Software Requirement Specification for Hostel Room Allocation and Management System

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Project ID	16
Problem Statement	HOSTEL ROOM ALLOCATION AND MANAGEMENT SYSTEM.

1. Introduction

1.1. Purpose:

The purpose of this document is to present a detailed description of the (HOSTEL ROOM ALLOCATION AND MANAGEMENT SYSTEM). It will explain the purpose and features of the system, the interfaces of the system, what the system will do, the constraints under which it must operate and how the system will react to external stimuli.

1.2. Scope of Project:

- The scope of the hostel management system project involves developing a comprehensive web-based portal to efficiently manage various aspects of hostel operations. The system aims to streamline room allocation, occupancy tracking, and

overall hostel management processes. It will include features such as room capacity management, real-time status of room vacancies for students and staff, identification of vacant rooms, detailed room allocation records, categorization of room types, comprehensive information on all hostel blocks, room booking for outsiders, tracking of total admitted strength, specifying hostel building area in square meters, and providing room area details.

- The project will focus on enhancing user experience, improving data security, ensuring system reliability, and scalability to accommodate future requirements. By automating manual processes and providing a user-friendly interface, the system will optimize hostel management operations, facilitate efficient room allocation, and enhance the overall experience for students, staff, and external guests.

2. System Overview:

The system overview for the hostel management project based on the provided sources is as follows:

1. Portal System for Room Capacity Management:

   Develop a web-based portal to manage and monitor the room capacity across different hostel blocks.

2. Room Vacancy Status (Student/Staff):

   Implement a feature to display the current room vacancy status, differentiating between student and staff occupancy.

3. Place of Vacancy:

   Identify and display the locations (hostel blocks and room numbers) where vacancies are available.

4. Room Allocation Details:

Maintain a comprehensive record of room allocations, including information on assigned occupants, duration of stay, and any specific preferences.

5. Room Types:

   Categorize the rooms available in the hostel based on occupancy types (single, double, suites, etc.).

6. Hostel Block Details:

   Provide detailed information on all the hostel blocks, including their capacities, locations, and any unique features.

7. Room Booking for Outsiders:

   Facilitate the booking of rooms by external parties (non-students/staff) and manage the associated records.

8. Total Admitted Strength:

   Display the total number of students and staff currently admitted to the hostel.

9. Hostel Building Area in Sq m:

   Specify the total area of the hostel buildings in square meters.

10. Room Area in Sq m:

    Provide information on the size of individual rooms in square meters.

This system aims to streamline the hostel room allocation and management processes, ensuring optimal utilization of available resources, enhancing the overall experience for students, staff, and external guests, and enabling data-driven decision-making for the hostel administration

3. System Requirements Specification:

3.1 Functional Requirements:

1. Room Capacity Management:

- Feature: Display total room capacity.
- Feature: Track room occupancy status for students and staff.
- Technology: Utilize a web application framework like Django or Spring Boot for backend development.

2.Room Vacancy Status:

- Feature: Provide real-time information on room vacancies.
- Feature: Differentiate between student and staff vacancies.
- Technology: Implement a relational database (e.g., MySQL) for efficient data storage

3. Place of Vacancy:

- Feature: Identify specific locations with vacant rooms.
- Technology: Use secure authentication mechanisms to restrict access to sensitive data.

4. Room Allocation Details:

- Feature: Maintain records of room allocations.
- Feature: Include information on assigned occupants and duration of stay.
- Technology: Implement RESTful APIs for frontend interaction.

5.Type of Room:

- Feature: Categorize rooms based on occupancy types.
- Feature: Provide details on room amenities.
- Technology: Ensure data encryption for secure storage and transmission.

6.All Hostel Block Details:

- Feature: Present comprehensive information on all hostel blocks.
- Feature: Include capacities, locations, and amenities.
- Technology: Design an intuitive and user-friendly interface for all users.

7.Room Booking for Outsiders:

- Feature: Facilitate booking of rooms by external parties.
- Feature: Manage booking details securely.
- Technology: Generate reports on room occupancy, allocations, and other metrics.
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8.Total Admitted Strength:

- Feature: Display the total number of students and staff admitted.
- Technology: Ensure system response within 2 seconds for efficient usability.

9.Hostel Building Area:

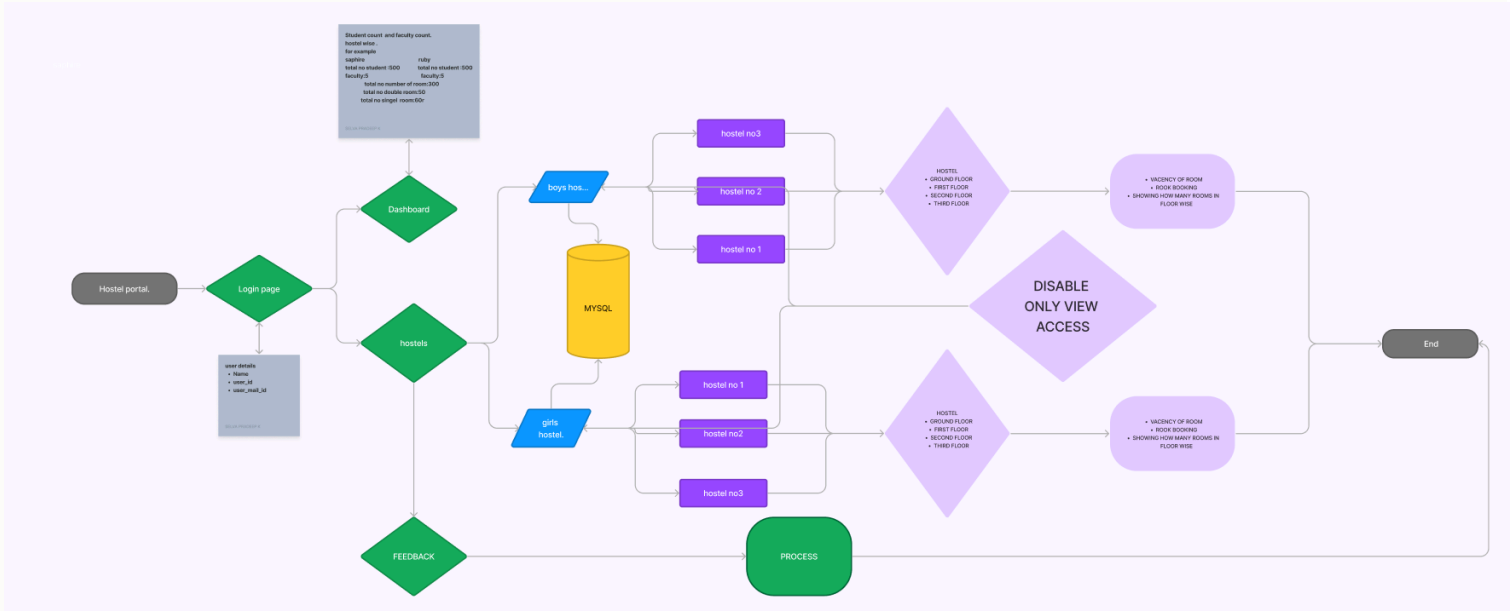
- Feature: Specify the total area of the hostel buildings.
- Technology: Implement a notification system for alerts and updates.

10.Room Area:

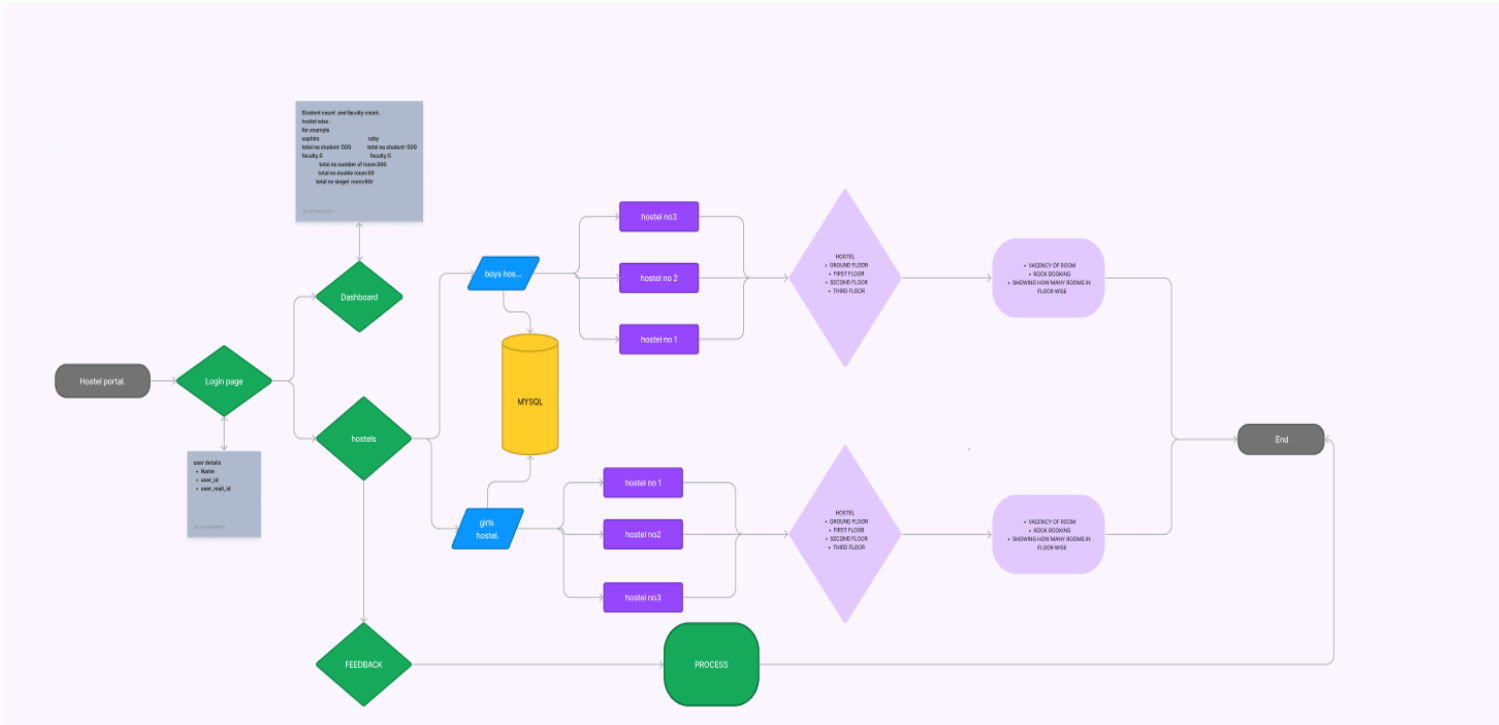
- Feature: Provide information on individual room sizes.
- Technology: Design the system to scale with the growing needs of the hostel.

FLOW CHART

STUDENT ACCESS



ADMIN ACCESS



3.2. Non-Functional Requirements:

In the context of the hostel management system project, the non-functional requirements are crucial to ensure the system's performance, security, usability, reliability, and scalability. Here are the revised non-functional requirements based on the problem statement:

1. Performance:

   The system must respond to user actions within 2 seconds to ensure efficient usability.

2. Security:

   User data must be encrypted during transmission and storage to maintain confidentiality.

3. Usability:

   The user interface should be intuitive and user-friendly to enhance user experience.

4. Reliability:

The system should be available 24/7 with minimal downtime to ensure continuous access for users.

5. Scalability:

The system should be designed to accommodate an increasing number of users and data volume over time.

These non-functional requirements are essential for the successful development and implementation of the hostel management system, ensuring that the system not only meets functional needs but also performs effectively, securely, and reliably while being user-friendly and adaptable to future demands.

Backend:

1. Student entity

Roll no	int
Name	String
age	int
Room id	int(primary key)
Hostel id	int

2. Room Entity

Room id	int(foreign key)
Hostel id	int
Room type	string
Room capacity	int

Current capacity	int(conditional)

3. Room booking

Roll no	int
Room_ id	int
Hostel_id	int
Booking _id	int
Student name	string

4.Hostel

Hostel_id	int
Name	string
Total rooms	int
Total student	int

5.Staff

Staff_id	int
Name	string
Room_id	int

6.Fee

fee_id	int
Roll_no	int
Status	(True/False)

Stack:

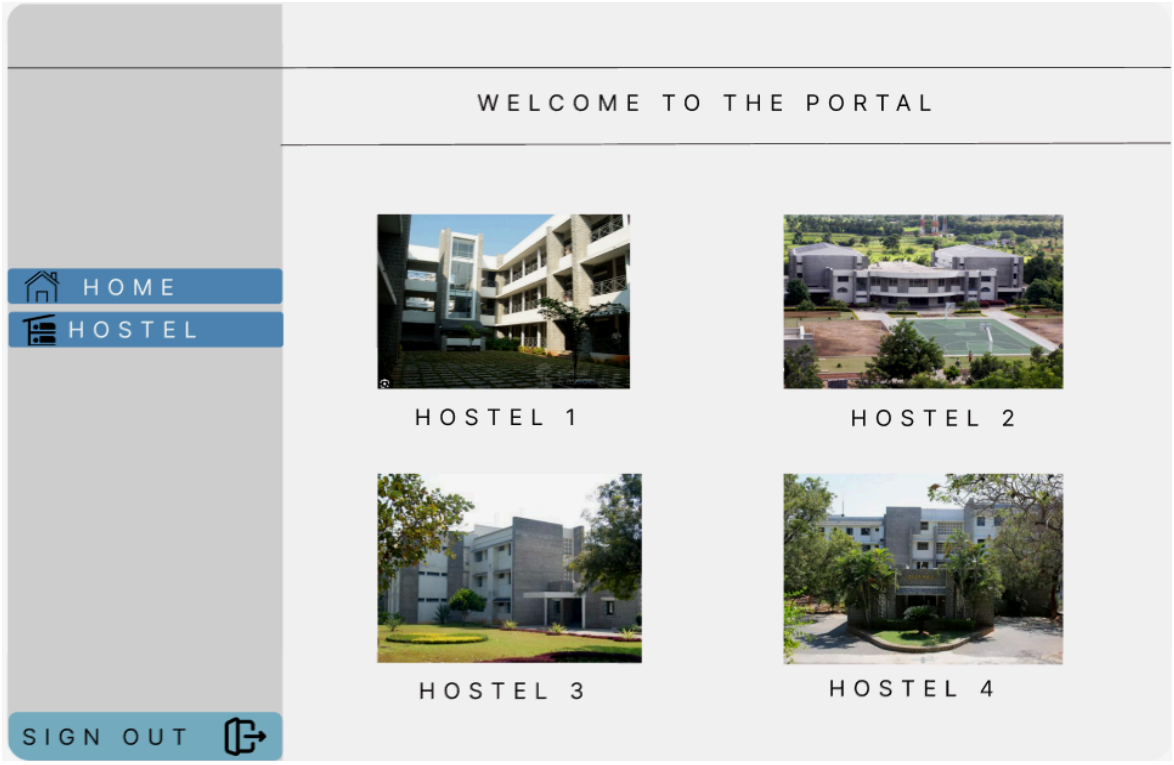
Front End	React Js.
Backend	Spring boot java.
Data Base	Mysql.

Prototype of the Project:

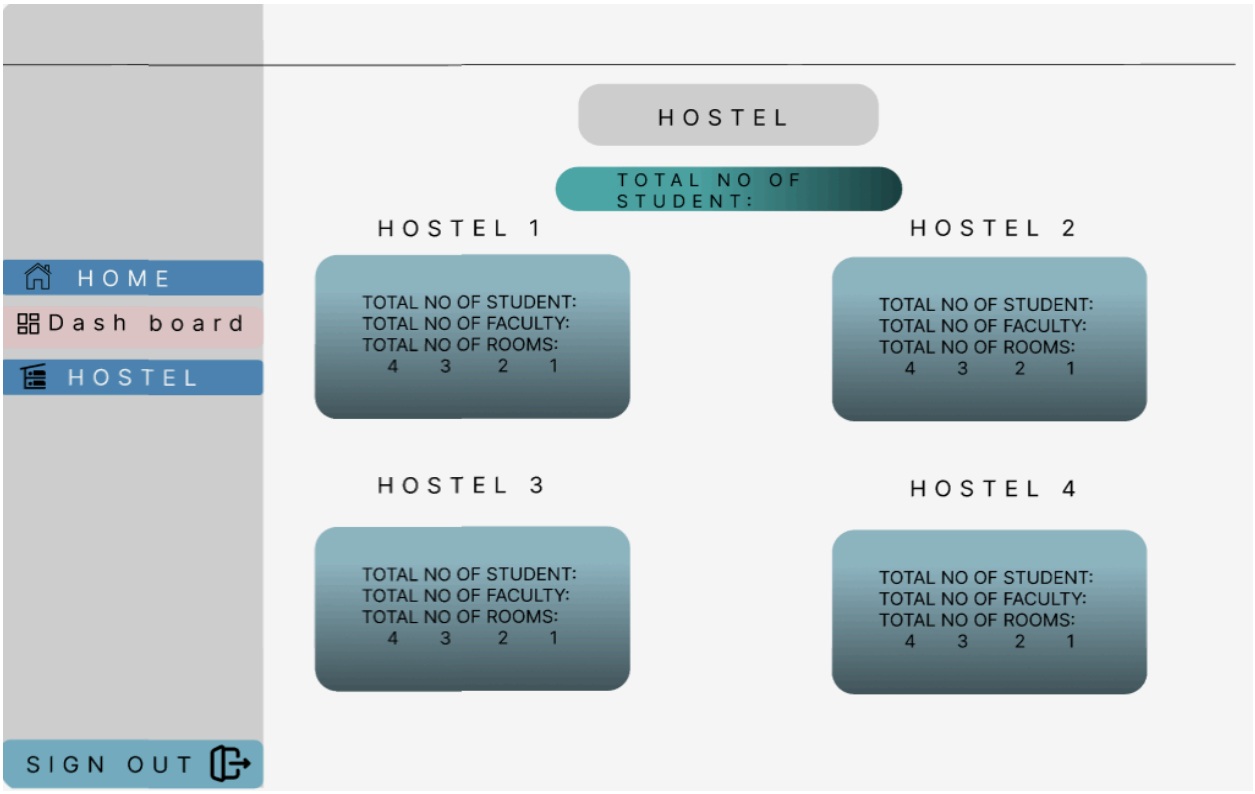
1. Login form

BANNARI AMMAN
INSTITUTE OF TECHNOLOGY
Stay Ahead
USER NAME
ROLL NO
SIGN WITH YOUR MANAGEMENT ACCOUNT
LOGIN

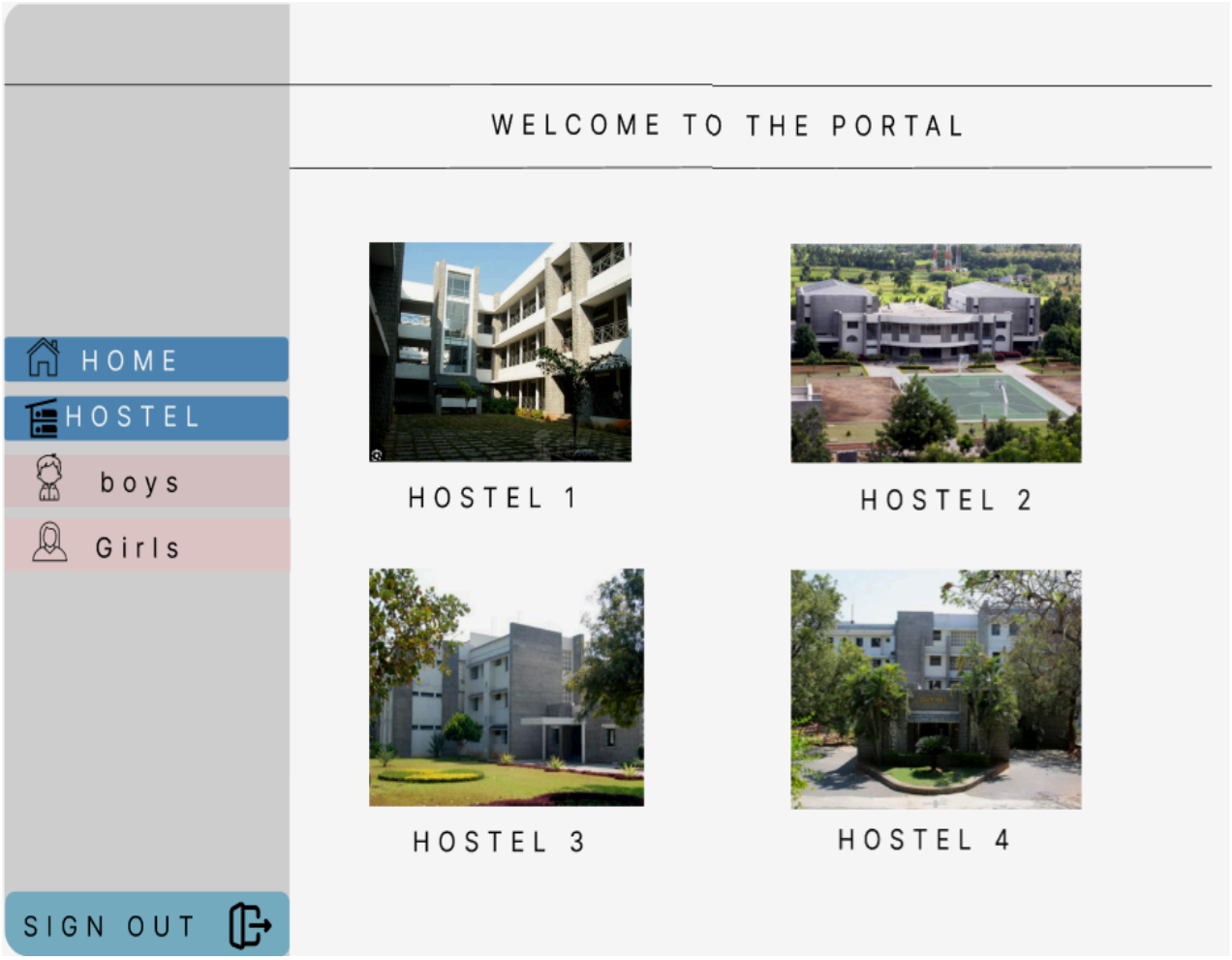
2.HOME PAGE:


WELCOME TO THE PORTAL
HOME
HOSTEL
SIGN OUT
HOSTEL 1
HOSTEL 2
HOSTEL 3
HOSTEL 4

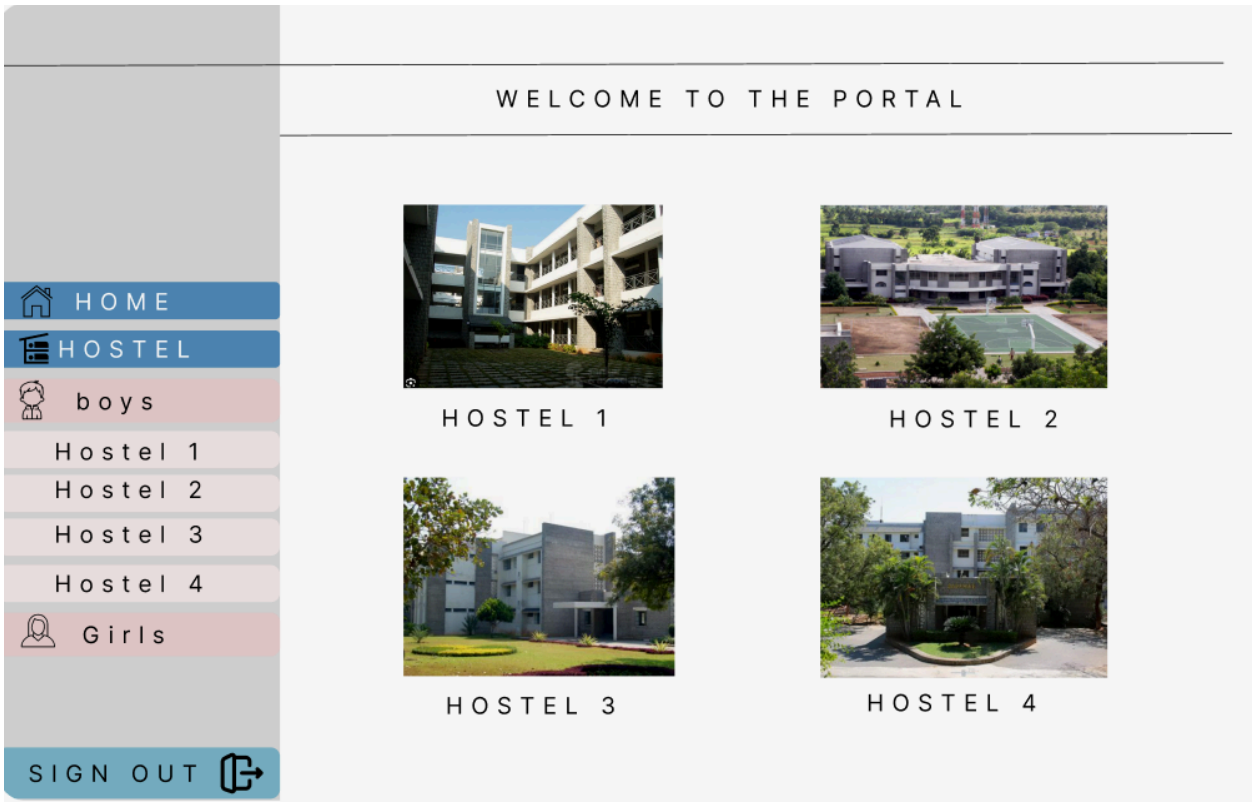
3.DASHBOARD:



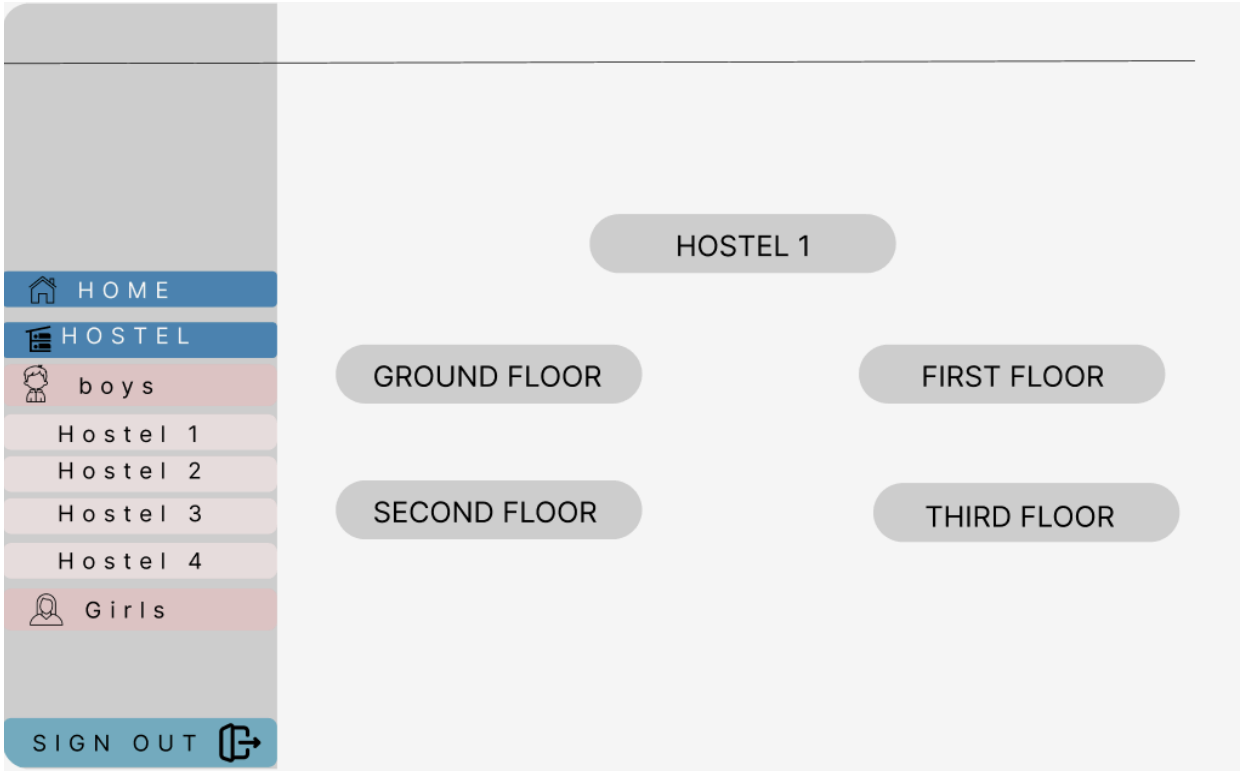
4.HOSTEL PAGE:



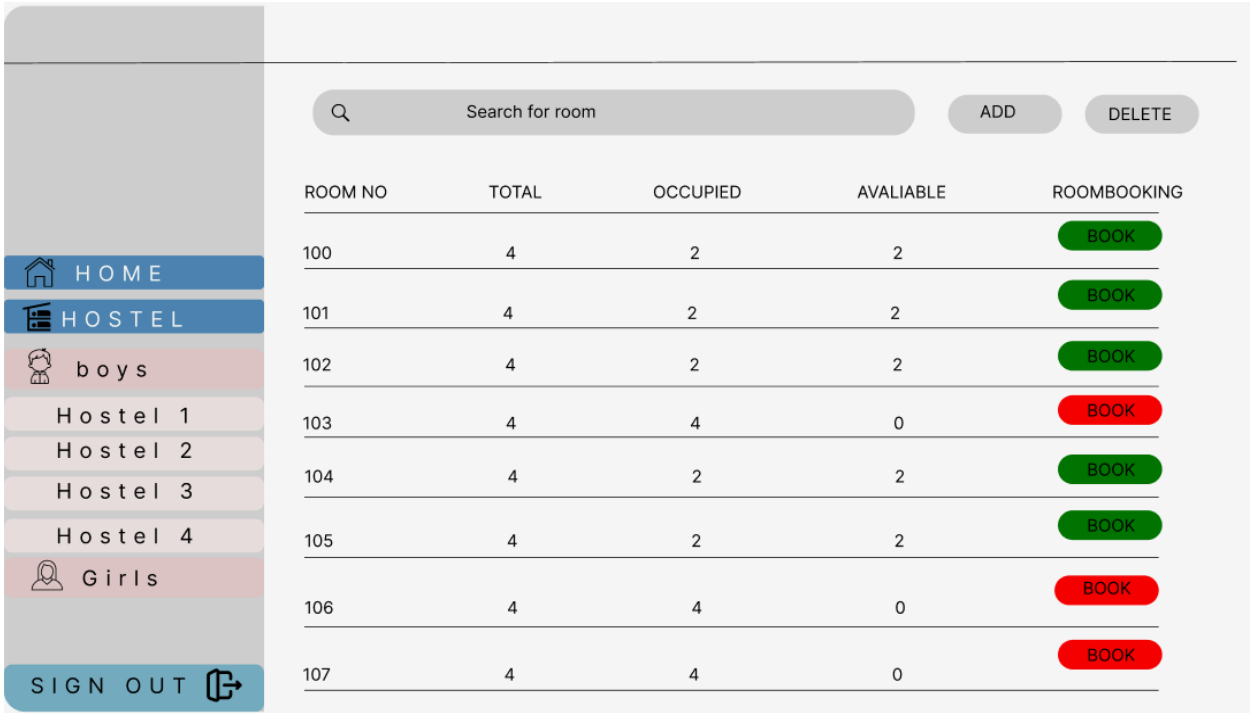
5.HOSTEL PAGE



6.HOSTEL FLOOR PAGE:



7.VACANCY CHECK AND HOSTEL BOOKING PAGE:



8.FEED BACK PAGE: