Hostel Room Allocation System

2025

Presented by:

TEAM-“Hello World”

TEAM MEMBERS:-

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ABOUT

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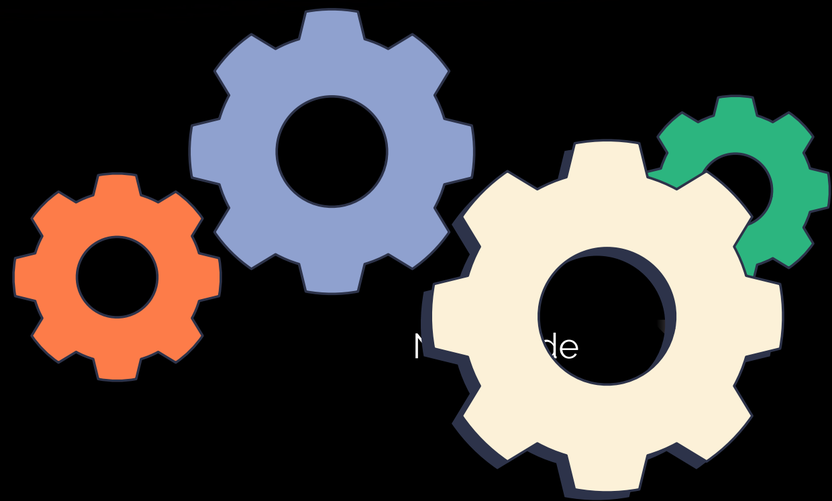
This project enables admin users to manage hostel room allocation for students in a user-friendly Java GUI. Students' information can be added, updated, deleted, and viewed with proper database management using MySQL.

Key Functionalities:

- Add, update, and delete student records.
- View allocated rooms.
- Room allocation based on availability.
- Real-time database sync.



PROBLEM STATEMENT

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- Manual room allocation is error-prone and time-consuming.
- Requires a system that automates allocation and makes data easily accessible..
- Data must be stored persistently and be modifiable by the admin..
- Goal: Build a system that simplifies hostel room management with GUI and database backend.

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OBJECTIVES

- Simplify room allocation using Java GUI.
- Enable easy management of student records and room availability.
- Provide real-time database sync using MySQL.
- Offer intuitive admin interface with all CRUD operations.

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SYSTEM ARCHITECTURE

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- Frontend: Java Swing GUI for interacting with system.
- Backend: Java logic using JDBC.
- Database: MySQL for data storage.
- Flow :

  Admin ⇄ GUI ⇄ JDBC ⇄ MySQL

TECHNOLOGY STACK

- Frontend: Java Swing (GUI Components).
- Backend: Java (JDK 8+), JDBC.
- Database: MySQL.
- IDE: Visual Studio Code / IntelliJ.
- OS: Windows 11.

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KEY FEATURES

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- Add, update, and delete student records.
- Add rooms with availability check.
- Allocate rooms to students.
- View all students, rooms, and allocations.
- Input validation and error messages.
- Transaction rollback on allocation failure.
- Neat and organized GUI interface.

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Challenges & Solutions

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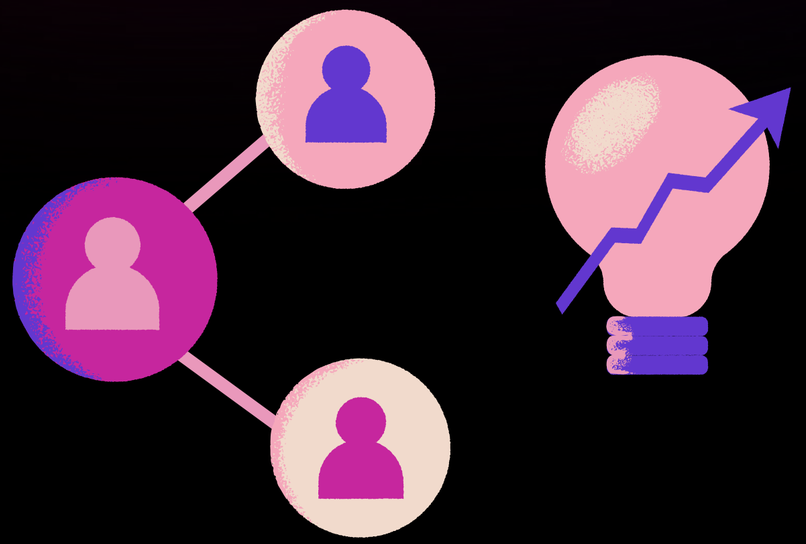
- **Data Sync: Solved using JDBC for persistent connection.**
- **GUI Management: Handled using modularized Swing components.**
- **Error Handling: Added alerts, try-catch, and validations.**
- **Room Logic: Ensured no overallocation by checking DB constraints.**



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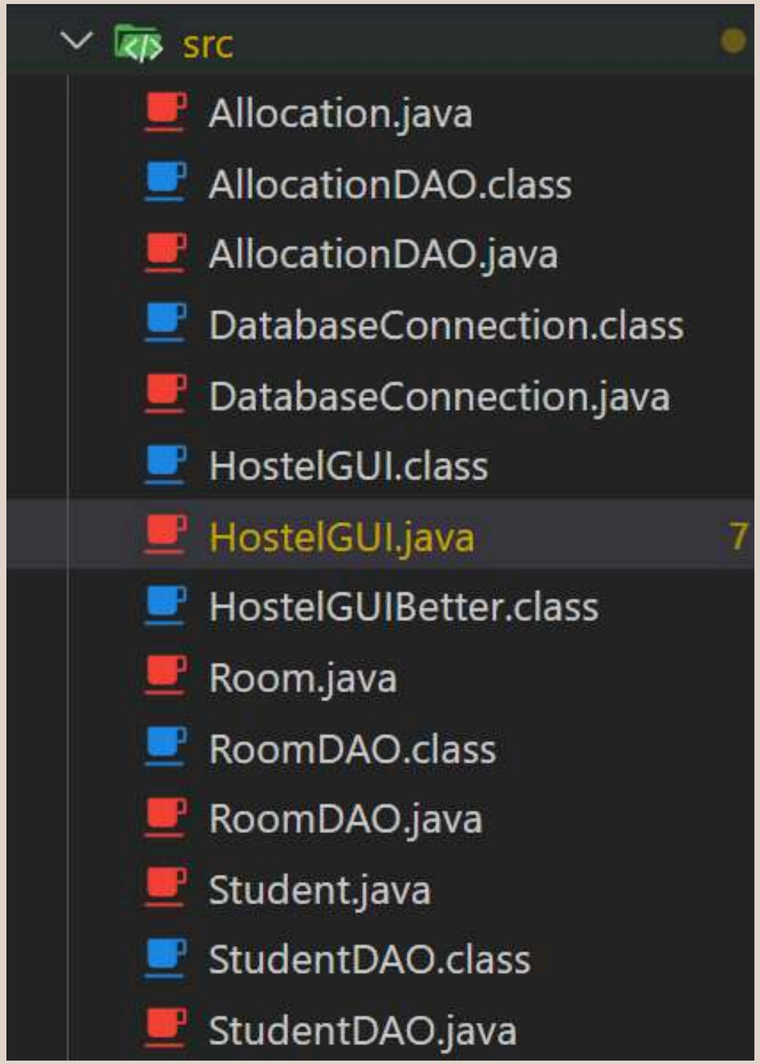
Some Screenshots For The Projects

Project Folder in VS Code

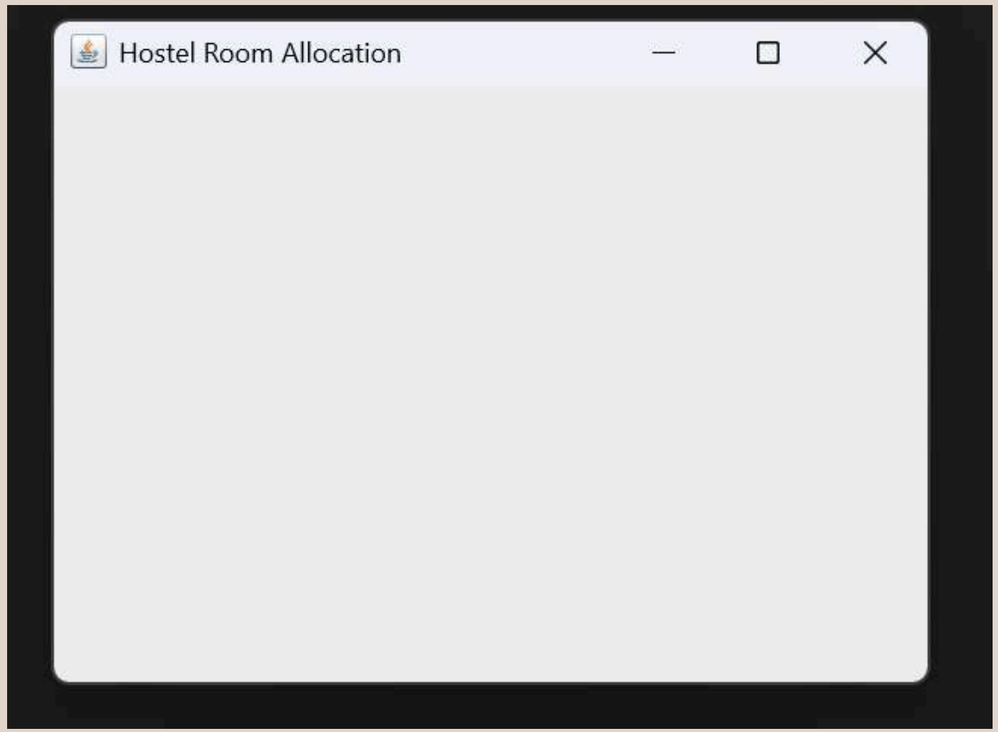


MySQL Database and Table Creation

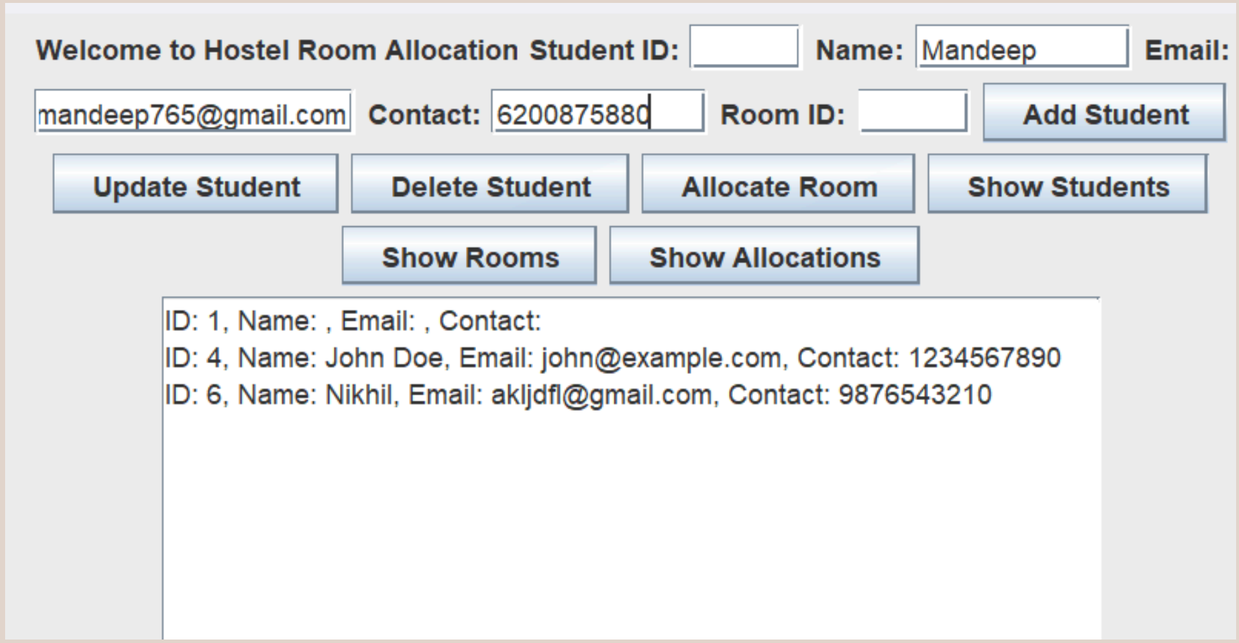
```
mysql> USE hostel_db;
Database changed
mysql> SHOW TABLES;
+----------------------+
| Tables_in_hostel_db  |
+----------------------+
| allocations          |
| rooms                |
| students             |
+----------------------+
3 rows in set (0.169 sec)
```

Some Screenshots For The Projects

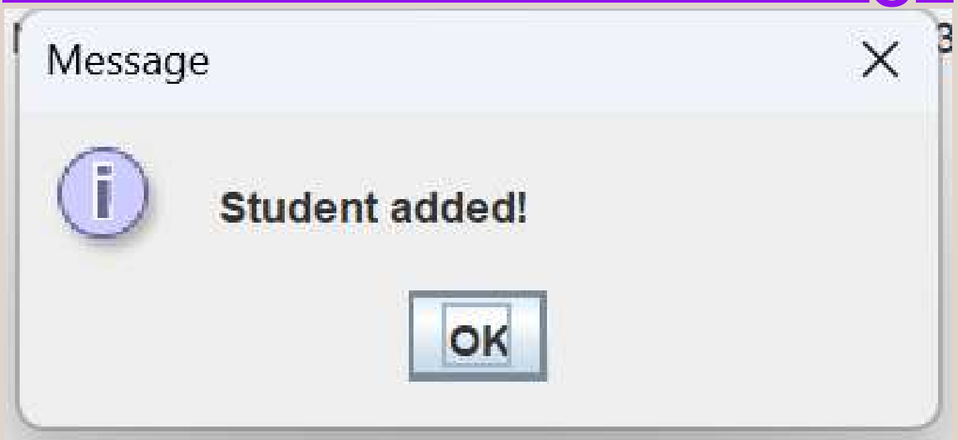
Initial GUI (Blank Form)



Filled Add Student Form



Add Student Success Message

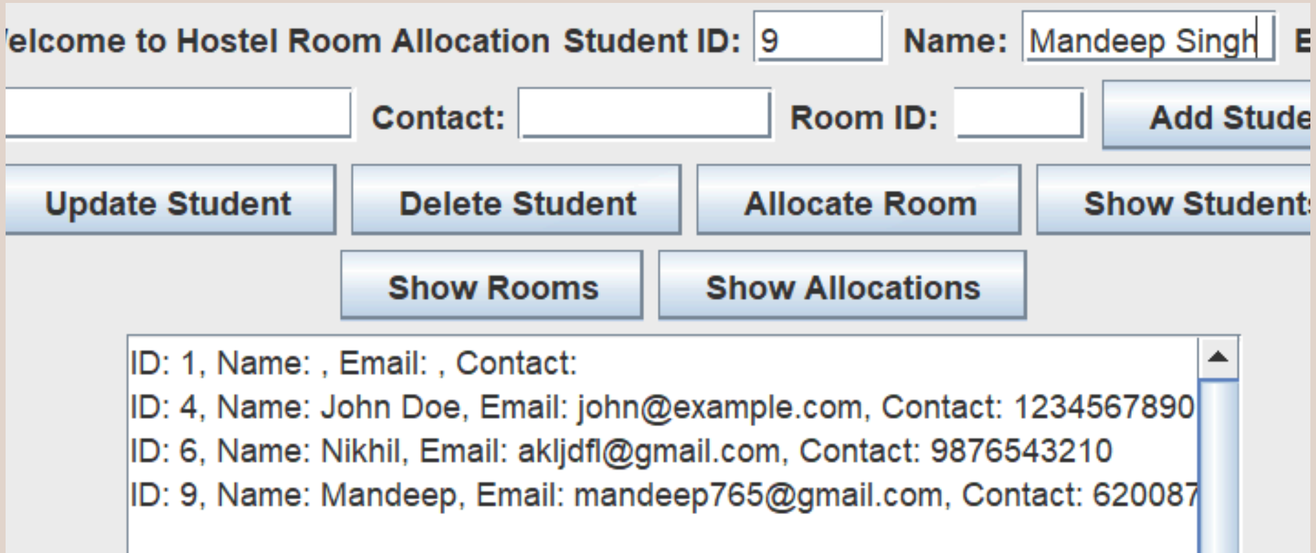


Some Screenshots For The Projects

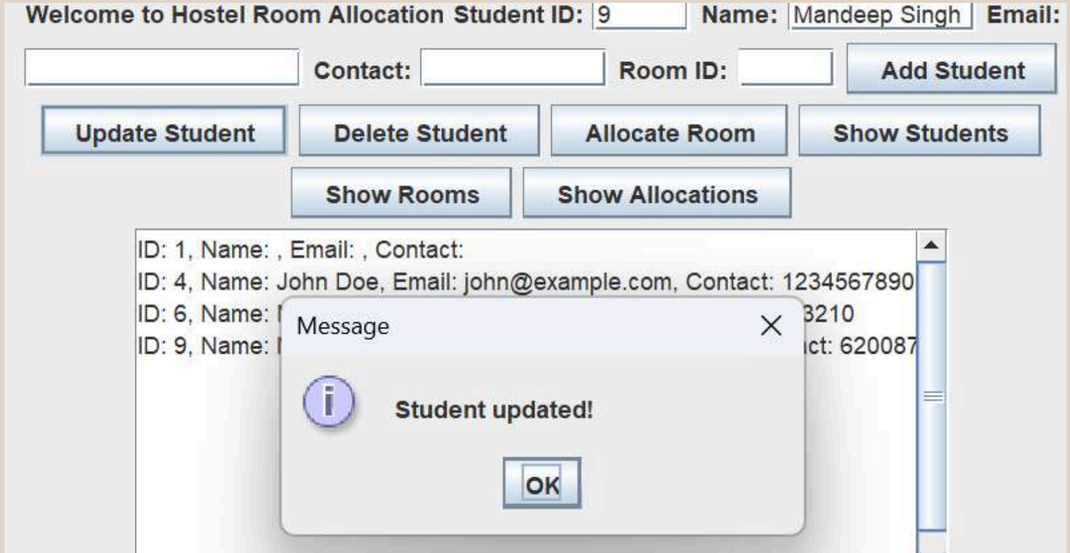
Students Table After Insertionl (Blank Form)

```
mysql> SELECT * FROM students;
+------------+----------+----------------------+------------+
| student_id | name     | email                | contact    |
+------------+----------+----------------------+------------+
|          1 |          |                      |            |
|          4 | John Doe | john@example.com     | 1234567890 |
|          6 | Nikhil   | akljdfl@gmail.com    | 9876543210 |
|          9 | Mandeep  | mandeep765@gmail.com | 6200875880 |
+------------+----------+----------------------+------------+
```

Filled Update Student Form

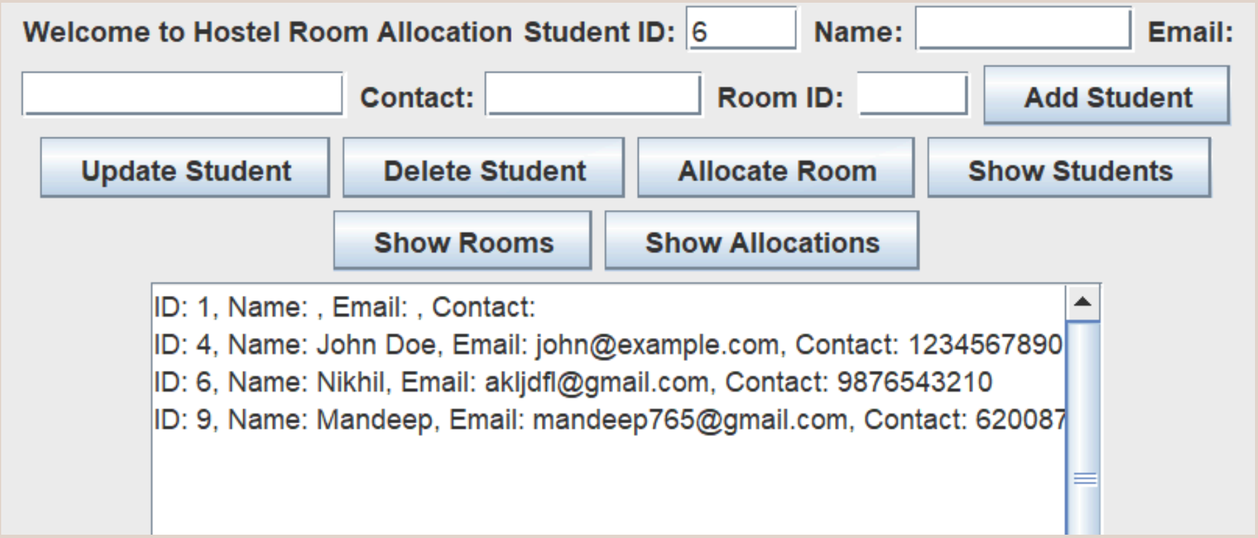


Update Success Message

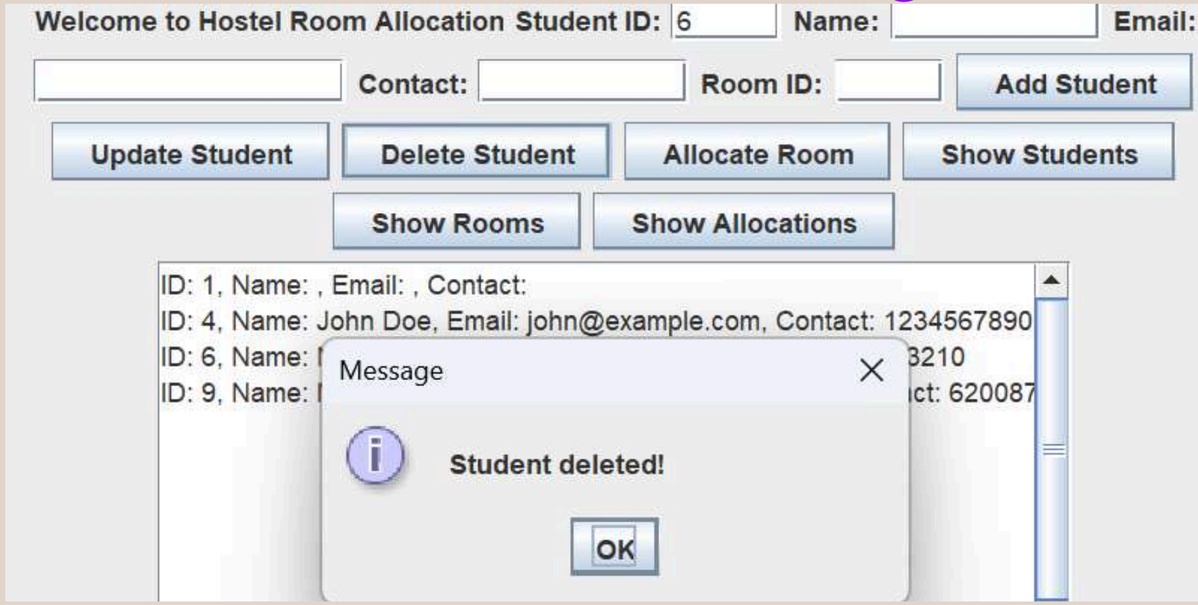


Some Screenshots For The Projects

Filled Delete Student Form



Delete Success Message

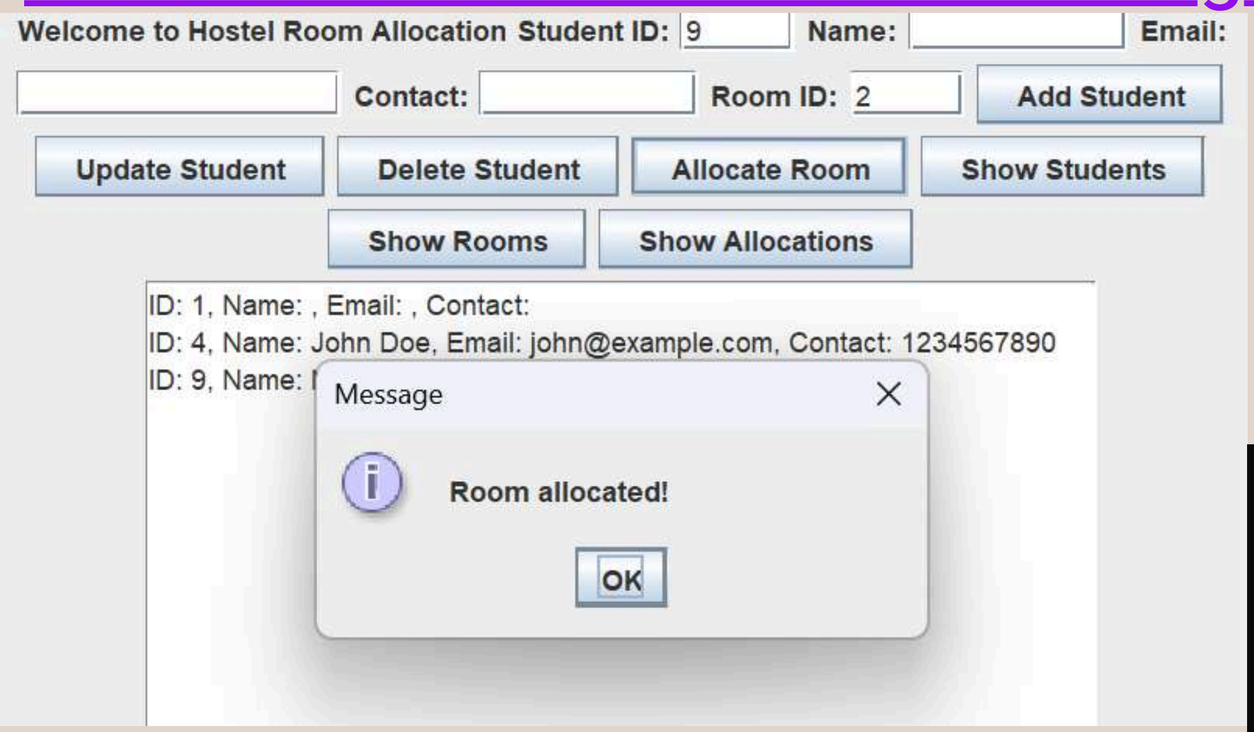


MySQL: Students Table After Deletion

```
mysql> SELECT * FROM students;
+------------+--------------+------------------+------------+
| student_id | name         | email            | contact    |
+------------+--------------+------------------+------------+
|          1 |              |                  |            |
|          4 | John Doe     | john@example.com | 1234567890 |
|          9 | Mandeep Singh |                  |            |
+------------+--------------+------------------+------------+
3 rows in set (0.009 sec)
```

Some Screenshots For The Projects

Filled Room Allocation Fields & Message



MySQL: Allocations Table After Allocation

```
mysql> SELECT * FROM allocations;
+---------------+------------+---------+----------------+
| allocation_id | student_id | room_id | allocated_date |
+---------------+------------+---------+----------------+
|             1 |          1 |       1 | 2025-05-01     |
|             2 |          1 |       1 | 2025-05-20     |
|             4 |          1 |       1 | 2025-05-20     |
|             7 |          9 |       2 | 2025-05-24     |
+---------------+------------+---------+----------------+
4 rows in set (0.009 sec)
```

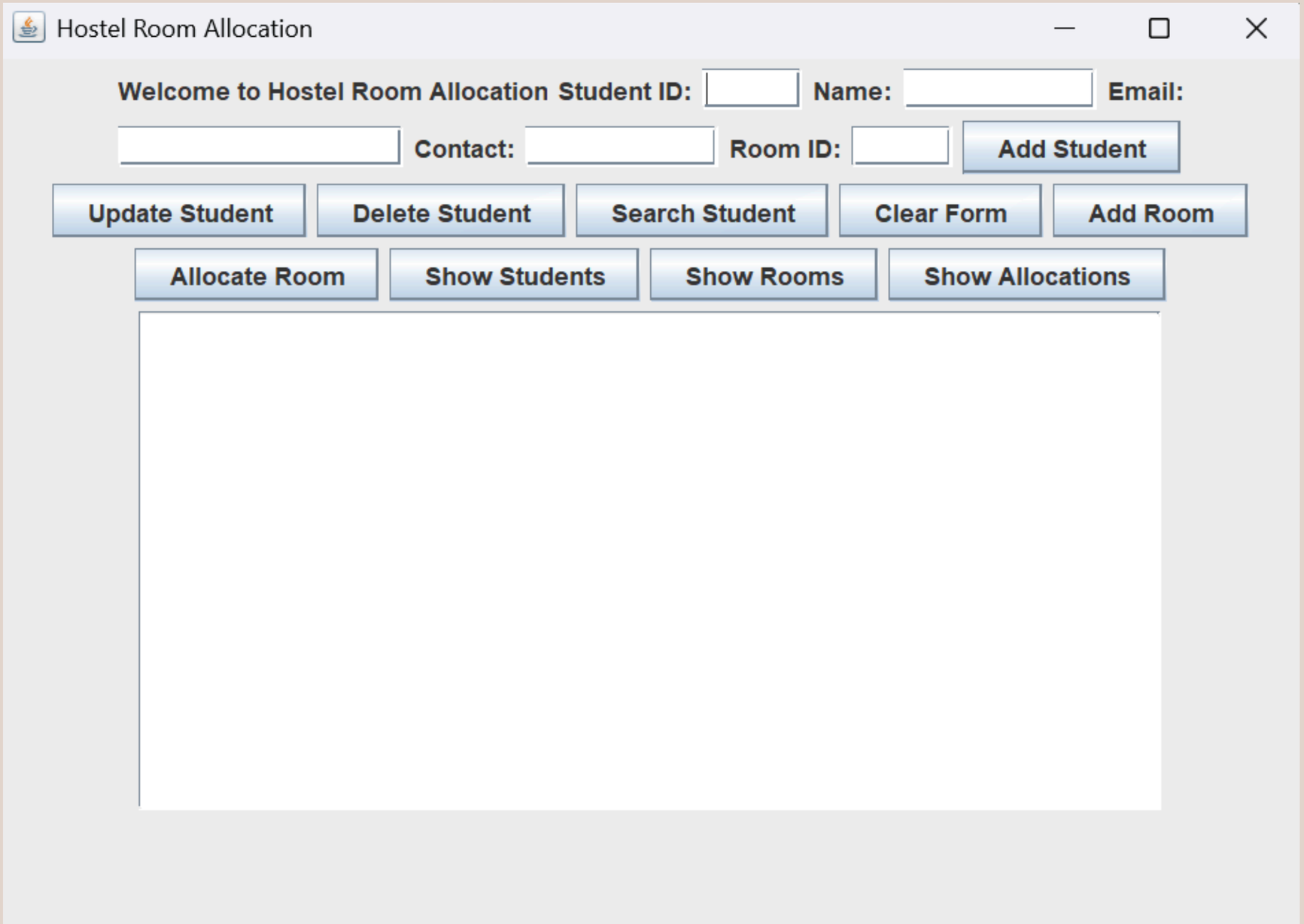
Some Screenshots For The Projects

MySQL: Rooms Table Showing Availability Update

```
mysql> SELECT * FROM rooms;
+---------+-------------+----------+-----------+
| room_id | room_number | capacity | available |
+---------+-------------+----------+-----------+
|       1 | R101        |        2 |         0 |
|       2 | R102        |        1 |         0 |
+---------+-------------+----------+-----------+
2 rows in set (0.012 sec)
```

Some Screenshots For The Projects

GUI Display of All Students (JTable)



Conclusion & Future Scope

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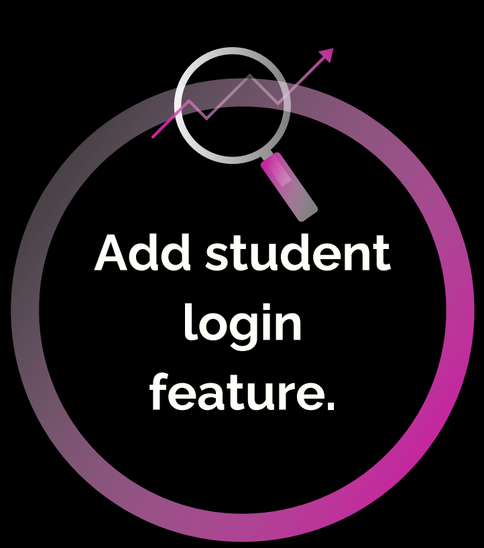
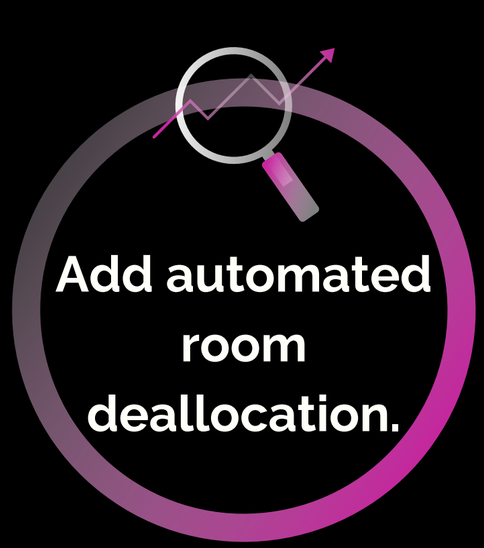
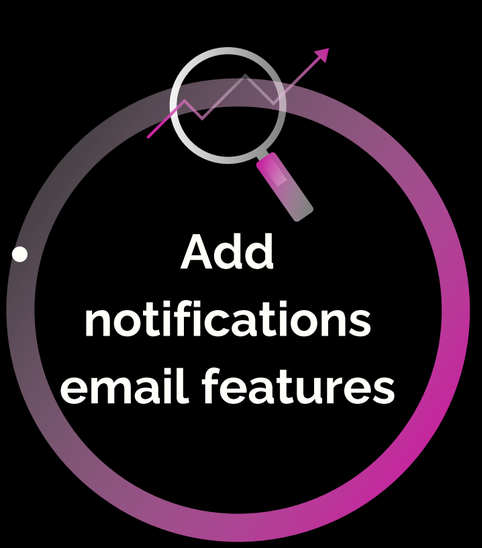
✅ The Hostel Room Allocation System is successfully implemented with essential features.

🚀 Future Scope:







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Thank You!

Thank you for your attention!