# **Project Report**

for

# HOSTEL ROOM ALLOCATION AND MAINTENANCE SYSTEM

# Prepared by

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# 1.INTRODUCTION

Hostel Management System is a web application designed for automating the hostel room allocation. It also provides other features such as informing hostel authorities about any complaints or queries. Currently our students are filling up forms and submitting in the respective hostel offices which involves a lot of paperwork. It is time consuming and inefficient.

This application intends to provide a very user friendly easy to use experience with the efficiency of using database design. So the web app eliminates the long hectic process of applying to any hostel and the need for being physically present while submitting the forms and running to multiple offices and authorities in getting signatures for the same. And also every bit of paper saved is an approach to saving nature.

Problems of the existing hostel management are identified, which leads to the development of computerized solutions that will be compatible with the existing hostel management with the solution which is more user friendly and more GUI oriented. We can improve the efficiency of the hostel management, thus overcoming the drawbacks of the existing management.

# 2.PROJECT OBJECTIVES

- 1. Simplification of the process of allocation and management of different hostels under an institute.
- 2. Creation of a database that allows monitoring and managing hostel requirements and functions in an efficient manner.
- 3. Reduce data redundancy and human error to some extent.
- 4. Solution for the large amount of file handling happening in the hostels.
- 5. Avoiding long waiting and datas getting lost during paperworks.
- 6. Implementing a proper virtual queue and speeding up the process.
- 7. Providing a platform to address student issues regarding stay to hostel authorities without delay and avoiding unattended or missed out complaints.
- 8. Reduce the amount of human resources or any other resources resulting in lesser implementation cost.

# 3.BACKGROUND AND MOTIVATION

Our college has a very traditional system of room allocation when it comes to hostel room allocation. Students need to submit various forms and often has to wait in long queues.

So we decided to change the system by making use of our web app which eliminated the need for all the paperworks. The app also allows provisions to file maintenance complaints related to one's room which otherwise would be a hectic long process.

Earlier all the provisions provided to students were that he could choose his roommate and would have to submit multiple forms which had to be submitted by hand and even needed multiple signatures from various authorities.

Now everyone could speed up the process with proper security without being present physically. This saves a lot of time, effort, and this approach is also a step toward protecting nature by saving paper.

Another reason would be that any complaints to be addressed to the authorities would not probably reach them or would take time and there was never a proper system to know what happened to our queries which we wish to eliminate as a whole.

# **4.LITERATURE SURVEY**

#### Books:

These books provided with basics related to designing a database from scratch involving developing a e-r model to making the relational model and normalising it also covering the basics of web-

- R. Elmasri and S. B. Navathe, Fundamentals of Database Systems,7/e, Pearson Education, 2016.
- R. Ramakrishnan and J. Gehrke, Database Management Systems,3/e, McGraw Hill, 2003.
- Randy Connolly and Ricardo Hoar, Fundamentals of Web Development, 1/e, Pearson Education, 2014.

#### Papers:

- Design and Implementation of Hostel Management System (HOMASY): LASU as Case Study by Stephen Braimah.<sup>[1]</sup>
- Hostel Management System Project Report by Vinod Raj R, Proshobh G.V.<sup>[2]</sup>

# **5.SYSTEM REQUIREMENTS**

# 5.1 Functional System Requirement

This section gives the functional requirements that are applicable to the HMS. These are sub modules in this phase.

#### 5.1.1 Administrator module:

The administrator can:

- 1. Appoint the Hostel Manager
- 2. Remove a Hostel Manager.
- 3. View the details of the student.

#### 5.1.2 Hostel Manager module:

The Hostel Manager can:

- 1. Allot different students to the different hostels.
- 2. Vacate the students from the hostels.
- 3. View message/complaint sended by students.
- 4. View details of already allocated rooms in the hostel.
- 5. View details of empty rooms in the hostel.

#### 5.1.3 Student module:

The options given to the student are:

- 1. Submission of the application form.
- 2. Sending message/complaint to hostel manager.

View application status.

#### **5.1.4 Application module:**

This section provides an application form which can be filled by the students and can take a print out. It is submitted to the hostel authorities which will be verified by them and allot rooms.

# 5.2 Non-Functional System Requirements:

#### **5.2.1 Performance Requirements**

Some performance requirements needed are listed below:

- The database should be capable of storing around more than 6000 records.
- The software should support multiple users at a time.

#### 5.2.2 Safety Requirements

There are chances of crashes in a database at any time due to malware attacks or system failure. So it is necessary to backup the database.

#### 5.2.3 Security Requirements

Some of the factors that are identified to protect the software from accidental or malicious access, use, modification, destruction, or disclosure are described below.

- 1. Assign certain functions to different modules
- 2. Restrict communications between some areas of the program
- 3. Check data integrity for critical variables
- 4. Later version of the software will incorporate encryption
- 5. Techniques in the user/license authentication process.

6. Keep specific log or history data sets.

#### **5.2.4 Software Quality Attributes**

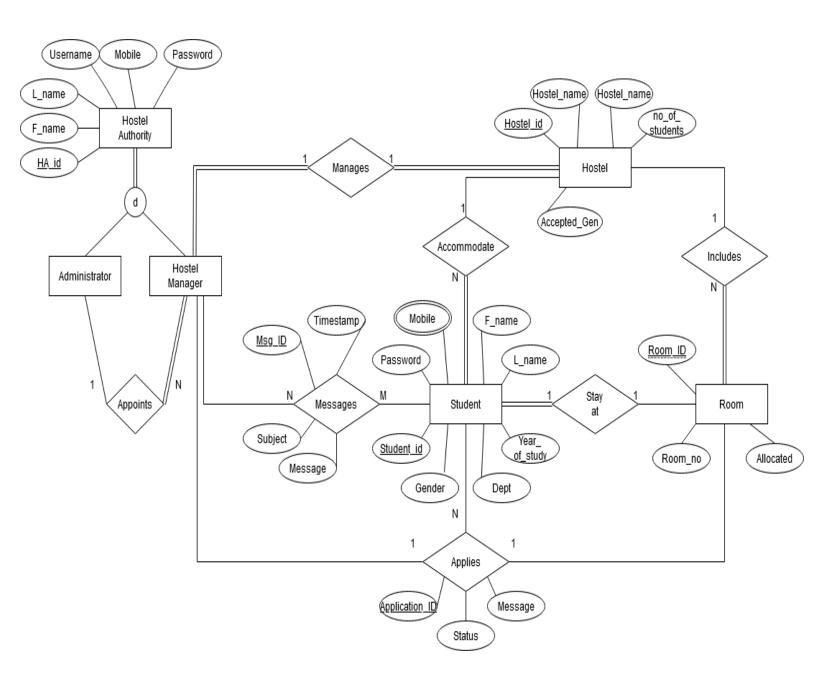
- Less human error.
- Strength and strain of manual labour can be reduced.
- High security.
- Data redundancy can be avoided to some extent.
- Data consistency.
- Easy to handle.
- Easy data updating.
- Easy record keeping.

# 5.2 Hardware Requirements:

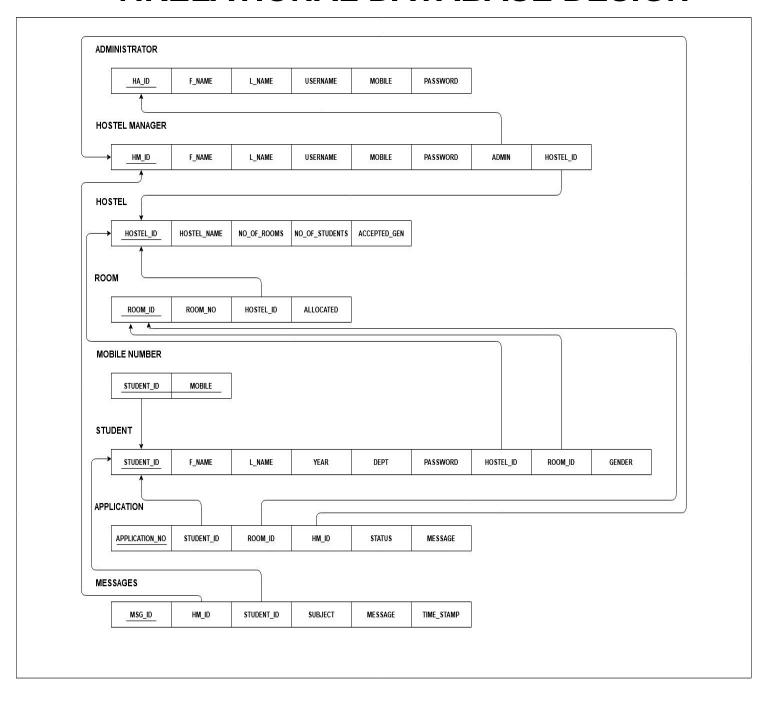
Processor : 1GHzRAM : 512 MBStorage: 1 GB

# **6.E-R DIAGRAM**

#### Entity Relationship Diagram for the project:



# 7.RELATIONAL DATABASE DESIGN



# **8.DATABASE NORMALIZATION**

#### 8.1. 1st Normal Form

All the relations present in the relational database schema are in first normal form since the domain of each attribute contains only atomic (indivisible) values, and the value of each attribute contains only a single value from that domain.

#### 8.2. 2<sup>nd</sup> Normal Form

All the relations satisfies second normal form since it fulfills the following requirements:

It is already in first normal form. It does not have any non-prime attribute that is functionally dependent on any proper subset of any candidate key of the relation. For most of the relations the candidate keys are single valued. So that there is no scope for a proper subset.

#### 8.3. 3rd Normal Form

Since all the relations are in the second normal form it satisfies the first prerequisite.

Furthermore,

Since all the attributes of each relation of the relational database schema solely depend on the primary key(i.e no two non-prime attributes have a dependency between them) the database is in the third normal form.

### 8.4 Boyce-Codd Normal Form(BCNF)

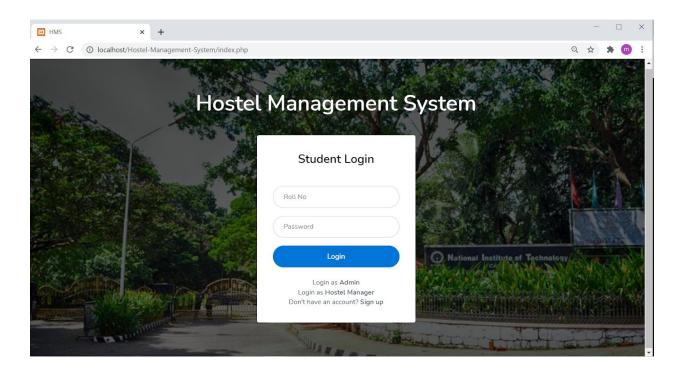
Since all the relations satisfy all previous normal forms.

Moreover all the attributes of each relation of the relational database scheme satisfies the condition, every functional dependency  $X \to Y$  implies X is the super key of the table.

# 9.GRAPHICAL USER INTERFACE

#### 9.1 Login Page

Upon opening the web app a login page appears. Students can login to their account using their roll number and password.

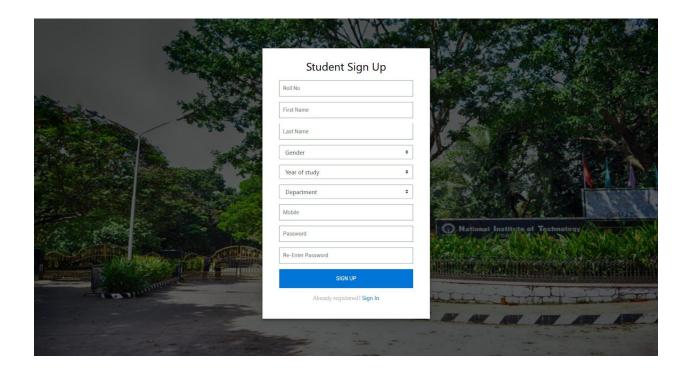


If the user is not a student but instead is Admin or Hostel Manager then they can choose the corresponding login options given below the login and log-in through that corresponding page.

If the user doesn't have any account at all then he/she has to create a new account using signup.

## 9.2 Signup Page

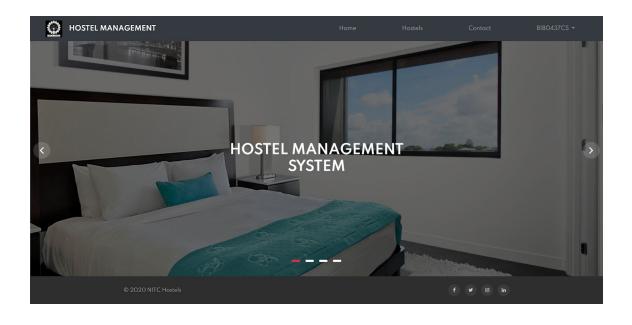
The corresponding page for the student.



#### 9.3 Student Pages

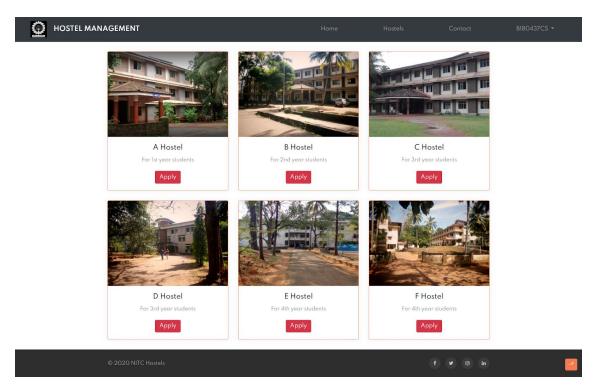
#### 9.3.1 Student Home Page

Student home page consists of Hostels which shows the various hostels to apply to, Contact to contact with the hostel manager also it is possible to compose messages and Student profile to see his/hers details.

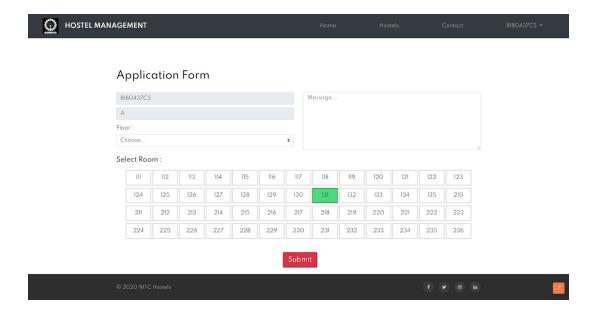


#### 9.3.2. Hostels :-

Here students can choose the hostels to apply to from the list of hostels provided

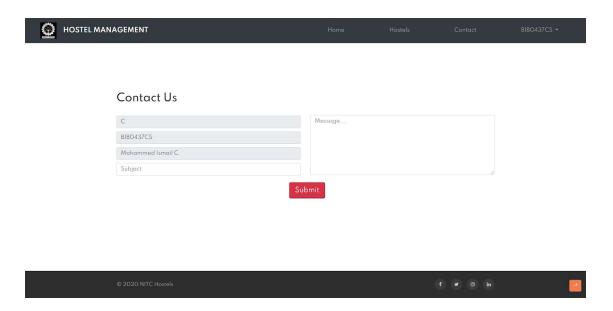


 After applying to a hostel students can then fill the application form by choosing the floor and room number to stay in . Also a brief message can be added which helps to convey their special needs.



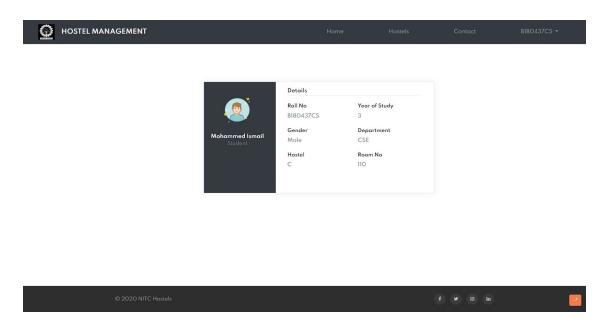
#### 9.3.4.Contact :-

Contact helps students to communicate with the hostel authorities. One can compose a message and submit it which will be shown in the messages list in the Hostel managers page.



#### 9.3.5. Student Profile

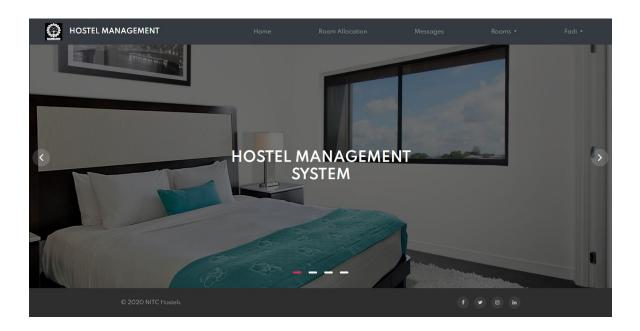
This is the dropdown on the right end. This shows the details of the current student logged in to the session. This shows the student details with the hostel and rooms allocated.



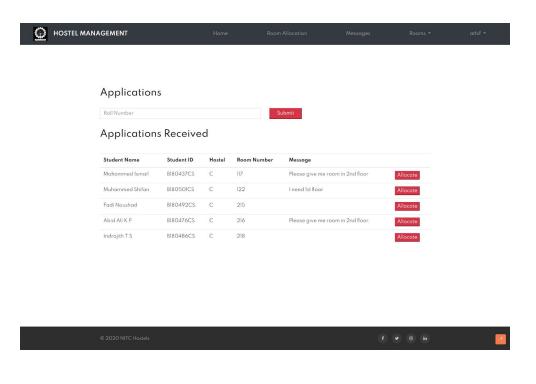
#### 9.4 Hostel Manager Pages

#### 9.4.1 Home page:-

Hostel manager home page consists of Room allocation, Messages, Rooms and Hostel Manager profile.

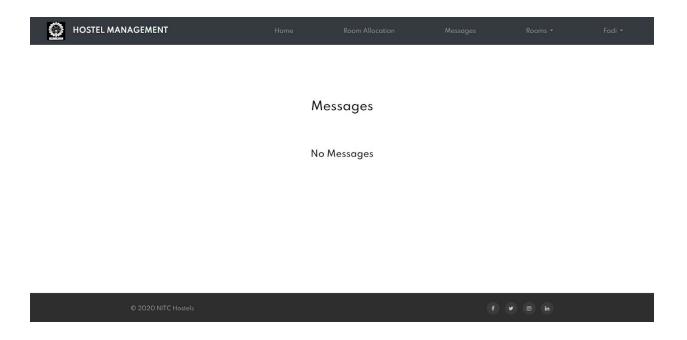


#### 9.4.2.Room Allocation :-



#### 9.4.3.Messages :-

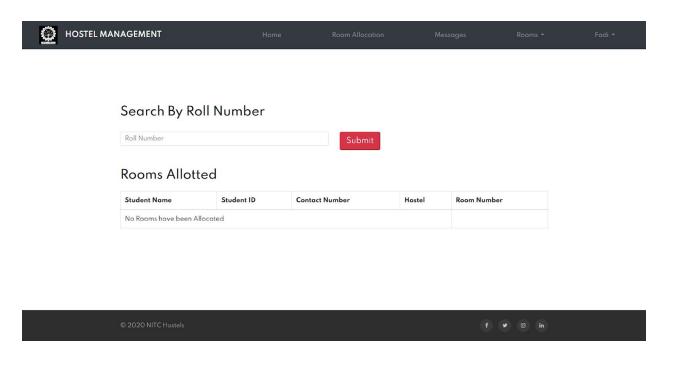
This shows the list of messages received from students.



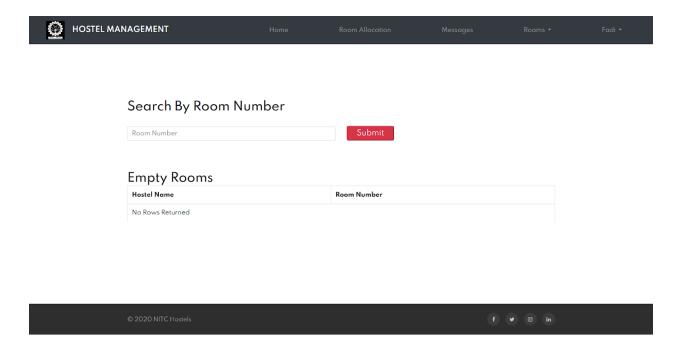
#### 9.4.4.Rooms:-

#### This contains

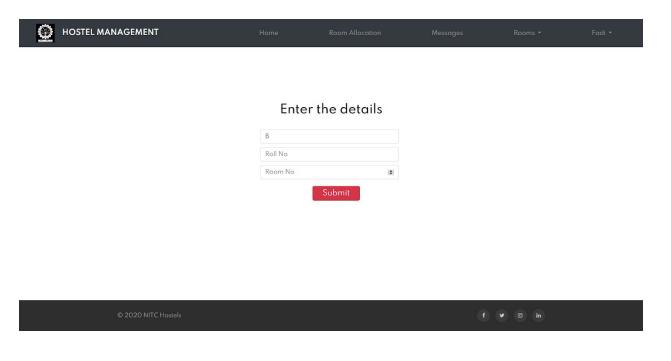
• Allocated Rooms: This is to allocate room to students.



• Empty Rooms : Displays if a room is empty or not.



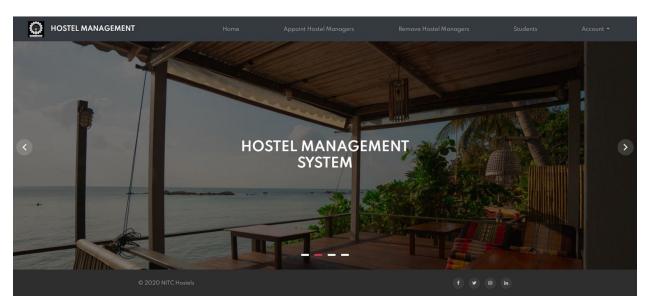
 Vacate Rooms: This is to vacate a room upon student request or on hostel managers interest.



#### 9.5. Admin Pages

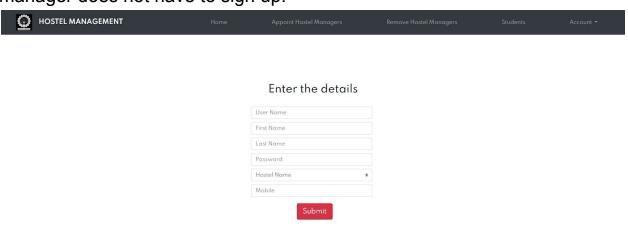
#### 9.5.1.Admin Home page

Admin homepage consists of the provisions to appoint a hostel manager ,remove a hostel manager and search student.



#### 9.5.2. Appoint Hostel Manager:-

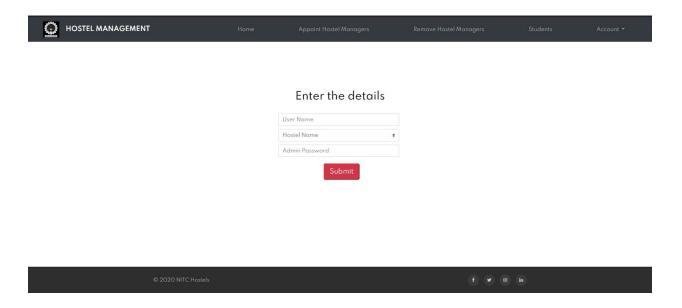
Admin is the one who appoints a hostel manager by entering his details as required. He also sets a password for the hostel manager so the hostel manager does not have to sign up.





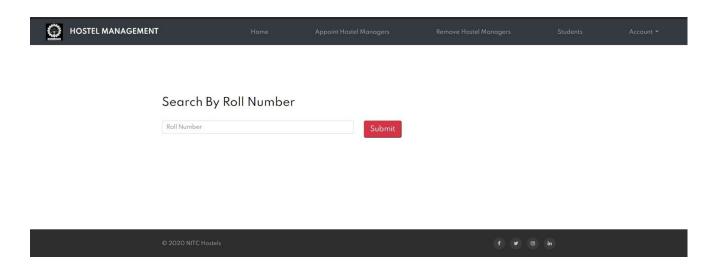
#### 9.5.3.Removes hostel manager :-

Admin also has the provision to remove a Hostel Manager already appointed by him/her by providing the required fields.



#### 9.5.4. Student search :-

Admin can also search for a student using student roll number and see his information including the hostel and the room that has been allocated to the student.

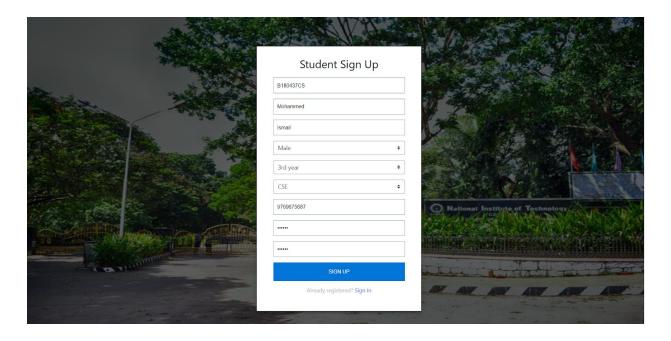


# 10.IMPLEMENTATION

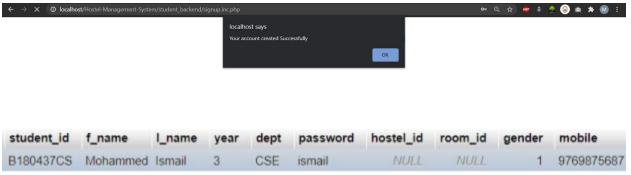
- The first step to development of the application was identifying the needs of the students and the authorities related to allocation of hostel rooms and management.
- Secondly the entities and relationships are identified and then entity relationship diagram was made. This pictorially represents the entities and attributes and functions with relationship among them.
- Next step was to create the relational schema with its attributes and then normalize it. Normalising upto BCNF normal form is what we have done and is a very common level of normalisation
- Next step is front end
  - Frontend has been done with the help of HTML ,CSS and Javascript in addition with the Bootstrap framework in order to provide a responsive User Interface.
- Finally back end
  - ➤ The Backend has been done with the help of PHP and MySQL by following a relational database model.

# 11.TESTING AND RESULTS

#### 11.1 Student Sign Up



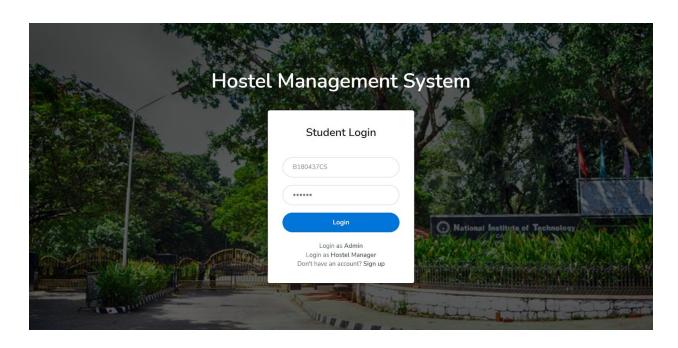
For sign up, Students have to fill details such as roll no, first name, last name, gender, year of study, branch, mobile no, password and confirm their password. If the account is created successfully, It shows a pop as shown below. Otherwise the corresponding error will pop up.

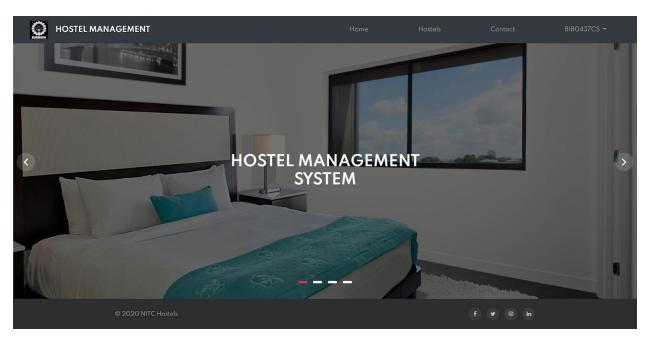


Row inserted in student table after successful sign up

#### 11.2 Student Login

After giving the correct username and password, students will be logged into their student home page. Otherwise the corresponding error will pop up.



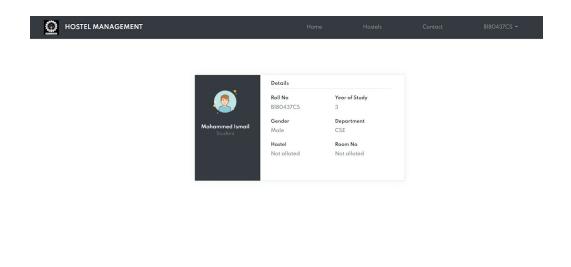


#### 11.3 Student Profile before allotting hostel room

Student profile will display information about the account holder. Also it will

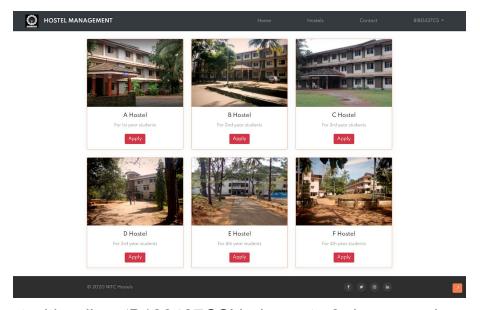
show the hostel room application status.

At present this student with roll no 'B180437CS' has not allotted any hostel, So it will show 'not allotted' as shown below.



#### 11.4 Student applying for hostel room

Now students have to select the appropriate hostel according to his/her year of study. Here in our application A hostel is reserved for 1st year, B hostel for 2nd year, C and D for 3rd year, E and F for 4th year.

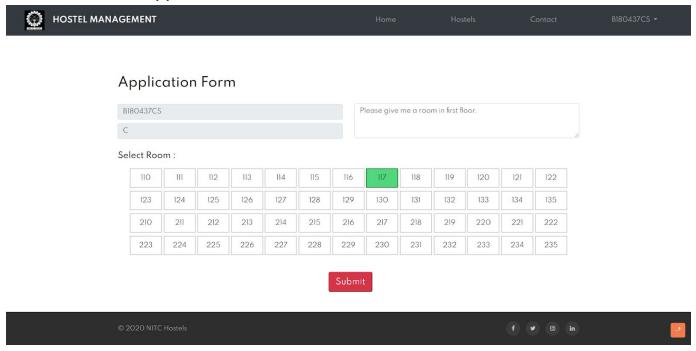


Our student with roll no 'B180437CS' belongs to 3rd year, so he can only apply to C and D hostels. Suppose he tried to apply to A hostel which

belongs to first year students, an error pop up will be displayed as shown below..



Now our student applied for C hostel and selected Room No 117.

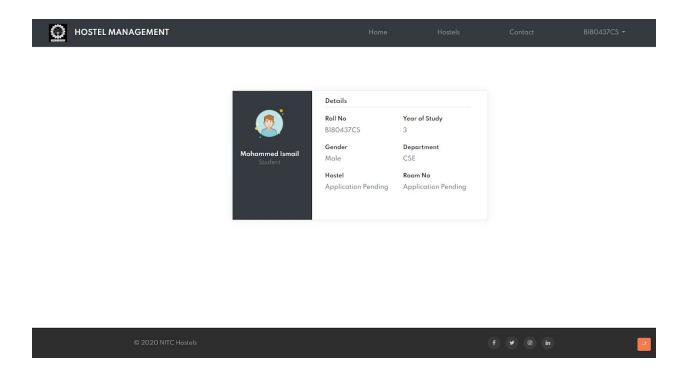


A pop-up will be shown after successful application.



Now the Hostel manager can review this student application from their console.

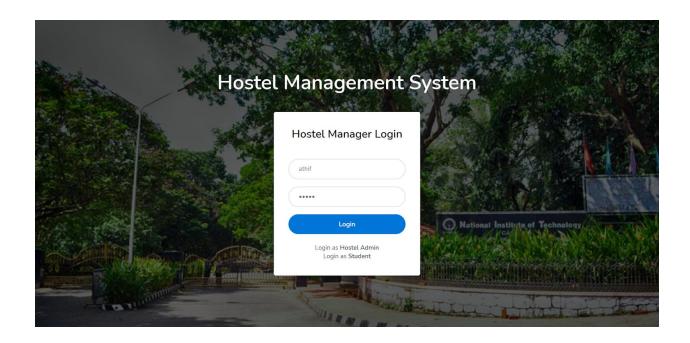
#### 11.5 Student application status before allocation



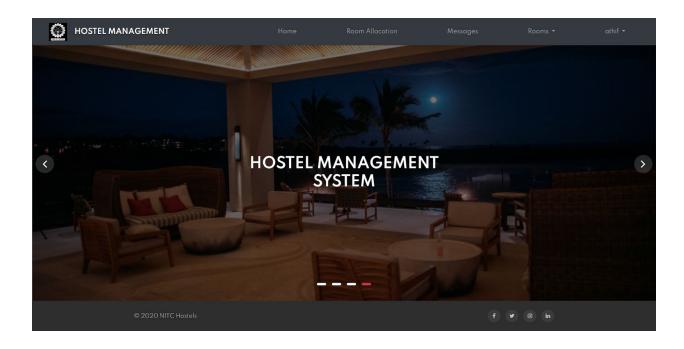
If a student has applied for a hostel room and is waiting for the hostel manager to allocate the room. Then inside the student profile, The Application pending status is displayed in the Hostel name column.

#### 11.6 Hostel manager Login

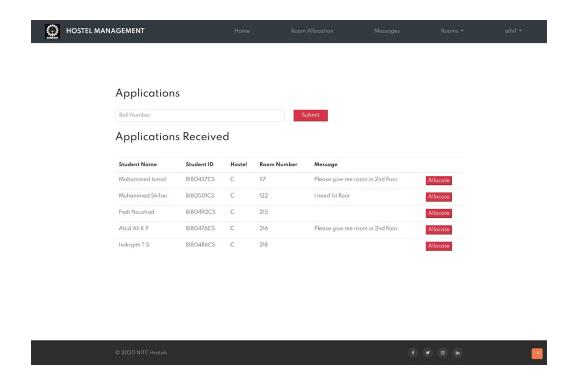
Hostel managers are appointed by the hostel admin. For each hostel one hostel manager is appointed. Now hostel manager 'athif' who is incharge of C hostel is logging.



After successful login, Hostel manager console will be displayed as shown below.

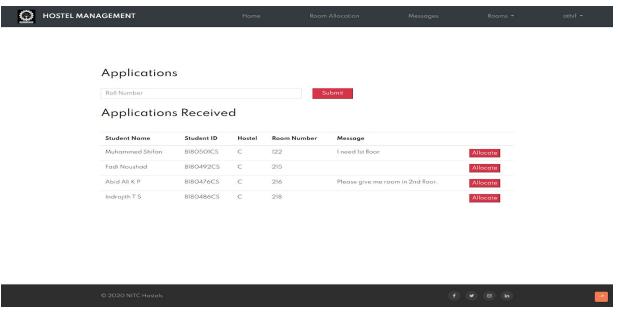


#### 11.7 Hostel Manager allocating rooms

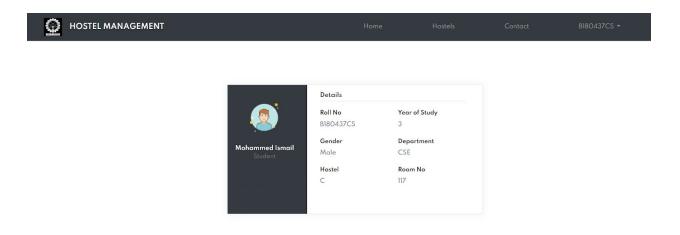


Hostel manager can now see all the last applications sent by the student as discussed earlier. Now he can allocate by just pressing the allocate button corresponding to each application row.

After allocating, that application will disappear from applications' received menu as shown below.



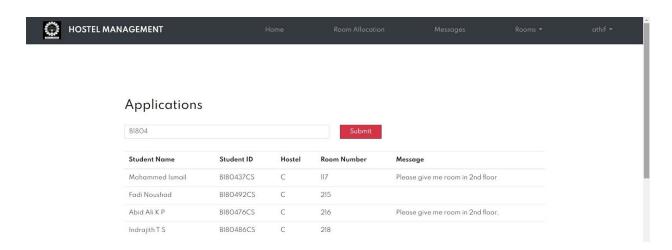
#### 11.8 Student Application status after allotting room





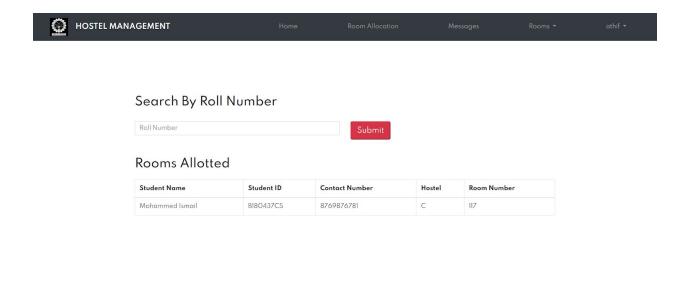
After the allocation of room, Inside student profile corresponding Hostel name and room no will be displayed.

#### 11.9 Hostel Manager searching application



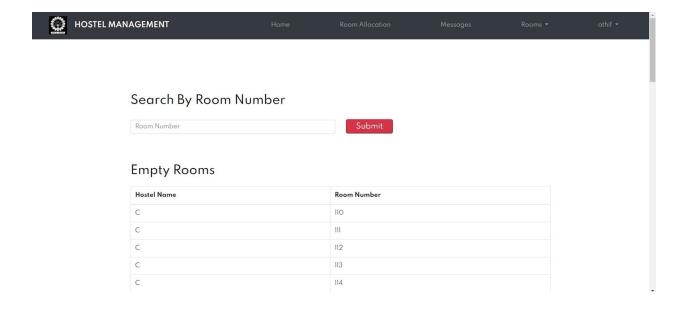
Hostel managers can type Roll No (or starting part of Roll No) to display that particular Application.

#### 11.10 Showing allotted rooms

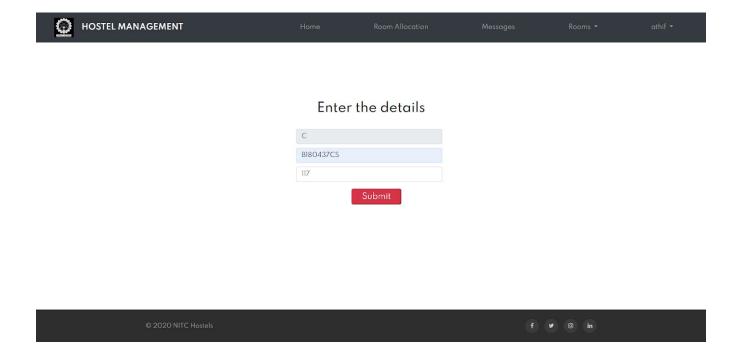


Hostel managers can see all the rooms allotted application list by clicking on the allotted rooms option from 'Rooms' menu.

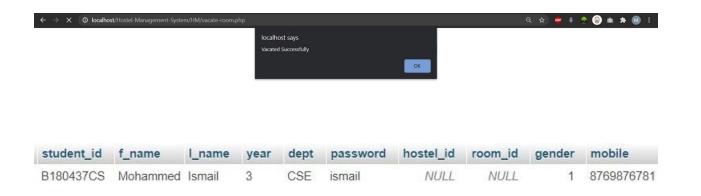
#### 11.11 Showing empty rooms



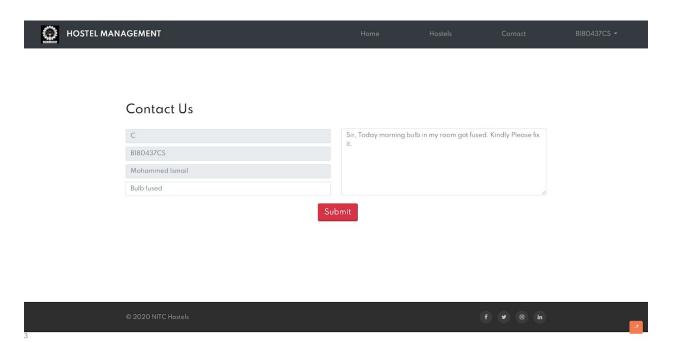
#### 11.12 Vacate Rooms



Hostel Manager can vacate the student with Roll No 'B180437CS' and Room No 117. A pop up will be displayed after successfully vacating the student.



#### 11.13 Student sending message to hostel manager

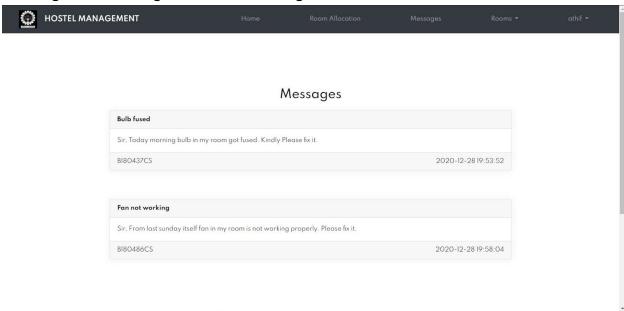


Students can fill the Contact Us form to send messages to his/her corresponding hostel manager. After sending a message, A pop will be displayed as shown below.

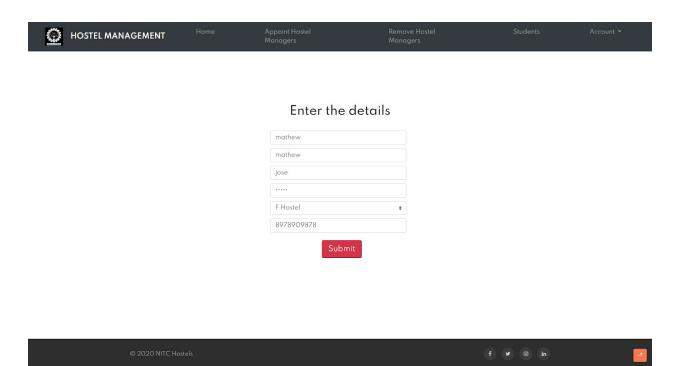


#### 11.14 Hostel Manager viewing messages

Hostel manager can view all messages sent by students of his hostel by clicking the message tab in the navigation bar.



#### 11.15.Admin appointing hostel manager



Admin can appoint a hostel manager by giving username, first name, last name, password, Hostel name, mobile no.

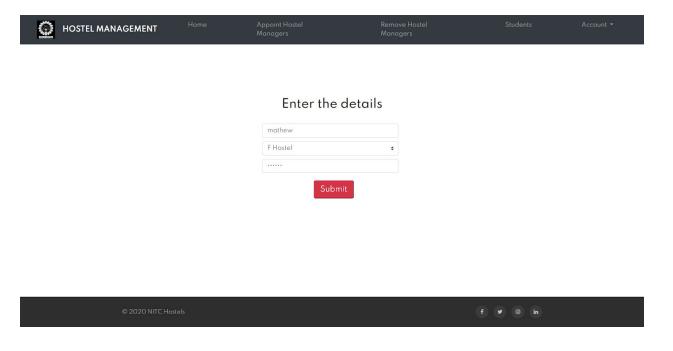
After successful appointment, a pop up will be displayed as shown below.



You can see below the inserted column in the hostel manager table



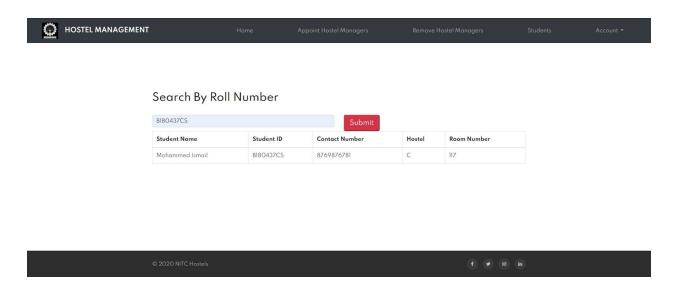
# 11.16.Admin removing hostel manager



Admin removing hostel manager 'mathew'



#### 11.17. Admin searching for a student



Admin also have the provision to search students by just entering their Roll No.

# 12. CONCLUSION

To conclude the description about the project: The project, developed using PHP and MySQL is based on the requirement specification of the users and the analysis of the existing system, with flexibility for future enhancement.

The expanded functionality of today's software requires an appropriate approach towards software development. This hostel management software is designed for people who want to manage various activities in the hostel.

This particular project deals with the problems on managing a hostel and avoids the problems which occur when carried manually. Identification of the drawbacks of the existing system leads to the designing of computerized systems that will be compatible to the existing system with the system which is more user friendly and more GUI oriented.

# 13. REFERENCES

#### (From Literary Survey)

1.https://www.researchgate.net/publication/326493698\_Design\_and\_Implementation\_of\_Hostel\_Management\_System\_HOMASY\_LASU\_as\_Case\_Study

2.https://www.academia.edu/9234897/Project\_Report\_On\_HOSTEL\_MAN\_AGEMENT\_SYSTEM\_Submitted\_by

There are multiple websites which provided insights on how to handle sql command and the designing of web applications. Especially thanking Stack Overflow. Some of them are:

- www.w3schools.com/sql/default.asp
- https://www.w3schools.com/php/default.asp
- https://www.w3schools.com/html/
- https://getbootstrap.com/docs/4.1/getting-started/introduction/
- Git Learning series by coding ninja for collaboration in group projects: <a href="https://www.youtube.com/watch?v=3RjQznt-8kE&list=PL4cUxeGkcC">https://www.youtube.com/watch?v=3RjQznt-8kE&list=PL4cUxeGkcC</a>
   <a href="mailto:9goXbgTDQ0n\_4TBzOO0ocPR">9goXbgTDQ0n\_4TBzOO0ocPR</a>