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PROJECT ID: 16

SEAT NUMBER: 376

PROJECT TITLE: BIT HOSTEL PORTAL

TECHNICAL COMPONENT: MERN STACK

COMPONENT	TECH STACK
Front end	React.js
Back end	Node.js
Database	MongoDB
API	OpenAPI

PURPOSE OF THE PROJECT:

The purpose of creating a “Hostel Portal” is to efficiently manage hostel operations by providing features such as hostel capacity tracking, seat availability status, room allocation

details, student and staff strength, staff details, leave application, complaint handling, and work status updates. The portal streamlines administrative tasks and enhances communication between students, staff, and faculty.

SCOPE:

- **Data management:** Maintain a record of the hostel's structures, levels, types, and personnel information.
- **Room Bookings & Allocation:** Allow students and event attendees to make reservations for rooms. The administrator will handle room assignments depending on staff or student availability.
- **Leave and Complaint Management:** Provide teachers and staff with the ability to track and approve complaints as well as apply for leave.
- **Reporting & Insights:** Monitor the allocation of staff and students throughout floors and dormitories, as well as the overall capacity and occupancy.

USERS:

Students:

Access :

All individual students at BIT hostel will have the login credentials with their individual bitasathy mail id. Importantly the boys and girls will only have the access to their respective hostels(boys hostel & girls hostel).

Permissions:

All individual student can able to visualize the details about the hostel including capacity,room availability,room allocations, staffs details,request to change the room,to apply leave,to express their grievances and know about the work status.

Admin:

Access:

Admin will have the privileged accounts access to monitors every moves and changes in it with the administrative rights. While the Deputy warden will have only limited access.

Permissions:

Admin has the access to the fullest to visualize the entire data base , able to modify the changes in the data, allots rooms to the requested ones,solves the grievences by approaching the respective incharges and performs analytics.

FEATURES:

Hostel Management:

- Track hostel buildings, floors, and rooms (including capacity, type - 2 or 4 cot).
- View real-time room availability (vacant/occupied, student/staff).
- Access hostel building and room area details (square meters).

Student and Staff Information:

- Monitor total student strength and distribution across hostels and floors.
- Staff strength and their room allocations.
- Details and contact info of the Deputy Warden.

Room Booking & Allocation:

- Allow students and event participants to search and book rooms.
- Enable admins to manage room allocations based on vacancy and preferences.

Leave & Complaint Management:

- Facilitate student/staff leave applications with tracking and faculty approvals.
- Provide a complaint box for student/staff to report issues.
- Allow admins to track complaint status, gather approvals (if needed), and update users.

FUNCTIONAL REQUIREMENTS:

1.Hostel Management:

- The system shall allow administrators to add, edit, and delete information about hostels, including the number of buildings, floors per building, and total building/room area (sq meters).
- The system shall display a list of all hostels with details like the number of floors and total capacity.

2. Room Management

- The system shall allow administrators to add, edit, and delete information about rooms, including capacity (number of beds - 2 or 4 cot), type (student/staff), and vacancy status (filled/unfilled).
- The system shall track total room capacity and occupancy for each hostel and floor.
- The system shall provide a real-time view of room vacancy status (available/occupied by student/staff).

3. User Management

- The system shall differentiate between student and administrator user roles.
- Students and administrators shall have separate login credentials.
- The system shall allow administrators to manage student and staff details

4. Room Booking & Allocation

- Students and event participants (with designated user roles) shall be able to search for available rooms based on criteria like hostel, floor, room type (2/4 cot), and date range.
- Students and event participants shall be able to submit room booking requests.
- Administrators shall be able to review and approve/reject room booking requests based on vacancy and defined allocation policies.
- The system shall send notifications to students/event participants regarding booking confirmation/rejection.

5. Leave & Complaint Management

- Students shall be able to submit leave applications electronically which include details like start/end date and reason for leave.
- Complaints shall include details like description, attachments (optional), and desired resolution.
- Administrators shall be able to track the status of complaints, gather approvals (if needed), and update users on the resolution process.

6. Additional Considerations

- The system should maintain an audit log to track user activity (adds, edits, deletions).
- The system should have functionalities for data import/export (e.g., CSV) for bulk data management (optional).
- The user interface should be user-friendly and accessible for all user role.

NON FUNCTIONAL REQUIREMENTS:

- Performance
- Security
- Availability
- Usability
- Scalability
- Reliability
- Maintainability

USER STORIES:

Student user:

As a student, I want to search for available rooms based on criteria like hostel, floor, room type (2/4 cot), and date range so I can plan my accommodation needs, I want to view the status of my room booking request and receive notifications about confirmation or rejection, I want to submit an electronic leave application specifying the reason and duration so I can be excused from the hostel, I want to submit a complaint electronically detailing the issue and desired resolution so I can report any problems with the hostel.

Administrator user:

As an administrator, I want to manage hostel data including adding, editing, and deleting information about hostels, floors, and rooms, I want to view a real-time overview of room vacancy status (available/occupied by student/staff) to effectively manage room allocation. I want to access reports on total student strength across the college and student/staff distribution across hostels and floors for informed decision-making, I want to review and approve/reject student and event participant room booking requests based on vacancy and defined allocation policies, I want to manage student and staff complaints by tracking their status, gathering approvals (if needed), and updating users on the resolution process.

Staff user:

As a faculty member, i want a detailed list about about the number of students, their individual details, I want to receive notifications and approve/reject student leave applications when required by the workflow, also wants to know about the work flow on the grievance which was reported by the student.

Web Development Tools: Front-end frameworks (React, Vue.js) for user interface and interaction, and back-end frameworks (Node.js, Django) for data processing and APIs.

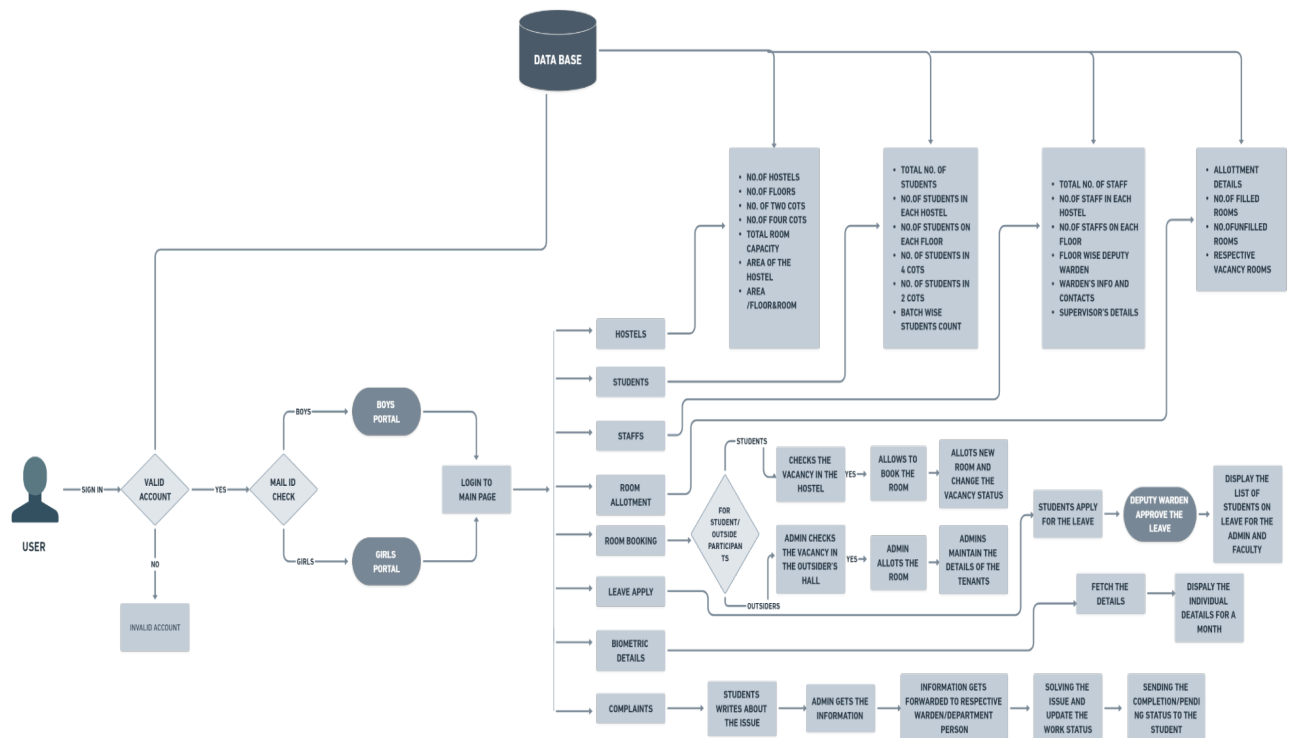
Database: A relational database to store hostel data (hostels, rooms, bookings, users).

Additional Libraries: Authentication, date/time handling, and email/notification services

Optional Integrations: Existing college systems (student information) for data exchange.

FLOW CHART:

USER INTERFACE:



ADMIN INTERFACE:

