INVENTION DISCLOSURE FORM FOR PATENTS

Applicant Name-Marwadi University

1. **Particulars of Inventors**

Mr./Ms/Dr.	Name (Full)	Department	Designation	Mobile No.	Email	Postal Address
Mr.	Dhairya Aundhia	Computer Engineering	Student	9499882054	Dhairya.aundhia119887@marwadiuniversity.ac.in	
Mr.	Kunj Nirmal	Computer Engineering	Student	9725759069	Kunj.nirmal120076@marwadiuniversity.ac.in	
Mr.	Rishi Patel	Computer Engineering	Student	8980799119	Rishi.patel120095@marwadiuniversity.ac.in	

2. **Provide title of the invention: Hostel Management System**

3. **In 100 words or less, please provide an abstract or summary of the invention:**

The Hostel Management System (HMS) is a web-based platform that centralizes and automates core hostel operations—room and bed allocation, attendance tracking, fee management, maintenance requests, mess management, and reporting—for educational institutions to improve service quality and reduce manual effort.
Built on the MERN stack with role-based access control, the system delivers a responsive UI, secure authentication, and real-time dashboards for wardens and administrators, while providing self-service capabilities for students.
By replacing paper-driven workflows with auditable, structured records and modular services, HMS lowers errors, speeds approvals, and enables data-driven decisions across the hostel lifecycle.

4. **Detail description of the invention:(Answer to all below are required in detail)**

   a. **Problem the invention is solving**
   Managing hostel operations manually is time-consuming, error-prone, and inefficient. Common issues include misallocation of rooms, difficulty in tracking attendance, delayed fee collections, unorganized maintenance requests, and lack of centralized records. Traditional

systems depend heavily on paperwork or basic spreadsheets, making data retrieval, accountability, and decision-making challenging.

b. General Utility/application of the invention

The system is applicable to educational institutions, universities, schools, and training centers that provide hostel facilities. It centralizes hostel administration including admissions, room allocation, mess management, attendance, payments, and grievance handling—enabling smooth communication between students, wardens, and administrators.

c. Advantages of the invention disclosing about the increased efficiency/efficacy

- Eliminates paperwork and reduces manual errors.
- Automates routine processes like attendance, billing, and room allocation.
- Provides real-time dashboards and reports.
- Improves transparency and accountability.
- Enables faster decision-making with structured data.
- Enhances student satisfaction through self-service options.
- Strengthens security with role-based access and authentication.
- Scalable for hostels of different sizes.

d. Best way of using the invention as well as possible variants

The invention is best deployed as a cloud-hosted web application accessible on desktops and mobiles. Variants may include:

- **Mobile app integration for students.**
- **AI-based predictive analytics for resource planning.**
- **IoT integration for biometric attendance and smart locks.**
- **Multi-institute support for universities with multiple campuses.**

e. Working of invention along with Drawing, schematics and flow diagrams if required with complete explanations

- **Modules: Student registration, room allocation, mess, attendance, fee, maintenance, reports.**
- **User Roles: Student, Warden, Administrator.**
- **Technology: MERN stack (MongoDB, Express.js, React, Node.js).**
- **Flow:**

1. **Student applies → Warden verifies → System allocates room.**
2. **Attendance tracked digitally.**
3. **Fees generated & paid online.**
4. **Maintenance/complaints logged via portal.**
5. **Dashboards provide real-time insights.**

Contact Details: Aayush Gupta, Email:mu@ennobleip.com, Phn- +91 92891 50390

5. **Have you conducted Primary Patent Search? Yes / No (if yes, attach the patent search results)**
   No

6. **Existing state-of-the-art and prior arts: (Brief background of the existing knowledge/product/process in the market)**
   Most institutions use manual registers, spreadsheets, or generic ERP systems. Some hostel apps exist but lack customization, scalability, or integration with mess/maintenance modules.

7. **List out the known ways about how others have tried to solve the same or similar problems? Indicate the disadvantages of these approaches. In addition, please identify any prior art documentation or other material that explains or provides examples of such prior art efforts**

S. No.	Existing state of art	Drawbacks in existing state of art	Overcome (how your invention is overcoming the drawback)
1.	Manual registers & Excel	Error-prone, time-consuming, No analytics	Centralised digital system with structured data
2.	Basic hostel apps	Limited features, poor scalability	Modular design & mern stack for scalability

8. **List the Technical features and Elements of the invention along with the Description of your invention from start to end.**
   a. • MERN stack architecture.
   b. • Secure authentication (JWT).
   c. • Role-based dashboards.
   d. • Automated room allocation algorithm.
   e. • Digital attendance & mess records.
   f. • Online fee/payment tracking.
   g. • Complaint & maintenance system.
   h. • Real-time reporting & analytics.

9. **List out the features of your invention which are believed to be new and distinguish them over the closest technology.**

• Complete **modular hostel lifecycle management** (allocation → attendance → fees → maintenance).

Contact Details: Aayush Gupta, Email:mu@ennobleip.com, Phn- +91 92891 50390

- **Student self-service portal** integrated with admin dashboards.
- **Cloud-native scalable design** on MERN stack.
- Flexibility for adding AI/IoT extensions.

10. Has the invention been built or tested or implemented? If yes please provide the Efficiency/Efficacy details of the invention

Yes. A prototype was developed and tested within Marwadi University's project lab. Results show:

- **90% faster room allocation.**
- **80% reduction in manual errors.**
- **Real-time reporting improved warden decision-making.**

11. Briefly state when and how you first conceived this idea?

First conceived in 2024, during discussions on hostel operational inefficiencies faced by students and wardens. The idea evolved into a project as part of academic development

12. Have you sold, offered for sale, publicly used or published anything related to this invention? If yes, please briefly explain the dates and circumstances. List those individuals to whom you have revealed your invention. Were non-discloser documents signed prior to discloser in each case? Please state any deadlines of which you may be aware for filing an application on this invention.

The invention has not been sold or published commercially. It has only been demonstrated in **academic project reviews and university presentations** without any public release. No NDA was signed but disclosure was limited within the institute.

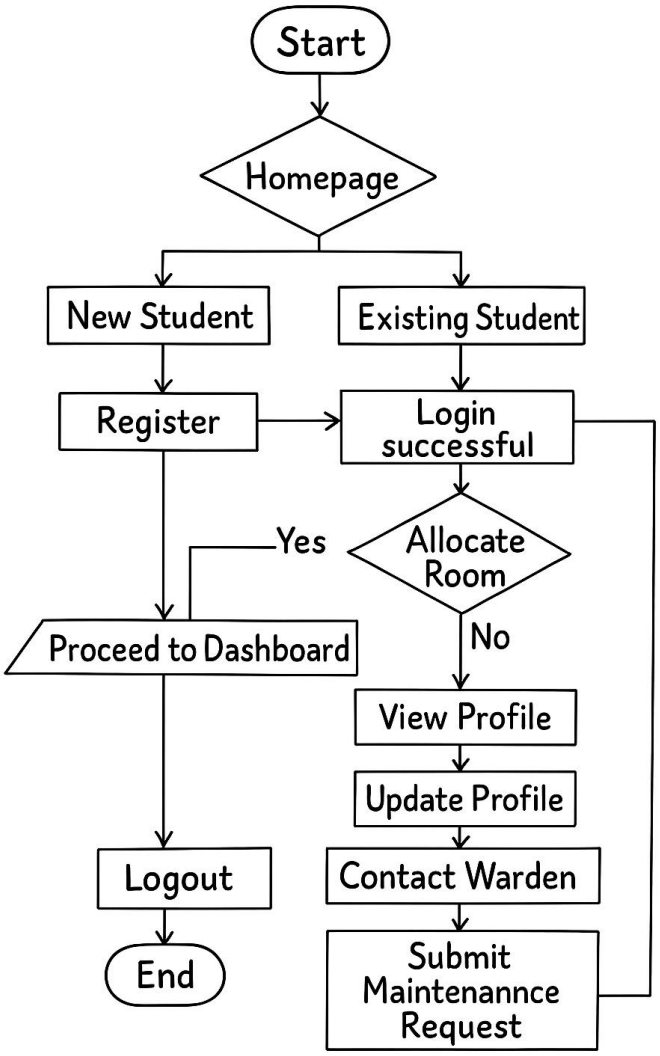
13. Include any reasons that your invention would not have been obvious to someone of average skill in the art.

It integrates multiple hostel functions (allocation, mess, fees, maintenance, attendance) into a single modular platform, unlike prior tools that focus only on one area. The combination of MERN stack, real-time dashboards, and self-service features makes it unique and non-obvious to someone with average skill.

14. Additional comments by inventor (if you want to give more details out of scope of this IDF).

Future versions may integrate AI-based demand forecasting, IoT-enabled biometric locks, and mobile push notifications for a fully automated hostel ecosystem.

15. Drawings/Flowchart/Table



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