A Midterm Progress Report on

GNDEC Hostels Dashboard

Submitted in partial fulfillment of the requirements for the award of

the degree of

BACHELOR OF TECHNOLOGY

(COMPUTER SCIENCE AND ENGINEERING)

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1. INTRODUCTION

1.1 Brief Introduction

The GNDEC Hostels Dashboard project addresses the need for a comprehensive digital solution to manage hostel activities effectively. The traditional methods of handling hostel operations are often time-consuming and prone to errors. This project introduces a digital dashboard that simplifies tasks such as room allocation, fee management, and maintenance tracking. By implementing this system, GNDEC aims to enhance the efficiency of hostel management and provide a better living experience for students.

The application will be developed using HTML , CSS , Javascript , Bootstrap , Express.js, MySQL, ensuring a scalable, responsive, and user-friendly solution.

1.1.1 Existing hostel management:

Systems often rely on manual processes, such as paper-based logs, spreadsheets, and basic database applications. These traditional methods are inefficient, prone to human error, and difficult to scale. Problems such as mismanagement of room allocations, loss of student data, and administrative bottlenecks are common. Furthermore, these systems lack real-time data accessibility, making it challenging for administrators to manage hostels effectively.

1.1.2 Proposed system :

The need for a digital hostel management system arises from these inefficiencies. Digital systems automate and streamline various operations, reducing administrative workload and human errors. They offer real-time access to critical data, such as room availability and student information, enhancing decision-making and resource allocation. Overall, a digital solution ensures smoother operations, increased resident satisfaction, and better resource management. The dashboard will feature user-friendly interfaces for different roles:

- **Administrators:** Manage room assignments, Track maintenance requests, and

handle student records.

- **Residents**: View their accommodation details, submit maintenance requests, and receive important notifications.

1.2 Objectives

a. To automate the tasks of room allocation and complaint handling.

b. To notify students about their approval/non-approval of complaint.

c. To display information regarding various events.

2. SYSTEM REQUIREMENTS

2.1 Hardware Requirements

- **Processor :** AMD Ryzen 5 5600H with Radeon Graphics **,** 11th Gen Intel(R) Core(TM) i5 - 1135G7 @ 2.40GHz
- **RAM :** 16.0 GB , 8.00 GB
- **Storage :** 475 GB , 456 GB
- **Internet :** Stable connection for the project development and deployment.

2.2 Software Requirements

2.2.1 Frontend Technologies

- **HTML5**: Structuring web pages.
- **CSS3**: Styling elements.
- **JavaScript (ES6+)**: Dynamic interactions.
- **Bootstrap 5**: Responsive design framework.

2.2.2 Backend Technologies

- **Node.js**: JavaScript runtime for server-side logic.
- **Express.js**: Lightweight backend framework for handling requests.

2.2.3 Database

- **MySQL**: Relational database for structured storage.
- **MySQL Workbench** (for managing database).

3. SOFTWARE REQUIREMENT ANALYSIS

3.1 Problem Definition

Guru Nanak Dev Engineering College (GNDEC) accommodates a large number of students in its hostels. Managing hostel operations manually is inefficient, leading to delays in room allocation, difficulties in tracking student attendance, and slow complaint resolution. A digital system is required to streamline these processes, ensuring efficient hostel management, better communication, and enhanced user experience for students and hostel staff. Some of the key issues faced include:

- **Room Allocation Delays**: Manual allocation often results in delays, leading to confusion and mismanagement of available hostel space.
- **Slow Complaint Resolution**: Students face issues related to maintenance (e.g., electricity, plumbing, internet), but manual complaint handling causes inefficiencies and delays in resolution.
- **Communication Gaps**: Hostel notices and announcements are often missed due to reliance on physical notice boards or word of mouth, leading to a lack of awareness among students.
- **Difficulty in Generating Reports**: Hostel administrators struggle with manually compiling data on room occupancy, complaints, making decision-making time-consuming and inaccurate.
- **Scalability Issues**: With an increasing number of students, the current manual system cannot efficiently handle growing demands and hostel expansions.

The GNDEC Hostels Dashboard aims to provide an automated, centralized, and user-friendly solution for hostel management, enabling smooth operations, real-time tracking, and data-driven decision-making.

3.2 Modules & Functionalities

3.2.1 User Roles

- **Admin (Hostel Warden & Staff)**
    a. Manage room allocation and student records.
    b. Monitor student complaints and maintenance requests.
    c. Generate reports for hostel management.

- **Students**
    a. View allocated room details and request room changes.
    b. Submit and track complaints.
    c. View hostel notices and announcements.

3.2.2 Key Modules

- **User Management**
    a. Secure authentication for students and admins.
    b. Role-based access control (Admins manage hostels, students access personal info).
    c. Integration with college database for student verification.

- **Room Allocation & Management**
    a. Dynamic room allocation based on availability.
    b. Track vacant rooms and generate reports.
    c. Manage room change requests.

- **Complaint & Maintenance System**
    a. Students can submit complaints (e.g., electricity, water issues).

b. Complaints are assigned to hostel staff.

c. Track complaint resolution progress.

d. Feedback system for service quality assessment.

- **Notifications & Announcements**

a. Admins can send notifications regarding hostel rules, etc.

b. Students receive real-time updates via SMS/email.

4. SOFTWARE DESIGN

4.1 Flowchart

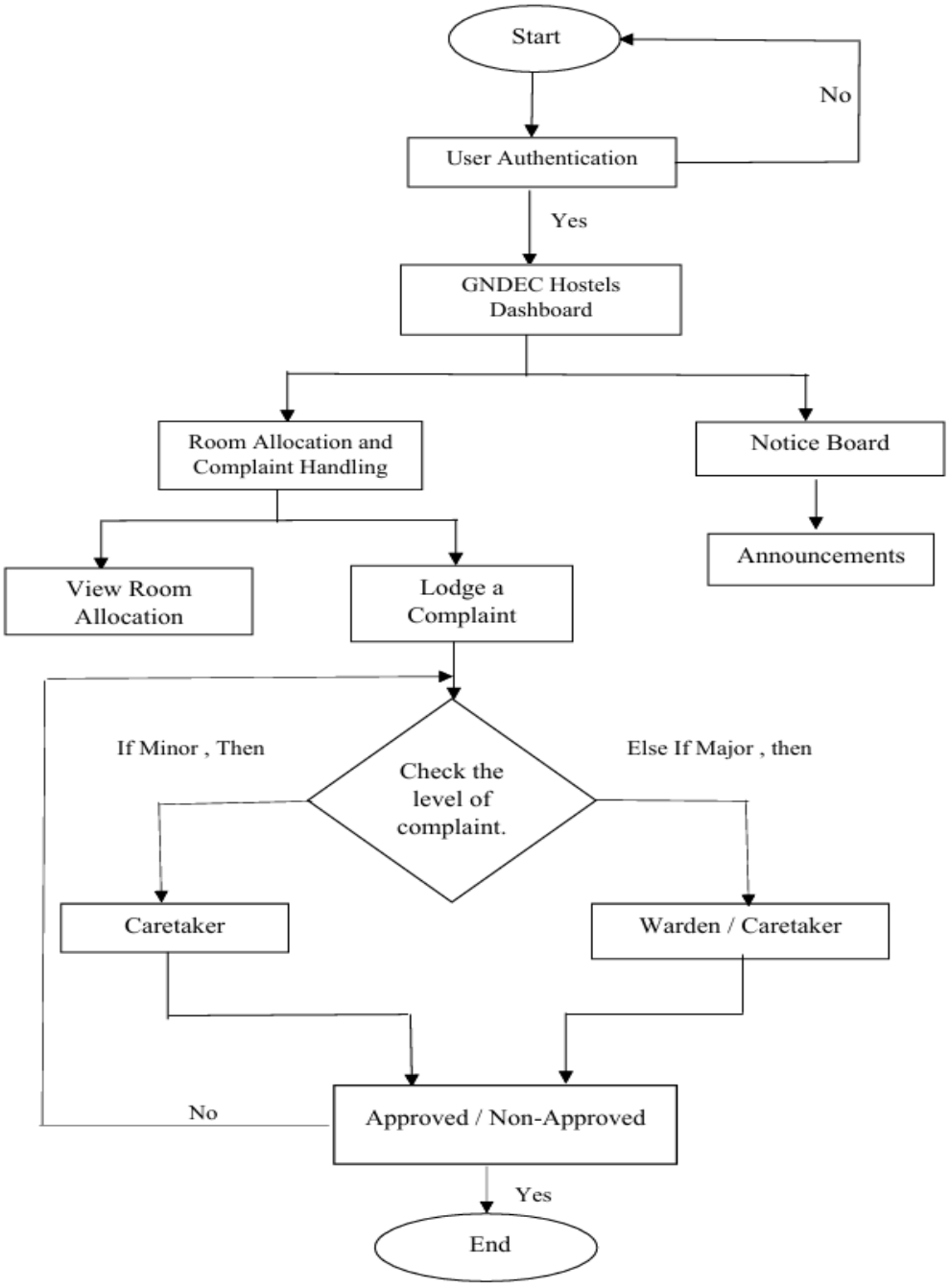

Figure 1: Flowchart Of the GNDEC Hostels Dashboard

4.1.1 Description of the flowchart

- **Start** : The process begins from the Start node.
- **User Authentication**
    a. The system checks for user authentication.
    b. If authentication fails, the user is redirected to retry.
    c. If authentication succeeds, the user is granted access to the GNDEC Hostels Dashboard.

- **Dashboard Functionalities**

  Once inside the dashboard, users have access to two major sections:

    a. Room Allocation and Complaint Handling
    b. Notice Board

- **Room Allocation and Complaint Handling**

    a. Users can either view room allocation or lodge a complaint.
    b. If a complaint is lodged, the system checks the severity level of the complaint:

        - Minor complaints are forwarded to the caretaker for resolution.
        - Major complaints are escalated to the warden or caretaker for further action.

          Once the complaint is resolved, the process ends.

- **Notice Board**

  Users can access upcoming events and announcements related to hostel management.

5. TESTING MODULE

5.1 Types of Testing Performed

5.1.1 Unit Testing (Test individual components)

- **Complaint Management**
    a. Submit a complaint and verify it appears in the complaint list.
    b. Change the complaint status and check if it updates correctly.
    c. Ensure only authorized admins can manage complaints.

5.2 Test Cases

Test Case ID	Description	Input	Expected Output	Status
TC-01	User Login	Valid username & password	User should be logged in successfully	Pending
TC-02	Invalid Login Attempt	Invalid username/password	Error message should appear	Pending
TC-03	Check Dashboard Statistics (Admin)	Open dashboard	Statistics should be displayed	Passed

6. PERFORMANCE OF THE PROJECT DEVELOPED

6.1 Functionality Implementation

6.1.1 Login Username

- In this, Student will login their username with password by their Student Id.
- In this, there is functionality used i.e. alert (for login successful)

6.1.2 Room Allocation:

- In Room Allocation, Student can check their rooms numbers.

6.1.3 Complaint Management:

- Students can submit complaints related to maintenance, hygiene, or other hostel issues.
- Student can send the complaints to the caretaker and warden. Students can send minor problems to caretaker. If problem is major, they will send to the Warden.

6.2 Areas for Future Improvement

6.2.1 Feature Additions:

- **Automated Maintenance Requests:** AI-based system to predict recurring complaints and suggest preventive maintenance.
- **Room Preference System:** Allow students to request specific room changes based on availability.
- **Real-Time Admin-Student Chat:** Direct communication between students and admins for faster issue resolution.

6.2.2 Performance Enhancements:

- **Load Balancing:** Optimize handling of 1000+ concurrent users for smooth operation.
- **Database Optimization:** Use advanced indexing & caching for faster data retrieval.

7. OUTPUT SCREENS

7.1 Login Page of GNDEC Hostels dashboard :

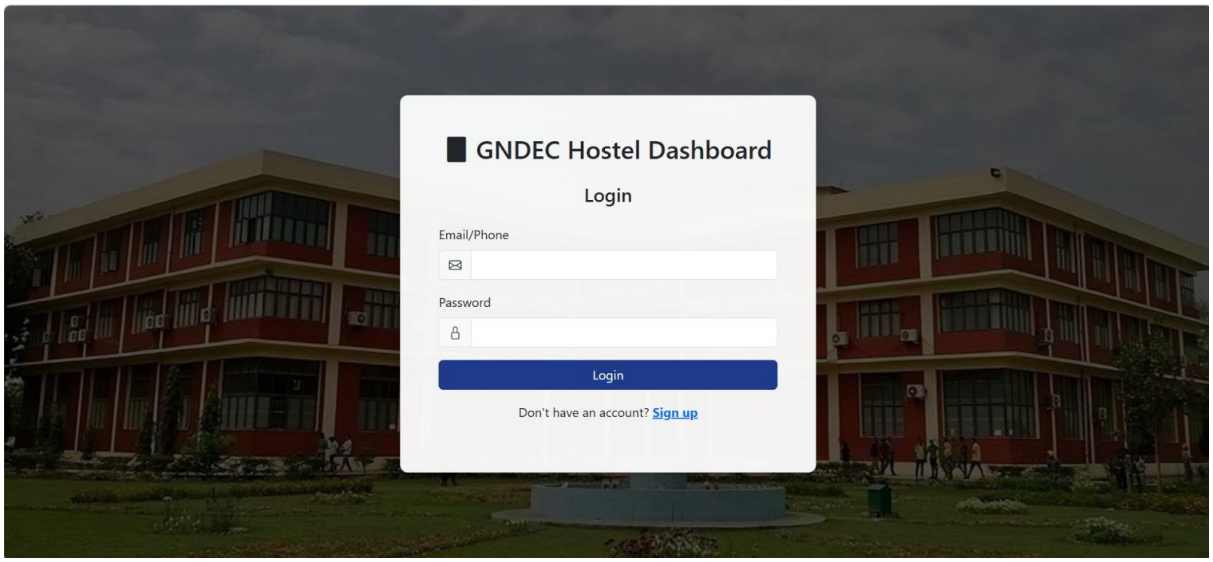

Figure 2 : Login page of Hostels Dashboard

7.2 Dashboard :

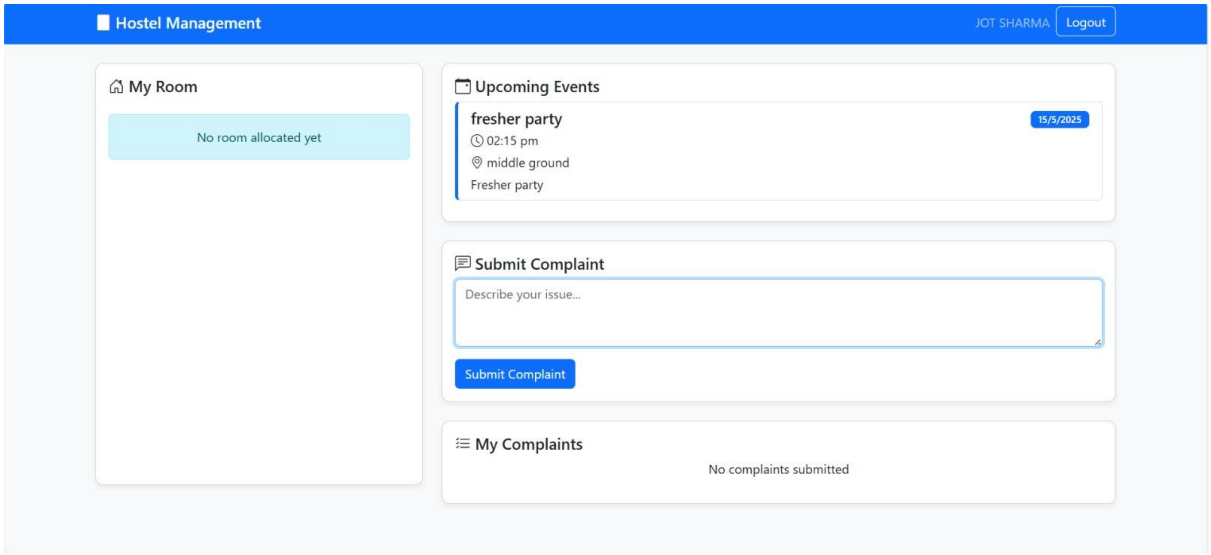

Figure 3 : Dashboard

7.3 Room Allocation Page

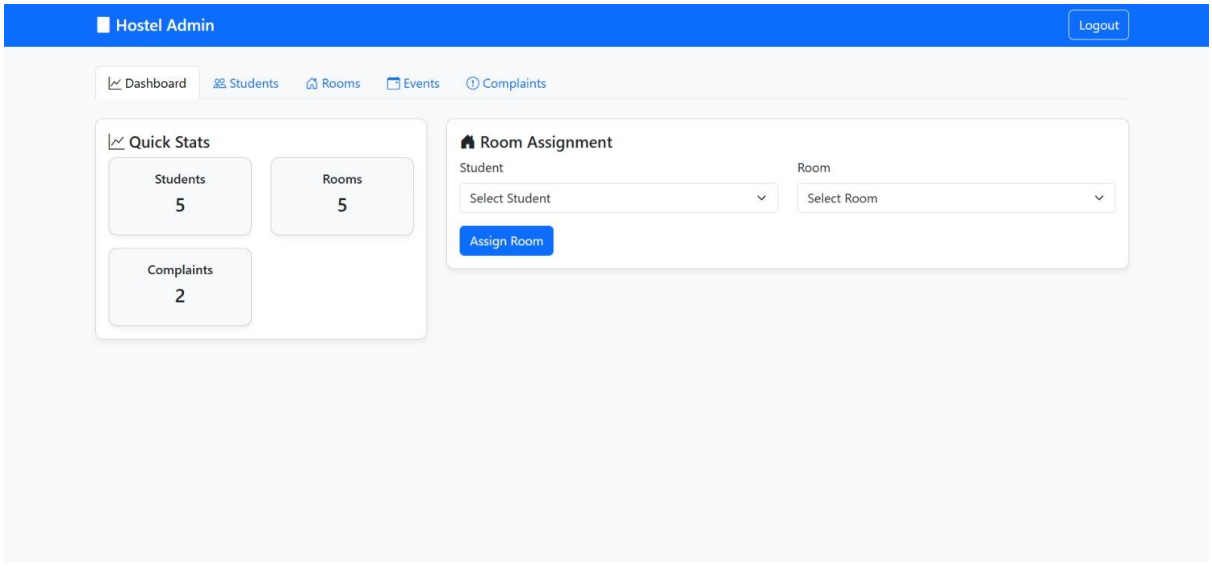

Figure 6 : Room Allottment

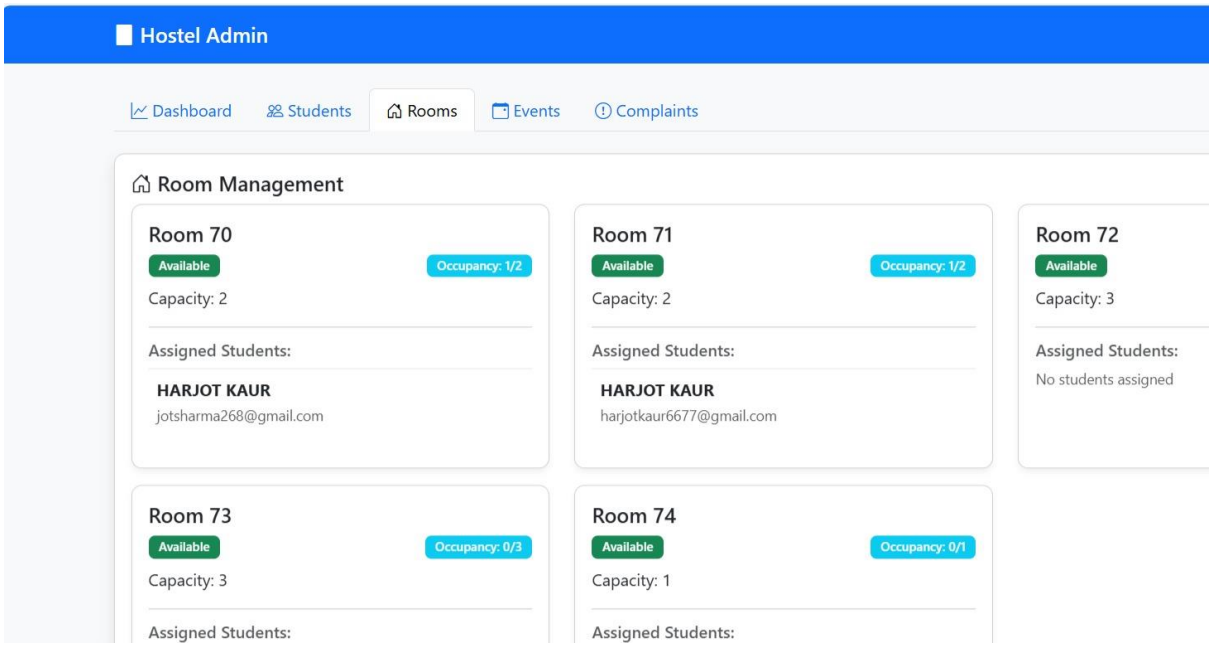

Figure 7 : Rooms list

7.4 Complaint Management

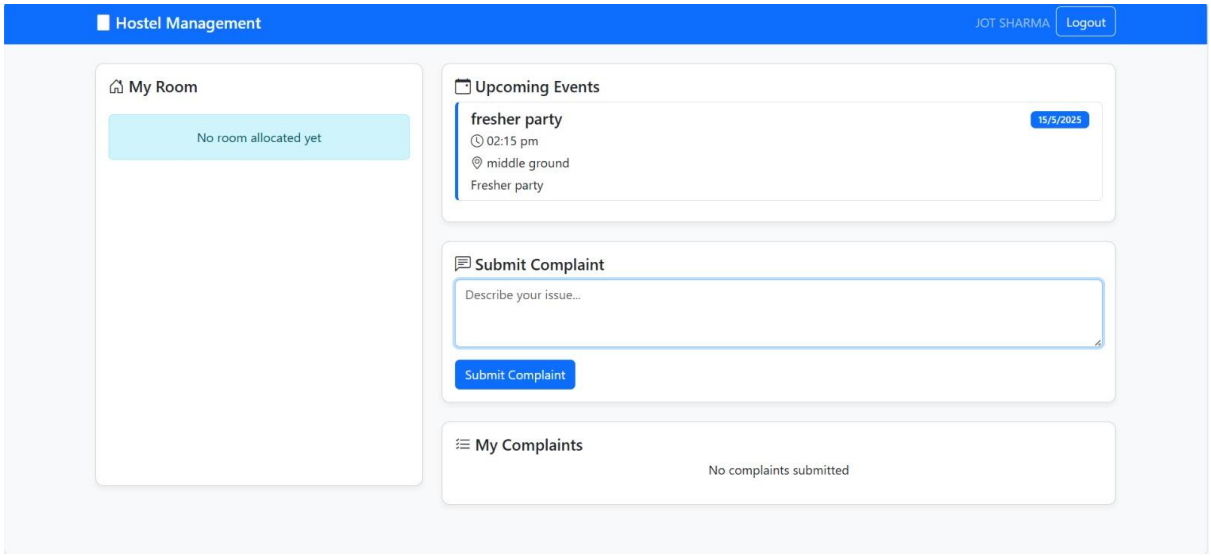

Figure 9 : Complaint Form

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