Smart Hostel Management System

Project Proposal

Department of Computer Science
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Team Members

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

Submission Date: November 8, 2025

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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:	Requirement Provider:
Name: Muhammad Ahmad	Name: Ms. Nida Sultan Nahra
Sign: 	Sign: 
Date: November 8, 2025	Date: November 8, 2025

2 Introduction

Hostels are an integral part of Namal University's campus life. Both male and female students live within a single shared hostel boundary, but each hostel area is separated by secure boundaries. The hostels share a common cafeteria and study/event area, where students can interact and study together before returning to their respective hostels at night. Currently, many hostel-related activities—such as attendance, visitor permissions, room allocation, and mess complaints—are handled manually. Female residents, for example, mark their attendance on a biometric machine by 10:00 pm, and wardens have to verify attendance reports manually. There is no automated system to track absentees or to easily confirm leaves, which can lead to errors or unintentional absences being overlooked. Manual gate-pass slips, unclear room allotments, and non-digital records increase administrative workload and confusion. These challenges inspired this project, **Smart Hostel Management System (SHMS)**, a web-based software model proposed under the guidance of Ms. Nida Sultan Nahra (Hostel Warden and English Lecturer). The project aims to digitize attendance, room management, gate-pass permissions, and mess tracking in a single portal accessible to wardens, students, and hostel staff.

3 Problem Statement

The existing hostel management process at Namal University is largely manual, leading to inefficiencies and delays. Key issues include:

- Manual attendance tracking for girls via biometric machines, and no automated system for boys, causing time-consuming verification and errors.
- Hostel exit procedures rely on written permission slips, which may be unavailable outside office hours, making emergency exits difficult.
- Day scholars and visitors are not tracked digitally, creating confusion for hostel security.
- Room allocation conflicts arise due to varying capacities and incomplete clearance when students leave.
- Mess payments and emergency meal requests lack flexibility and are difficult to manage manually.
- Female students' movement restrictions after 10:00 pm are enforced manually, creating potential safety and monitoring gaps.

These issues highlight the need for a centralized, automated system that tracks attendance, exits, room occupancy, and mess usage in real time, ensuring security, efficiency, and transparency for both students and hostel staff.

4 Project Objectives

The Smart Hostel Management System aims to:

- Digitize attendance tracking and automate absentee detection through biometric data integration.
- Enable online gate-pass and leave applications with digital approvals and notifications.
- Manage hostel room allocation dynamically according to capacity and availability.
- Introduce digital mess management for payments, menus, and complaint handling.
- Create an integrated student database that updates across all hostel services.
- Reduce administrative load 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 followed because it allows iterative progress and frequent feedback from the RP. Each milestone will serve as a sprint focusing on new modules such as attendance, gate-pass, room management, and mess operations.

- Short sprints will include design, feedback, and refinement stages.
- RP meetings will be held bi-weekly for demonstrations and review.
- Documentation and prototype updates will be version-controlled on GitHub.

7 Tools and Technologies

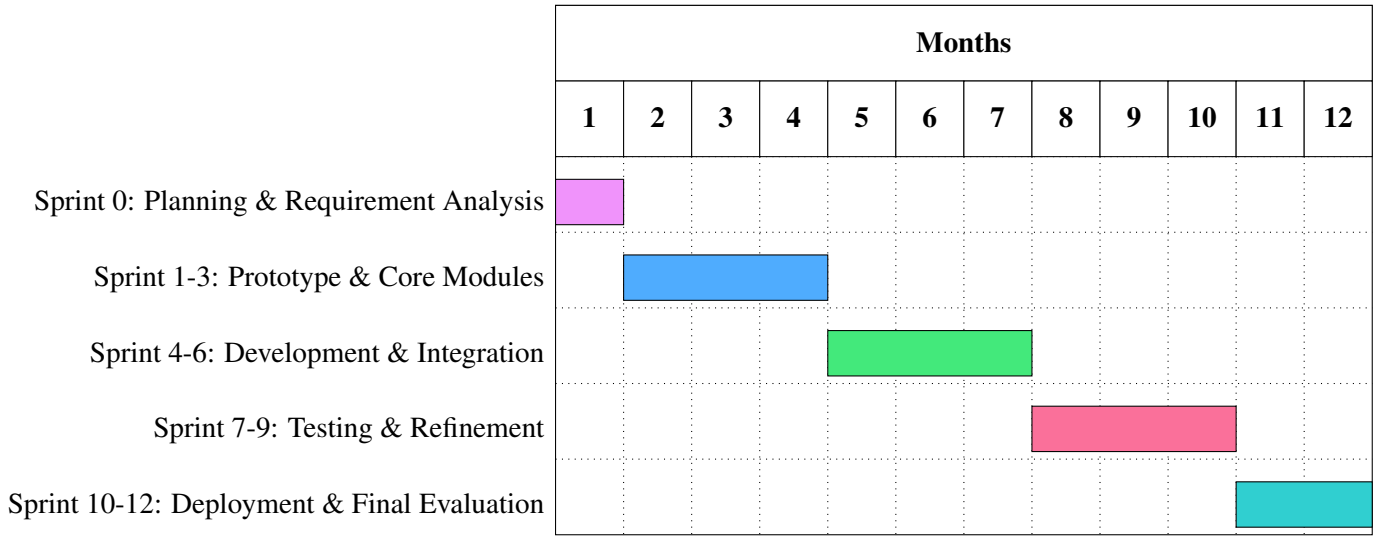
- **Design:** Figma (for wireframes and user flows)
- **Version Control:** GitHub (repository and issue tracking)
- **Documentation:** LaTeX (formal report preparation)

8 Core Functionalities

1. **Attendance Module:** Automated attendance record linked with biometric data and real-time dashboard for wardens.
2. **Gate-Pass System:** Online leave and outing requests with digital approval and security notifications.
3. **Room Management:** Allocation according to capacity, real-time vacant room view, and clearance tracking.
4. **Mess Management:** Menu publishing, complaint handling, and emergency meal requests with limited credit.
5. **Day Scholar and Visitor Tracking:** Notifications for security when day scholars or visitors enter hostel premises.
6. **Centralized Student Record:** Unified database for attendance, permissions, and hostel history.

9 Project Timeline

Project Development Gantt Chart



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