Visvesvaraya Technological University

BELAGAVI, KARNATAKA

ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿದ್ಯಾಲಯ

ಬೆಳಗಾವಿ, ಕರ್ನಾಟಕ

Report on Mini Project

"Hostel Management System"

for the course

DBMS LABORATORY WITH MINI PROJECT (18CSL58)

Submitted by

ROHAN D – 4JN20IS073

Under the guidance of

Mr. Satyanarayana K.B M.Tech

Assistant Professor,
Dept. of IS&E,

JNNCE, Shivamogga

Department of Information Science & Engineering
J N N College of Engineering
Shivamogga - 577 204
2022-23

National Education Society ®

J N N COLLEGE OF ENGINEERING

SHIVAMOGGA-577204.

DEPARTMENT OF INFORMATION SCIENCE & ENGINEERING

CERTIFICATE

This is to certify that Project entitled

"Hostel Management System"

Submitted by:

ROHAN D – 4JN20IS073

Students of 5th semester B.E. ISE, in partial fulfillment of the requirement for the award of degree of Bachelor of Engineering in Information Science and Engineering of Visvesvaraya Technological University, Belagavi during the year 2022-23.

Signature of Guide	**Signature of HOD**
Mr. Sathyanarayana K. B M.Tech	**Dr. R Sanjeev Kunte** M.Tech, PhD
Assistant Professor, **Dept. of IS&E,** **JNNCE, Shivamogga**	**Professor & Head,** **Dept. of IS&E,** **JNNCE, Shivamogga**

	Name	**Signature**
Examiner 1:		
Examiner 2:		

ACKNOWLEDGEMENT

The satisfaction and euphoria that accompany the successful completion of any task would be incomplete without the mention of the people who made it possible, whose constant guidance and encouragement crowned the efforts with success.

I Would like to thank **Dr. K Nagendra Prasad,** Principal JNNCE, Shivamogga and also, I would like to thank **Dr. R Sanjeev Kunte**, Professor and Head, Dept. of IS&E, and for their support and encouragement.

It gives me a great pleasure in placing on record a deep sense of gratitude to my guide **Mr. Sathyanarayana K.B** Assistant Professor, Dept. of IS&E, for his guidance, initiative and encouragement that led me through the project work.

Finally, I also would like to thank the whole teaching and non-teaching staff of Information Science and Engineering Dept., our respective parents, friends and well-wishers.

ROHAN D – 4JN20IS073

ABSTRACT

The Hostel management System is being Developed for the Hostel officer who looks after the admission of the students, accounts and about the employees. This application involves the management of multiple hostel under the same ground and alloting rooms to the hostel. It can register the student Details, addmitt student to the hostel, can update and remove student students from the hostel.It can also take the information about the Employee working in the hostel in different designations.The information of the employee can also be updated and employee can be removed from work. Hostel Database Management System reduces the paperwork effort, problem of recording information and keeping the records. This system will have the information in one system and reduces the effort of the worker.

TABLE OF CONTENTS

LIST OF FIGURES

CHAPTER 1

INTRODUCTION

1.1 Introduction to DBMS

A Database management system, or DBMS is a software designed to assist in managing and utilizing large collection in data, and the need of such system, as well as their use, is growing rapidly. The alternative to using a DBMS is used to hoc approaches that do not carry over from one application to another.

The area of the Database Management system is microcosm of computer science in general. The issues addressed and the technique used to span a wide spectrum, including languages, object orientation and other programming paradigm, compilation, operating system, concurrent programming, data structures, algorithms, theory, parallel and distributed systems user interface, expert systems and artificial intelligence, statistical techniques, and dynamic programming.

1.2 Problem Description of Hostel management System mini-project

This system is designed in favor of hostel management which helps them to save the records of the students about their rooms and employees. It helps them from the manual work from which it is very difficult to find the record of the students and the hostel of the students, and the information of those ones who had left the hostel. All the hostels at present are managed manually by the hostel office. The Registration form verification to the different data processing is done manually. Thus, there are a lot of repetitions which can be easily avoided. And hence there is a lot of strain on the person who are running the hostel and software's are not usually used in this context. 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 system that will be compatible to the existing system with the system which is more user friendly. We can improve the efficiency of the system, thus overcome the drawbacks of the existing system.

1.3 Objectives

- To manipulate the Hostel transactions with instant confirmation.
- To save time.
- To increase efficiency of students.
- For fast access of data.
- For secure and smooth running of the program.
- For error free, effective and easy for database related work.
- Indicate the room availability.
- To reduce material related cost

1.4 Limitation of the Project

Data accuracy and integrity: The system may not be able to handle errors or inconsistencies in the data input, which can lead to error information**.**

Scalability: The System may not be able to handle the large amount of data which can slow down the performance of the application and delays in processing results**.**

Security: The System may not have adequate security measures in place to protect sensitive information of the students, employees and results from unauthorized access or manipulation.

Integration: The system may not be able to integrate with other systems, such as College student information system, which leads to data duplication and inconsistencies.

1.5 Organization of the report

This section deals with the Introduction and organization of the project report. Chapter 2 discusses the Specific to the problem-Requirement Analysis-Design. Chapter 3 discusses the Design and Implementation Chapter 4 gives information about the snapshot and results Chapter 5 include conclusion and future scope. Chapter 6 gives the references of the project.

CHAPTER 2

SYSTEM REQUIREMENT SPECIFICATIONS

2.1 Functional Requirements

These are statements of services the system should provide, how the system should react toparticular inputs and how the system should behave in particular situations. In some cases, the functional requirements may also explicitly state what the system should not do. The functional requirements for a system describe what the system should do. These requirements depend on the type of software being developed, the expected users of the software and the general approach taken by the organization when writing requirements. When expressed as user requirements, the requirements are usually described abstractly. However, functional system requirements describe the system function in detail, its inputs and outputs, exceptions, and so on. Functional requirements for a software system may be expressed in several ways.

The functional requirements of Hostel Management System are as follow:

Login Module:

- For login officer will input their Id and password which is provided to them.

Register Module:

- The Officer can add hostel, allot rooms to the added hostel by filling the requirements.
- Officer can register student and give admission to the hostel and can add employee to the hostel by filling the Details.
- These Details will be stored in database.

Manage Module:

- The Officer can manage the data of the student by taking admission updating, deleting of the students.
- The Officer can also manage the data of the Employee by updating, removing employee.
- The System will allow the Officer to do so.

2.2 Non-Functional requirements

Non-functional requirements are requirements that are not directly concerned with the specific functions delivered by the system. They may relate to emergent system properties such as reliability, response time and store occupancy. Alternatively, they may define constraints on the system such as the capabilities of I/O devices and the data representations used in system interfaces. The plan for implementing functional requirements is detailed inthe system design. The plan for implementing non-functional requirements is detailed in thesystem architecture. Non-functional requirements are often called qualities of a system. Other terms for non-functional requirements are "constraints", "quality attributes", "qualitygoals", "quality of service requirements" and "non-behavioral requirements". Qualities, thatare non-functional requirements, can be divided into two main categories: Executionqualities, such as security and usability, which are observable at run time.

Security:

- The system should provide a high level of security and integrity of the data held by the system, only authorized personnel to access the Details stored.

Performance:

- The system should have high performance rate when executing the input and should be able to provide feedback or response within a short time span usually 50 seconds for highly complicated task and 20 to 25 seconds for less complicated task.
- The system provides user friendly interface, any common people with little knowledge can use the system.
- System is robust, reliable and fast, provides more efficiency.

Reliability:

- It is the probability and percentage of the system performing without any failure for a specific number of uses or amount of time.
- This system provides reliable interface as it provides data security and data safety.

Consistency:

- This system provides consistency services, by retaining the data present in the database.
- The officer gets the details that are only provided by him, thus achieving correctness of data in the database.

2.3 Hardware and Software Requirements

2.3.1 Software requirements

A major element in building a system is the section of compatible software since the software is the market is experiencing in geometric progression. Selected software should be acceptable by the firm and one user as well as it should be feasible for the system. This document gives a detailed description of the software requirement specification. The study of requirement specification is focused specially on the functioning of the system. It allows the developer or analyst to understand the system, function to be carried out the performance level to be obtained and corresponding interfaces to be established.

- Operating system - Windows 10
- Backend - MySQL Workbench
- Front end - Java swings
- Platform - JCBC jar

2.3.2 Hardware components

The section of hardware configuration is an important task related to the software development insufficient random-access memory may affect adversely on the speed and efficiency of the entire system. The hard disk should have capacity to store the file and application.

- Processor - Intel core i5
- Processor speed - 2.1 GHz
- Ram - 8 GB
- Hard disk - 512 GB

CHAPTER 3

SYSTEM DESIGN

System Design process partition the system into subsystems based on the requirements. It establishes overall system architecture and is concerned with identifying various components. Specifying relationships among the components, specifying relationship among components, specifying software structure maintaining a record of design decisions and providing a blue print for the implementation phase.

3.1 ER DIAGRAM

ER stands for Entity Relationship Diagram, also known as ERD, It is a diagram that displays the relationship of entity sets stored in the database. It is created based on three basic concepts: entities, attributes and relationships. It uses rectangle symbol to represent entities, oval to define attributes and diamond shape to represent relationship among the entities.

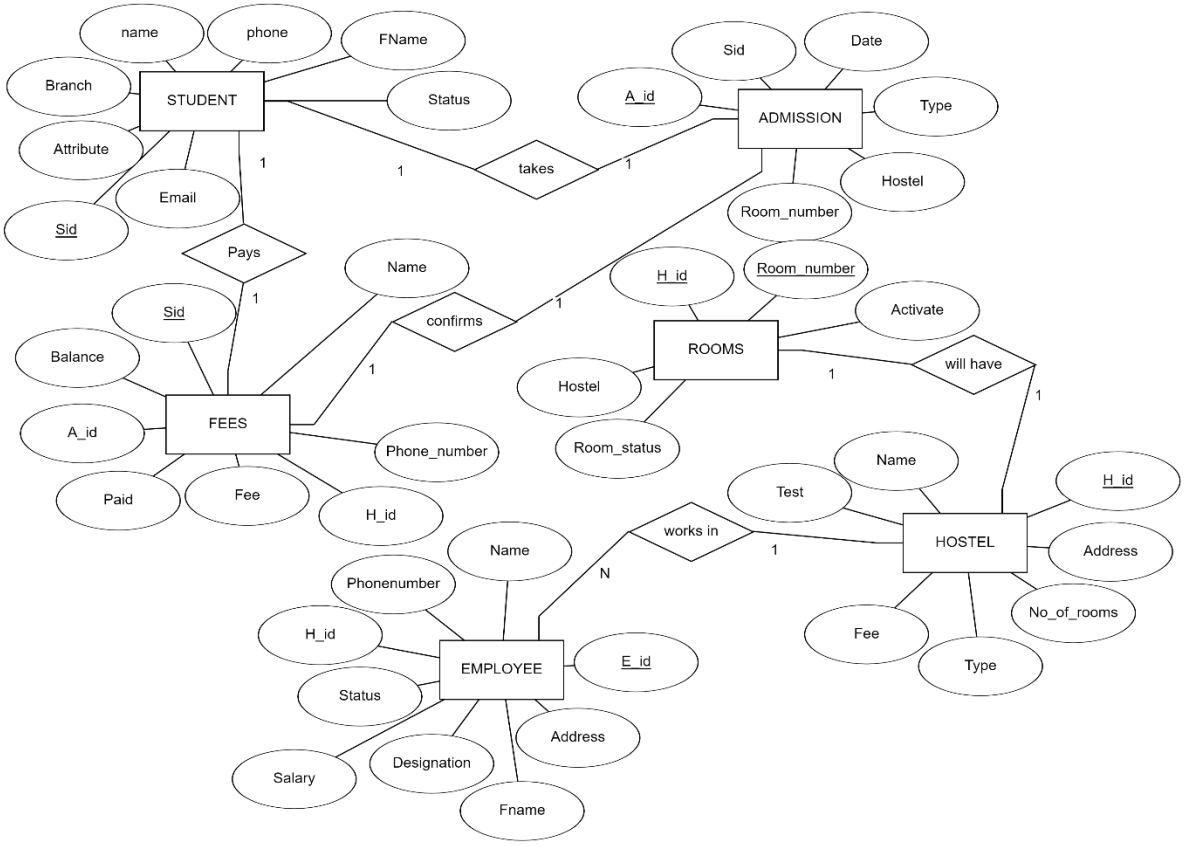

Fig. 3.1 ER Diagram of Hostel Management System

In the Fig. 3.1, there are six entities namely Hostel, Rooms, Student, Admission, Fees and Employee. The Cardinality ratio between Hostel and Room entity is 1: N, Hostel and

Student is 1: N, Fees and admission is 1: 1 and Student and admission is 1: 1 because one student can take only one admission to the hostel in the period of time.

3.2 SCHEMA DIAGRAM

The design of the database is called Schema. This tells us about the structural view of the database. It gives us the overall description of the database. A database schema defines how the data is organized using the schema diagram. A Schema diagram is a diagram which contains entities and the attributes that will define that schema. It only shows the database design but not the actual data. Schema may be one table or it can have the multiple related tables. The schema represents the relationship between these tables.

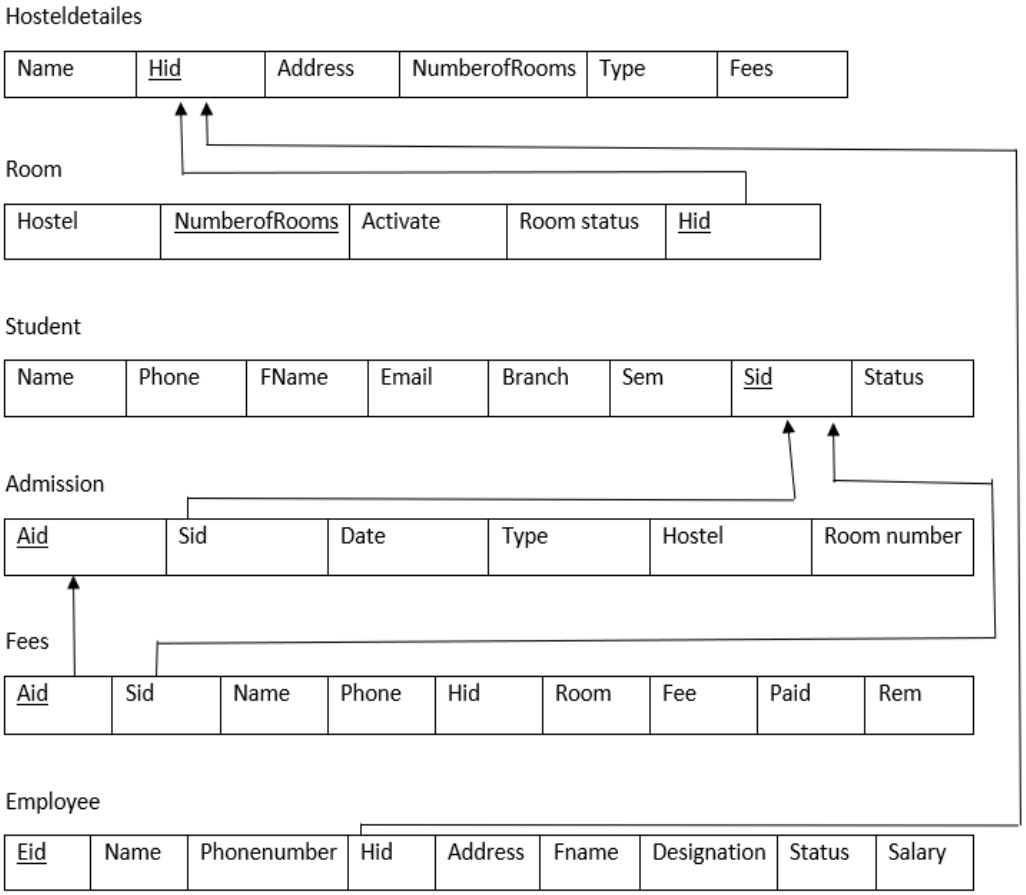

Fig 3.2 Schema of Hostel Management System.

3.3 ATTRIBUTE LIST

Hostel Management System consists of six tables.

1.HOSTEL: Table Hostel contains the attribute of

1.name: The name of the Hostel.
2.Hid: The unique ID of the Hostel.
3.Address: Location of the Hostel.
4.Number of rooms: Total number of rooms of the Hostel.
5.type: Type of the Hostel, i.e., AC or Non-AC.
6.feess: The fees of the Hostel.

2.ROOM: Table Room contains the attribute of

1.Hostel: The name of the Hostel.
2.roomnumber: Unique number given to represent the room.
3.activate: This is to make the added room available to student during admission.
4.roomstatus: This is to the status like Booked or Not.
5.Hid: This is the Unique ID which refers to the Hid of the Hostel.

3.STUDENT: Table Student contains the attributes of

1.Name: Name of the Student.
2.Phone: Phone number of the student.
3.fname: Father name of the student.
4.email: email of the student.
5.address: Home address of the student.
6.branch: Branch of the student in which he is studying.
7.Sem: Current semester of the student.
8.Sid: Unique ID given to represent the student.
9.Status: Status of the student like admitted, not admitted or left the hostel.

4.ADMISSION: Table Admission contains the attribute of

1.Aid: Unique ID given to the student after taking admission.
2.Sid: Unique ID of the student refers Student.
3.Date: The date of the admission.
4.Type: Represents duration of the admission.
5.hostel: Hostel to which student has been admitted.
6.roomnumber: room number of the hostel where he has been admitted.

5.FEES: Table Fees contains the attribute of

1.Aid: Admission ID of the student refers admission table.
2.Sid: Student ID of the student.
3.Name: name of the student.
4.Phone: Phone number of the student.
5.Hid: Hostel ID of the Hostel in which student's admission took place.
6.Room: Room number of the student.
7.Total fees: Total fees of the student of that hostel.
8.paid: Total amount paid by the student.
9.rem: remaining fee or due of the student.

6.EMPLOYEE: Table Employee contains the attribute of

1.name: Name of the Employee.
2.Eid: Unique ID given for Employee.
3.phno: Phone number of the Employee.
4.Hid: Hostel ID where the employee works.
5.Address: Residential address of the employee.
6.Fname: Father name of the employee.
7.Designation: designation of the employee.
8.status: status like working or not working i.e., left the job.
9.Salary: salary of the employee.

CHAPTER 4

IMPLEMENTATION

The whole project was divided into two parts, the front-end and the back-end development. The front-end development was creating the interactive pages with user friendly interface. The back-end development was to access the database stored on the server side and updating the same. In this project, MySQL is used in backend database.We have used java sings for frontend implementation. For front-end development we used Apache NetBeans IDE 15 application. The database is accessed and updated using MySQL queries in java language.We have used MySQL queries to implement the project includes SELECT, INSERT, DELETE, UPDATE operations.

4.1 Tools and Technologies used

SOFTWARE:

Windows 10

Windows10 is a personal computer operating system developed and released by Microsoft as part of the windows NT family of operating systems.it was released on July 29, 2015. It is the first version of windows that receives ongoing feature updates. Devices in enterprise environments can receive these updates at a slower pace, or use long-term support milestones that only receive critical updates, such as security patches etc.

FRONT END:

Java Swings

Java database connectivity (JDBC) is an application programming interface (API) for the programming language java, which defines how a client may access a database. It is java based data access technology and user for java database connectivity. It is Part of the java standard edition platform, form oracle corporation.it provides methods to query and update data in a database, and is oriented towards relational databases. A JDBC-to-ODBC bridge enables connections to any ODBC-accessible data source in the java virtual machine (JVM) host environment.

Apache NetBeans IDE 15

Apache NetBeans is top level Apache Project dedicated to providing rock solid software development product. That address the needs of developers, users and the businesses who rely on NetBeans as a basis for their products; particularly, to enable them to develop these products quickly, efficiently and easily by leveraging the strengths of the Java platform and other relevant industry standards.

BACK END:

SQL

SQL stands for Structured Query Language. SQL is used to communicate with a database. According to ANSI (American National Standards Institute), it is the standard language for relational database management systems statements are used to perform tasks such as update data on a database, or retrieve data from a database. Some common relational database management systems that use SQL are: Oracle, Sybase, MySQL Server, etc. Although most database systems use SQL, most of them also have their own additional proprietary extensions that are usually only used on their system. However, the standard SQL commands such as "Select", "Insert", "Update", "Delete", "Create", and "Drop" can be used to accomplish almost everything that one needs to do with a database.

MySQL workbench

MySQL Workbench enables the DBA, Developer, or data architect to visually design, model, generate, and manage databases. It includes everything a data modeler needs for creating complex ER models, forward and reverse engineering, and also delivers key features for performing difficult change management and documentation tasks that normally require much time and effort.

CHAPTER 5

RESULT AND ANALYSIS

This Chapter includes result and snapshot of the implementation.

Fig.5.1 Screenshot of login page of hostel management

In the Figure 5.1, we can see the login page where Officer can login into the Hostel Management System

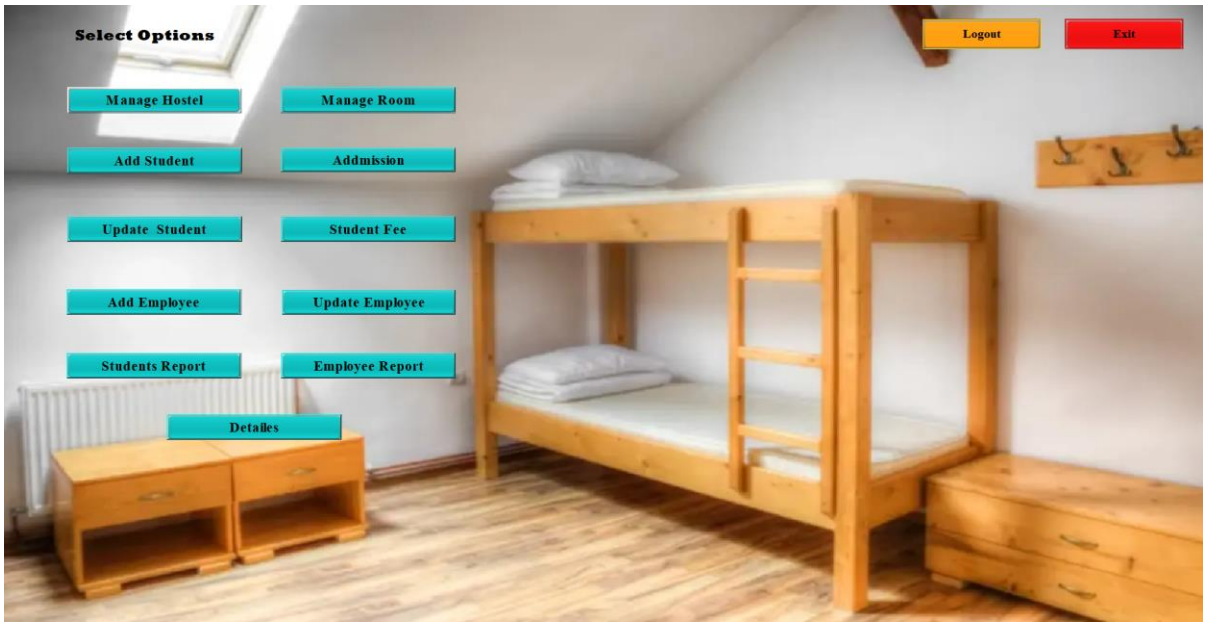

Fig 5.2 Screenshot of Home Page of Hostel Management System

In the figure 5.2, We can see the Home Page which contains the different options where Officer can do his works.

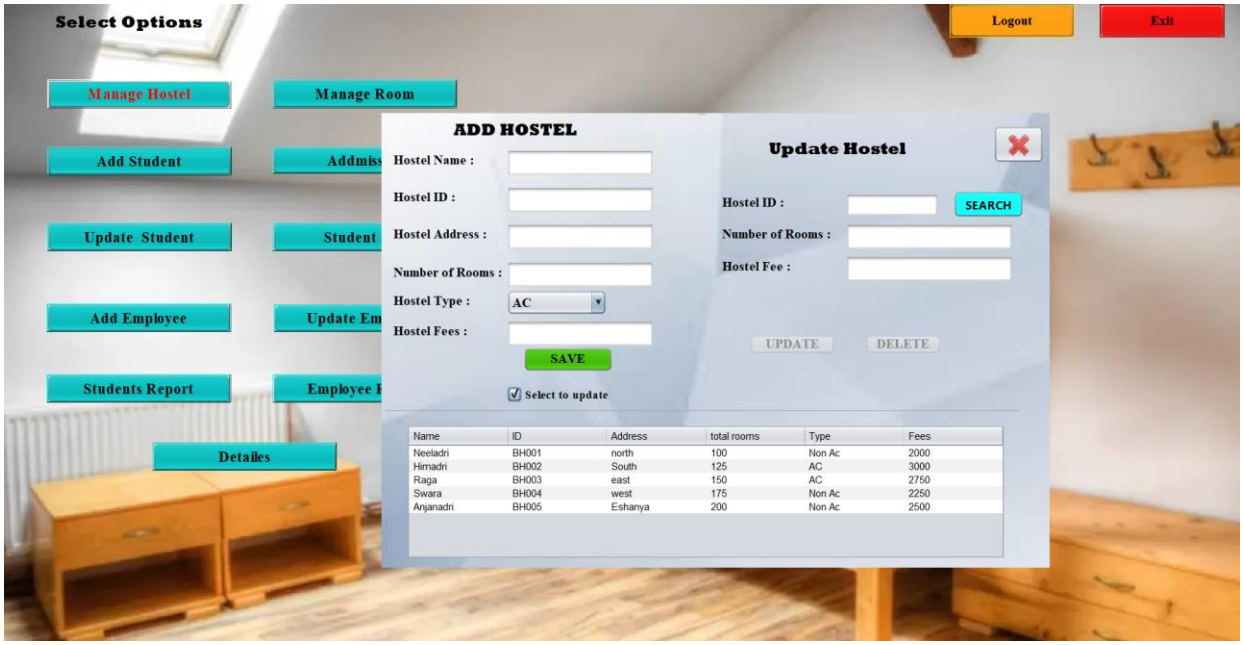

Fig.5.3 Screenshot of Mange Hostel

In the Figure 5.3, we can see the Manage Hostel Page where officer can Add the hostel, update the hostel and he also can delete the hostel.

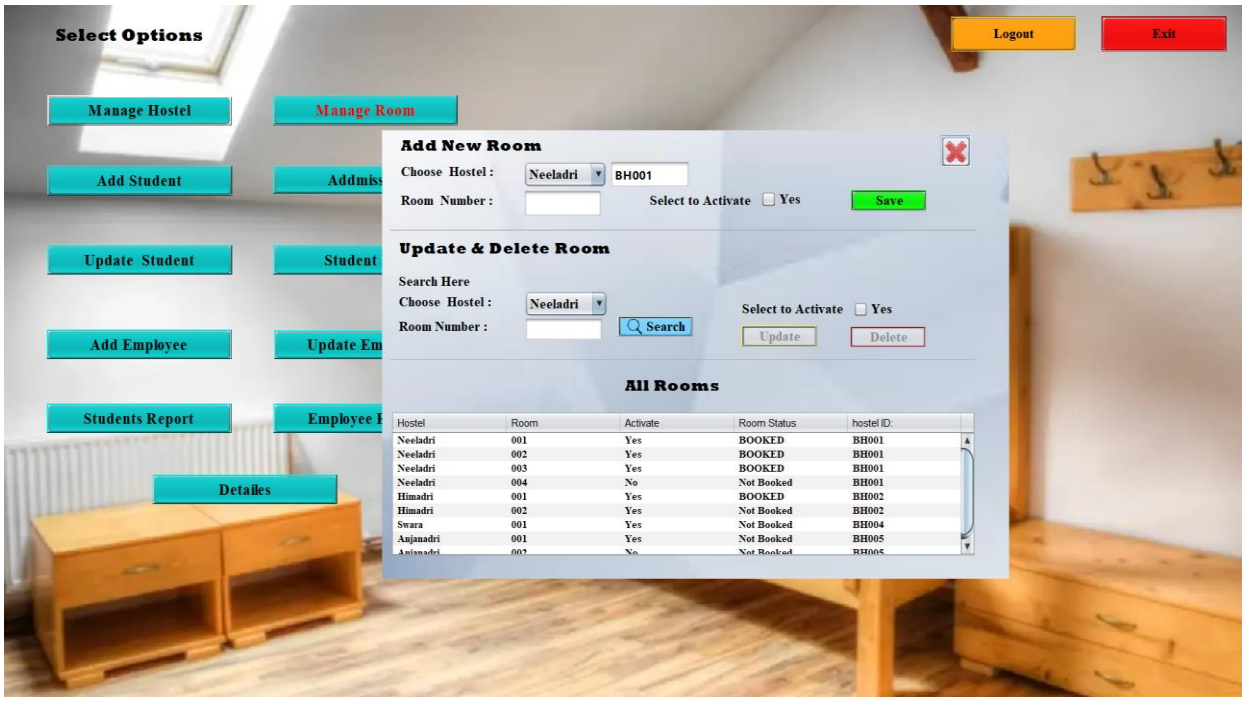

Fig 5.4 Screenshot of Manage Room

In the Figure 5.4, We can see the Manage Room Page where Officer can add the room to the particular hostel, he can update the rooms and he also can delete the room if it is not booked. Here he can see Details of the room in the table.

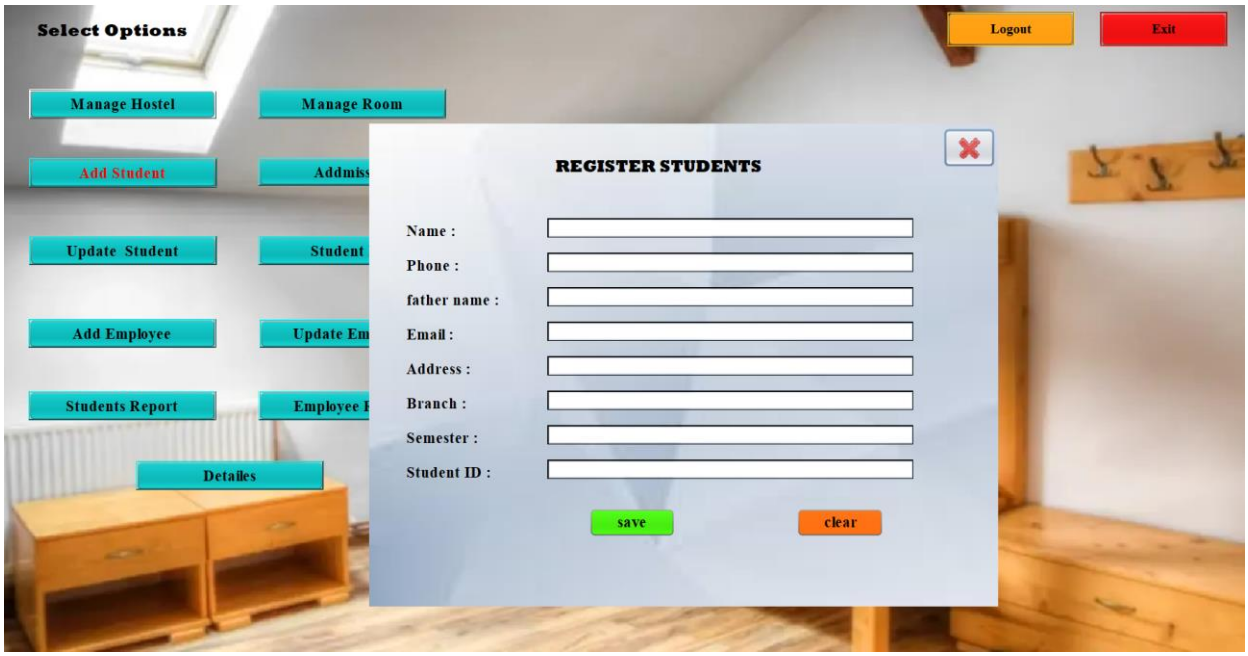

Fig 5.5 Screenshot of Add student

In the Figure 5.5, we can see the page where Officer can register student to take admission to the hostel by entering his information into the system.

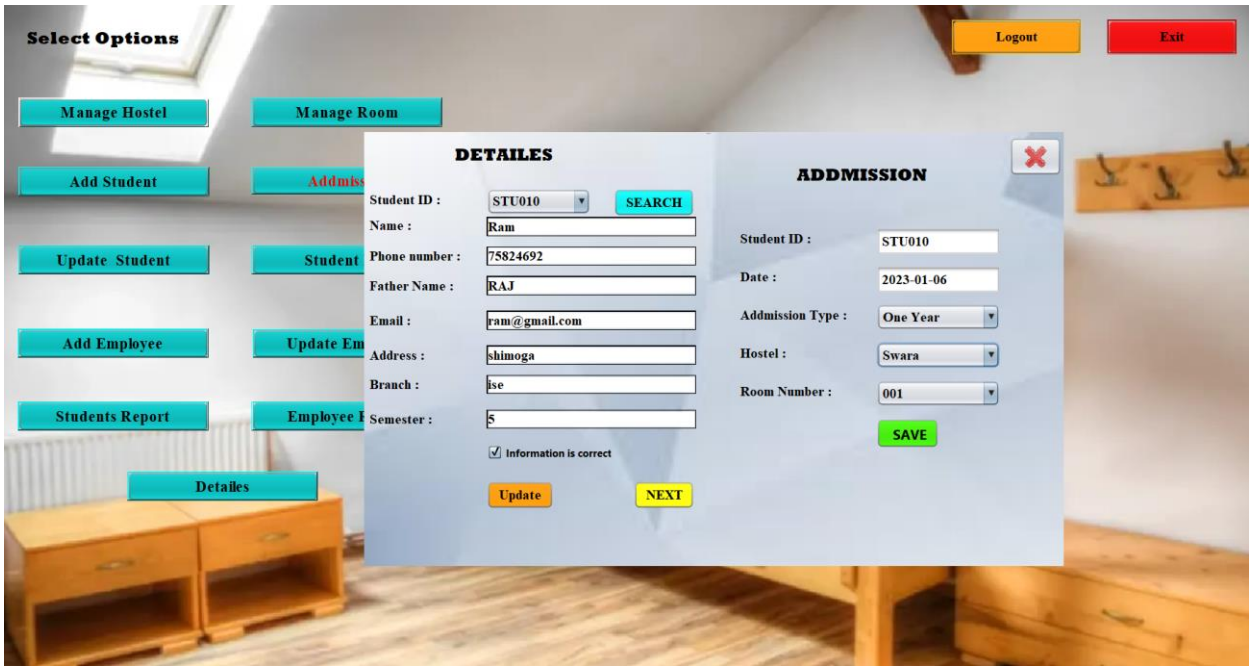

Fig 5.6 Screenshot of Admission Page

In the Figure 5.6, we can see the admission page where officer can see the registered student information and Officer can give admission to the student who are registered.

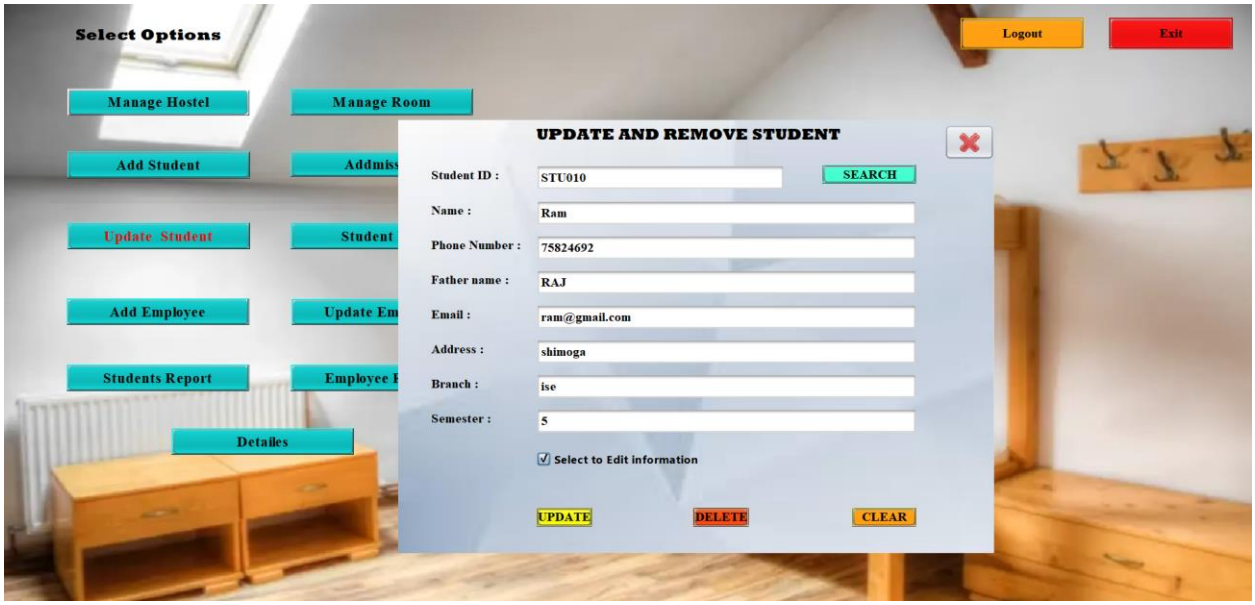

Fig 5.7 Screenshot of Update and Remove Student

In the Figure 5.7 we can see the update and remove student page, where Officer can update or remove the student that have been taken the admission from the hostel.

Fig 5.8 Screenshot of Student fees

In the Figure 5.8, we can see the Screenshot of student fees page where student id is entered the Fee structure of the student is displayed on this page. Total fees and paid amount and due will be displayed in the table. Officer can update the Amount paid and due left.

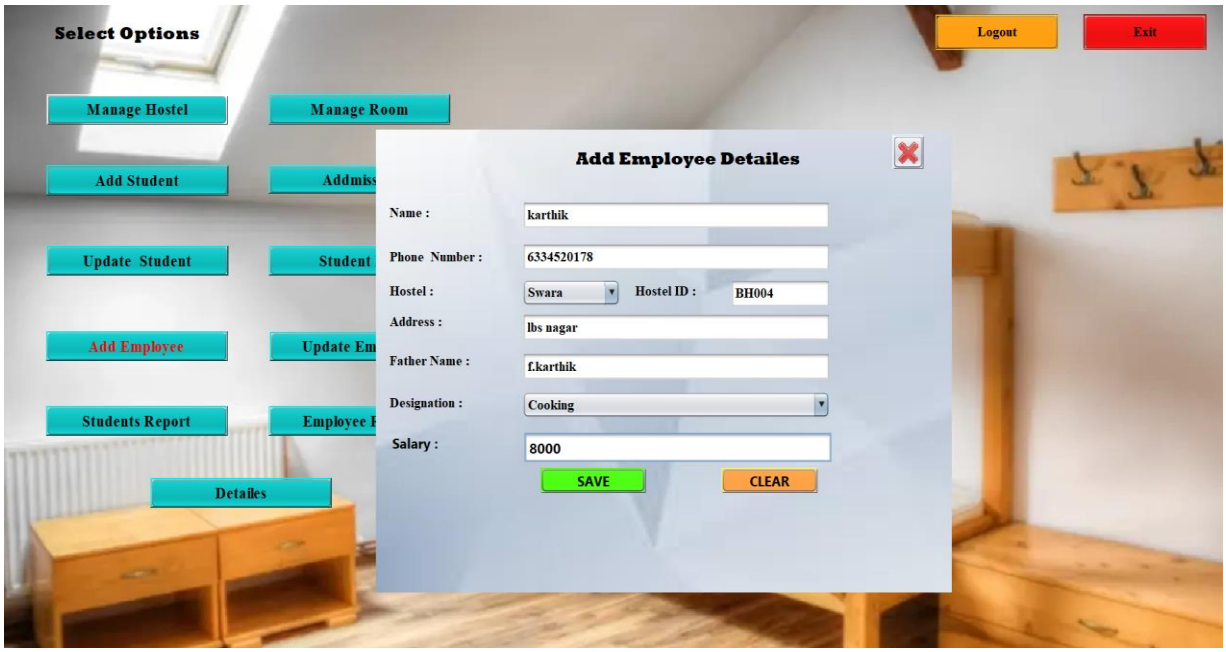

Fig 5.9 Screenshot of Add Employee

In the Figure 5.9, we can see the screenshot of Add Employee page, Officer can add the new Employee Details can select the hostel for the employee, select the designation for the employee and can fix the Salary to him.

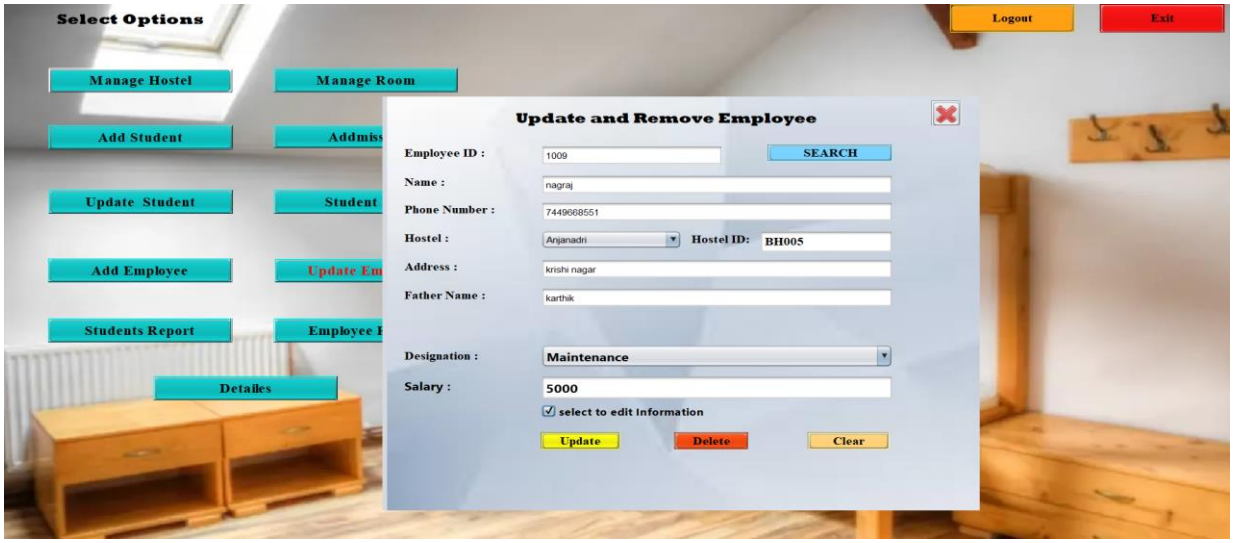

Fig 5.10 Screenshot of Update and Delete Employee

In the Figure 5.10, we can see the Screenshot of update and delete employee page where Officer can update the details of employee, here officer can change the hostel details, designation and salary. He can remove the employee by deleting the Employee.

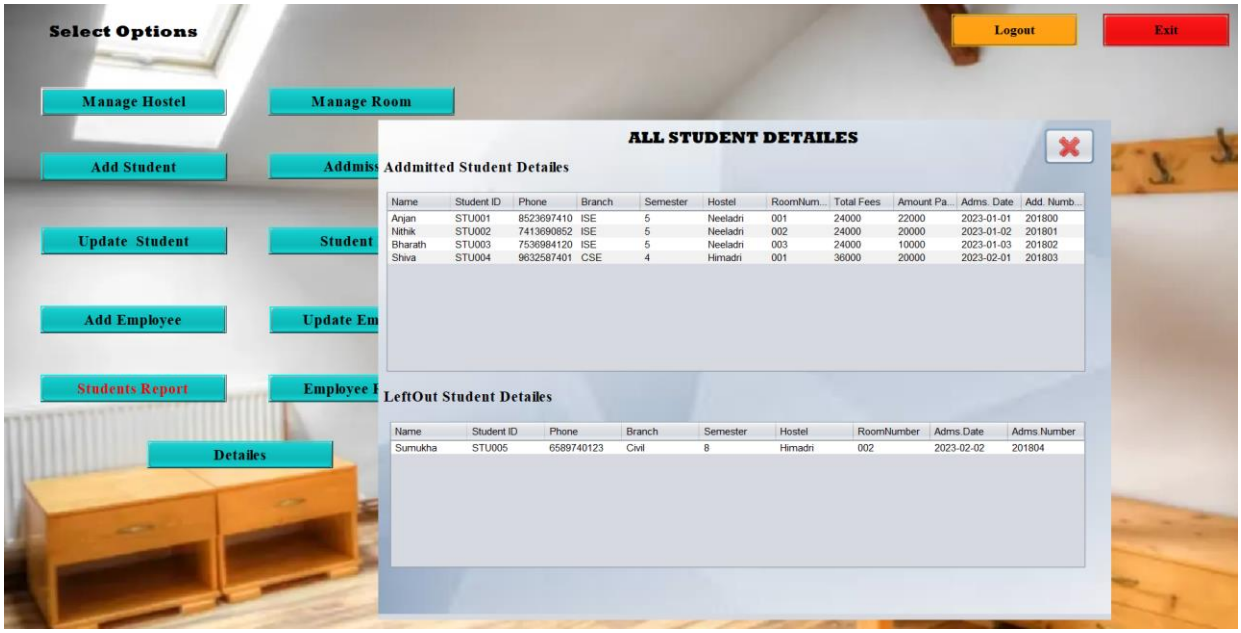

Fig 5.11 Screenshot of All Students Reports

In the Figure 5.11, we can see the Screenshot of all students report page, where Officer can see the details of all the students who are admitted to the hostel and also he can see the details of the student who left the hostel.

Fig 5.12 Screenshot of All Employee Reports

In the Figure 5.12, there is an All Employee Reports page where Officer can view the details of the employee who are working in the hostel and also the details of the employee who had left the hostel.

Fig 5.13 Screenshot of Details

In the Figure 5.14 we can see the Screenshot of the page Details, In this page Officer can get reports of the students sorted by hostel name, student's semester and he can get the reports of the employee by hostel name and also by the designations.

CONCLUSION

This System helps in understanding the creation of an interactive page and the technologies used to implement it. The building of the project has given us a precise knowledge about how Java Swings/ MySQL is used to develop an application, how it connects to the database to access the data and how the data and pages are modified to provide the user with the data maintaining application.

This project is to design an efficient Maintained database system and it will make easy to access the records based on requirements.

It will also improve decision making by reducing the processing time as well as reducing the communication gap between beneficiary and Hostel. It will also reduce error in records.

REFERENCES

Books

1. Fundamentals of database systems, Ramez Elmasri and Shamkant B. Navathe, 7th edition, 2017, Pearson.
2. Database management systems, Ramakrishnan, and Gehrke, 3rd edition, 2014, McGraw Hill.

Weblinks

3. https://www.edureka.co/blog/java-swing/
4. https://youtube.com/playlist?list=PLdRq0mbeEBmxkcuasB3D1grHjNFwwrMeo