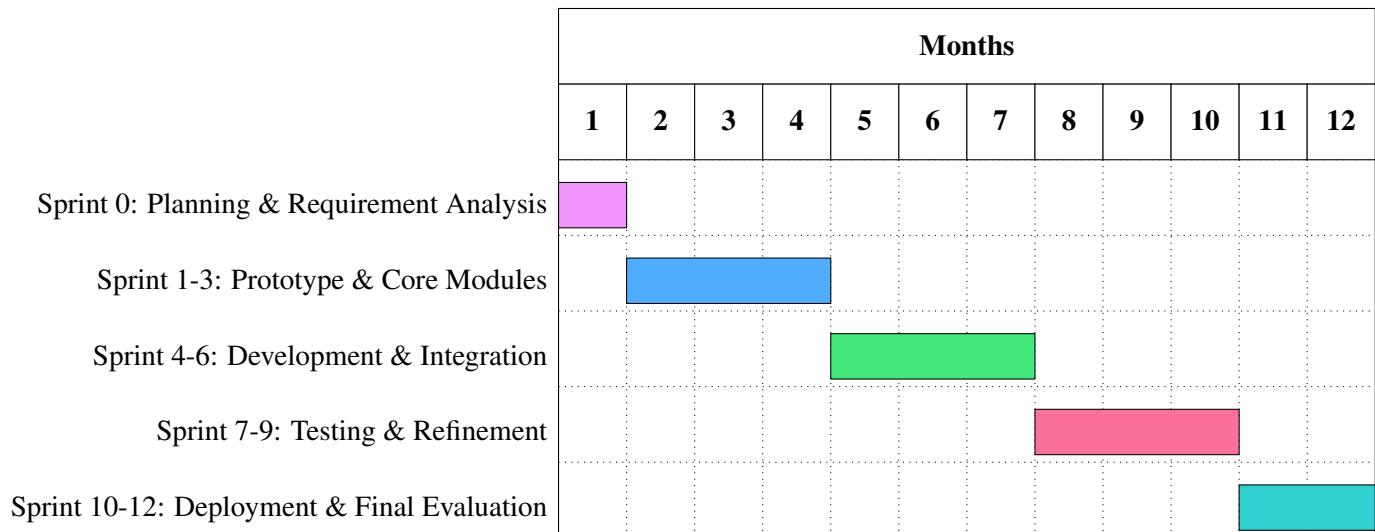
- **Front-End:** React.js (component-based interface)
- **Back-End:** Node.js + Express.js (mock API for model stage)
- **Database:** JSON fixtures or MongoDB for future deployment
- **Design:** Figma (for wireframes and user flows)
- **Version Control:** GitHub (repository and issue tracking)
- **Documentation:** LaTeX (formal report preparation)

8 Core Functionalities

1. **Attendance Module:** Auto attendance record will be linked with biometric data and a real-time dashboard for the warden.
2. **Gate-Pass System:** Online leave records will be saved as any student exits the hostel/university.
3. **Room Management:** Allocation according to room capacity, real-time vacant room view, and clearance tracking after a specific time set by the warden.
4. **Mess Management:** Menu publishing, complaint handling, and entering meal amount in student account as debt.
5. **Day Scholar tracking:** Notifications for the entry of day scholars in the hostel premises.
6. **Centralized Student Record:** Unified database for attendance, permissions, and hostel history for better management.

9 Project Timeline

Project Development Gantt Chart



References

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