JSS MAHAVIDHYAPEETHA

JSS SCIENCE AND TECHNOLOGY UNIVERSITY

SUBJECT: SOFTWARE ENGINEERING

TOPIC: HOTEL MANAGEMENT WEBSITE

TEAM NUMBER: 3

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Abstract

Aura Suites is a resort and hotel management system designed to streamline bookings and enhance administrative efficiency. The application's front end is developed primarily using HTML, Bootstrap, and CSS, incorporating the Flexbox grid for responsive design and optimal user experience. The web application also features JavaScript, JQuery, and JQuery UI on the front end to power other functionalities.

The backend database is managed with MySQL, and PHP 8.3 handles backend coding, ensuring smooth communication between the front and back end. The system is hosted on an Apache web server (XAMPP). Aura Suites allows guests to easily navigate the website, check room availability, and manage bookings.

The project aims to develop a user interface portal for managing room allotment in a hotel/resort. It will enable online room booking and allow guests to check their allotment status. A dedicated control panel will also be provided for hotel/resort administrators to enhance operational efficiency. The software will include functionality to retrieve information from the database and perform validation processes dynamically.

The project's principal objective includes exploring various data structures, database management, and data processing systems. This software will also include the code to retrieve information dynamically from the database and validate it. The entire design will be user-friendly. The designed software is a great tool and finds numerous practical applications such as booking resorts, serviced apartments, or homestays.

The salient features of this software include:

- Appealing and Elegant Home page describing various facilities of the Hotel
- Ready availability details of rooms on the home page itself
- A guest has to register, and he can log in under the "User login" option.
- Every user has a dashboard that will show the status of their requests.
- Users can submit new requests.
- The hotel admin has a control panel through which he gets the consolidation list of all requests.

- Admin can allot requests, reject requests, and cancel requests based on need and availability.
- Auto Email information to users when the request is submitted and confirmation on the allotment if rejected by admin or cancelled by admin.
- Security features like direct and unauthorised access to associate / linked webpages and user validations, Date picker from the calendar, and validation of every field of data submission are incorporated.
- Forgot password / Password restoration options

Feasibility study

Conducting a feasibility study for the developed software involves assessing various aspects to determine the viability, cost-effectiveness, and potential benefits of implementing such a system.

I. Economic Feasibility

i. Cost Analysis:

- The primary technologies used are HTML, CSS, Bootstrap, JavaScript, JQuery, PHP 8.3, and MySQL. As students, most of these technologies are open-source, significantly reducing licensing costs.
- The application will be hosted on an Apache web server (XAMPP), a cost-effective solution.

ii. Cost-Benefit Analysis:

- **Increased Efficiency:** Automation of room booking and management processes will reduce manual work, leading to cost savings. This will allow hotel staff to focus on more critical tasks, improving overall efficiency.
- **Improved Customer Satisfaction:** An enhanced user experience can increase bookings and repeat customers, positively impacting revenue for the hotel. Satisfied customers are likelier to leave positive reviews and recommend the hotel to others.
- **Reduction in Errors:** Automated processes reduce the risk of errors, leading to fewer customer complaints and better operational efficiency. This can lead to a smoother operation and a more professional image for the hotel.

II. Technological Feasibility

i. Technology Stack:

- **Frontend:** HTML, CSS, Bootstrap for responsive design, JavaScript, JQuery, and JQuery UI for enhanced functionality.
- **Backend:** PHP 8.3 for server-side scripting, MySQL for database management.
- **Server:** Apache web server (XAMPP) for hosting.

ii. Technical Requirements:

- **Hardware:** Standard web servers capable of running Apache, sufficient storage for the database.
- **Software:** Latest versions of the chosen technologies to ensure compatibility and security.

III. Schedule Feasibility

i. Development Timeline:

The entire project came into action through a foolproof plan by deploying five different phases, ensuring a seamless transition from concept to execution.

- **Phase 1: Planning:** Requirement gathering, project scope definition, and feasibility study.
- **Phase 2: Design:** UI/UX design, database schema design, and system architecture planning.
- **Phase 3: Development** Frontend and backend development, integration of all components.
- **Phase 4: Testing** Unit testing, integration testing, and user acceptance testing.
- **Phase 5: Deployment:** Deployment on the Apache web server, final testing, and go-live.

IV. Operational Feasibility

i. Functionality:

- **User Registration and Login:** Users can log in to access the dashboard.
- **Room Booking and Management:** Users can check room availability, make bookings, view, edit, and cancel requests.
- **Admin Control Panel:** Admins can view all requests, allocate rooms, and reject or cancel requests as needed.
- **Notifications:** Automated email notifications for booking confirmations, rejections, and cancellations.
- **Security:** Measures to prevent unauthorised access and ensure data protection.
- **Additional Features:** Forgot password option, date picker for booking dates, validation of input fields.

ii. Non-functionalities:

a. **Security:**

- The web application does not allow direct access to user and admin dashboards. It checks the login status of users before granting access to these pages. If a user is not logged in, the system redirects them to the login page (index.php). This ensures that unauthorised users cannot access sensitive areas of the application, maintaining the security of user data and admin functions.
- Session variables are destroyed when the browser is closed. This adds an additional layer of security by preventing unauthorised access to the application if a user forgets to log out.
- Admin-related PHP pages are kept in one folder below the webroot and are accessible locally within the intranet. This setup prevents direct access to these pages from the internet, ensuring that only authorised personnel within the local network can access administrative functions.

b. Portability:

- The software is tested to run on various operating systems such as Windows, Mac, and Linux, as well as browsers like Brave, Chrome, and Firefox.
- Linux hosting enhances security and reliability.

A thorough feasibility study provides hotel management with a comprehensive assessment of the technical, operational, economic, and schedule aspects related to implementing software solutions. It helps stakeholders make informed decisions about whether to proceed with the project, adjust requirements, or explore alternative solutions.

Requirement engineering

Requirement engineering for hotel management involves systematically gathering, documenting, and analysing requirements for developing effective software solutions tailored to the hospitality industry.

I. Inception

- Identify stakeholders involved in hotel operations, including hotel managers, front desk staff, housekeeping supervisors, IT administrators, and guests. Consider external stakeholders like booking platforms, third-party service providers, and regulatory bodies.

- During inception, the process began by gathering initial requirements from stakeholders and potential users through surveys. This phase aimed to understand their needs, expectations, and desired features for the Aura Suites hotel management system, setting the foundation for the project's direction and scope.

- High-level project goals and objectives were also defined to provide clarity on what the system aimed to achieve, such as improving booking efficiency, enhancing user experience, or increasing administrative productivity.

II. Elicitation

- Elicitation involved understanding stakeholders' perspectives to delve deeper into their requirements.
- Analysing existing systems and competitor offerings was another critical aspect of elicitation. This analysis helped identify industry best practices, potential gaps in current solutions, and innovative features that could be integrated into Aura Suites. It provided insights into essential functionalities and opportunities for improvement or differentiation in the new system.

III. Elaboration

- During elaboration, detailed use cases were developed to outline specific interactions and workflows within Aura Suites. These use cases captured user goals, system responses, and any external interactions necessary for the system to function.

- Designing a website for Aura Suites was also a focus during elaboration. This involved creating wireframes, mockups, and prototypes that visually represented how users would interact with the system.

IV. Negotiation

- The negotiation process ensured that essential features were addressed first and resources were allocated efficiently.We prioritised the requirements as follows:
    i. High Priority: Make Room Requests, View Requests, Allot Room Requests
    ii. Medium Priority: Check Room Availability, Edit/Delete Request, VIP Booking
    iii. Low Priority: Cancel Request, Deny Room Requests
- Managing scope and stakeholder expectations was integral to negotiation.

V. Specification

- The specification phase culminated in creating a detailed Software Requirements Specification (SRS) document. This document served as a blueprint for Aura Suites, documenting all functional and non-functional requirements, use cases, system constraints, and interfaces.
- The SRS specified how the system would behave under different conditions and served as a reference for development, testing, and validation.
- Acceptance criteria were defined within the SRS for each requirement. These criteria outlined specific conditions that must be met for a requirement to be considered successfully implemented.

VI. Validation

- Validation began with a thorough review of the SRS document.
- Prototyping or simulations were employed during validation to validate system behaviour and usability. Prototypes provided a tangible representation of the system's functionality, allowing them to interact with key features and provide feedback before full-scale development.
- Simulations simulated real-world scenarios to test how the system performed under different conditions, identifying potential issues or performance bottlenecks.

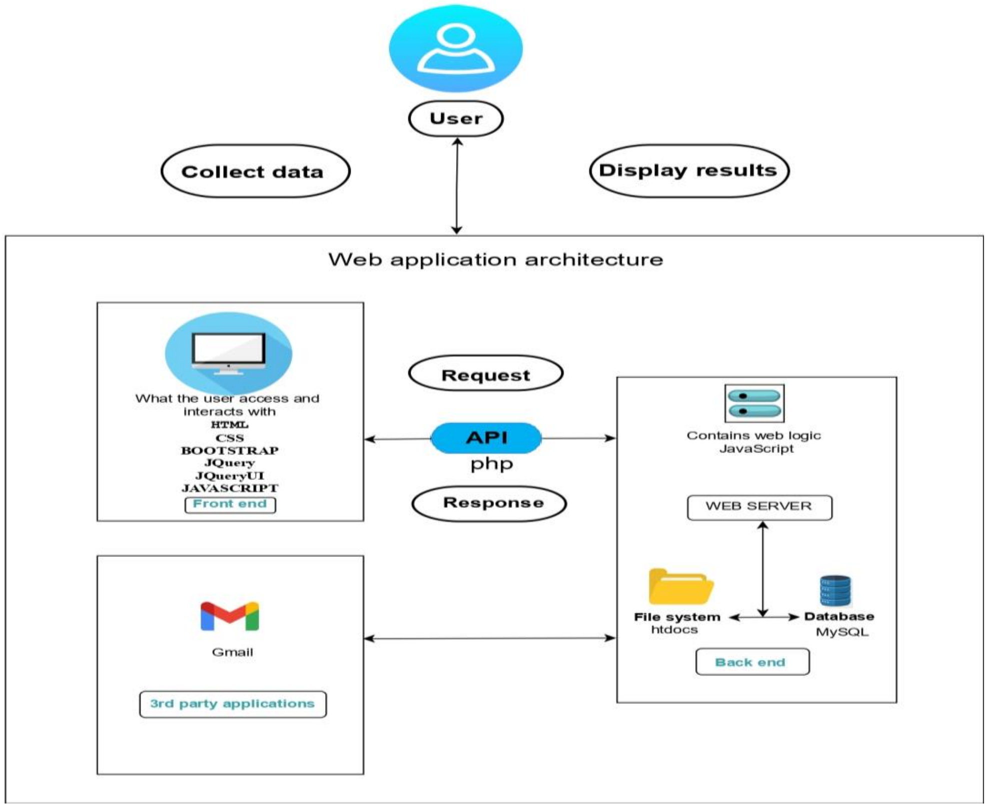
VII. Requirement Management

- Requirement management began by implementing a formal change control process. This process defined how changes to requirements were identified, evaluated, approved, and implemented.
- It established roles and responsibilities for managing changes and ensured that all stakeholders were informed and involved in the decision-making process. Tracking and documenting changes to requirements was central to requirement management. Changes were recorded with details such as the rationale, impacts on scope, schedule, resources, and approval status.

Effective requirement engineering is essential for developing a robust software that meets the diverse needs of stakeholders while aligning with business goals and industry standards. By following these seven steps, software engineers can systematically gather, analyse, document, validate, manage changes, and verify requirements to ensure successful software development and implementation in the hospitality sector.

Design

I. Architecture diagram



II. Use Cases' Analysis

I. Identify Actors:

i. Primary Actors:

a. Guest: Users who book and manage room reservations.

b. Admin: Hotel staff responsible for managing bookings and room allocations.

II. Define Use Cases:

i. Check Availability:

a. Check Room Availability: Allows guests to view available rooms based on their preferences and dates.

ii. Reservation Management (For Guests):

a. Sign In: New users can sign in with their email ID and assign themselves a username and password, through which they will access their user dashboard, which is required to make room requests.

b. Log In: Existing users can use their credentials to log in via the login page and access their dashboard to make various requests.

c. Make Room Request: Guests can request a room reservation.

d. View Requests: Guests can view their current room requests.

e. Cancel Request: Guests can cancel their existing room requests.

f. Edit/Delete Request: Guests can edit or delete their room requests.

iii. Reservation Management (For Admin):

a. Allot Room Requests: Admins can allocate rooms to guests based on their requests.

b. Deny Room Requests: Admins can deny room requests if necessary.

c. Cancel Room Requests: Admins can cancel an allotted room request based on urgent demands/administrative purposes.

d. VIP Booking: Admins can make new bookings for VIP purposes or handle on-the-spot bookings.

III. Detail Use Case Scenarios:

i. Check Room Availability:

a. Steps:

1. The guest selects arrival and departure dates and room preferences.

2. The system checks room availability.

3. The system displays available rooms.

b. Postconditions: Available rooms are displayed to the guest.

ii. Make Room Request:

a. Preconditions: The guest is logged in using their registered credentials.

b. Steps:

1. The guest selects a room and requests a reservation.
2. The system processes the request and updates availability.
3. The system confirms the guest's room request.

c. Postconditions: Room request is confirmed and recorded in the system.

iii. View Requests:

a. Preconditions: The guest is logged in using their registered credentials.

b. Steps:

1. Guest navigates to their request history.
2. The system displays current and past room requests.

c. Postconditions: The guest views their room request history.

iv. Cancel Request:

a. Preconditions: The guest is logged in and has an existing room request.

b. Steps:

1. The guest selects a request to cancel.
2. The system processes the cancellation and updates availability.
3. The system confirms the cancellation to the guest.

c. Postconditions: The room request has been cancelled, and availability has been updated.

v. Edit/Delete Request:

a. Preconditions: The guest is logged in and has an existing room request.

b. Steps:

1. The guest selects a request to edit or delete.

2. The system processes the changes and updates availability.

3. The system confirms the changes to the guest.

c. Postconditions: Room request is edited or deleted, and availability is updated.

vi. Allot Room Requests:

a. Preconditions: The admin is logged in and has access to room requests.

b. Steps:

1. Admin reviews room requests.

2. Admin allocates available rooms to guests.

3. The system updates the room status and confirms allocation to the guest.

c. Postconditions: The room request is allotted, and the room status has been updated.

vii. Deny Room Requests:

a. Preconditions: The admin is logged in and has access to room requests.

b. Steps:

1. Admin reviews room requests.

2. Admin denies the room request.

3. The system updates the status and notifies the guest.

c. Postconditions: The room request has been denied, and the status has been updated.

viii. Cancel Allotted Room Requests:

a. Preconditions: The admin is logged in and can access allotted room requests.

b. Steps:

1. The admin selects an allotted room request to cancel.

2. The system processes the cancellation and updates availability.

3. The system notifies the guest of the cancellation.

c. Postconditions: The allotted room request has been cancelled, and room availability has been updated.

ix. VIP Booking:

a. Preconditions: The admin is logged in.

b. Steps:

1. The admin selects dates and room preferences for VIP bookings.

2. The system checks room availability and processes the booking.

3. The system confirms the VIP booking.

c. Postconditions: VIP booking is confirmed and recorded in the system.

IV. Identify Relationships Between Use Cases:

i. Include Relationships:

a. Authenticate User: This step is common for all guest interactions and the admin.

b. Check Room Availability: Before making, editing, or allotting a room request, the system checks room availability from the database.
c. Generate Notifications: Notifications in the form of emails are sent to guests after significant actions, such as confirmation, rejection, and cancellation.

V. Prioritize and Validate Use Cases:

i. Priority:

a. High Priority: Make Room Requests, View Requests, Allot Room Requests.

b. Medium Priority: Check Room Availability, Edit/Delete Request, VIP Booking.

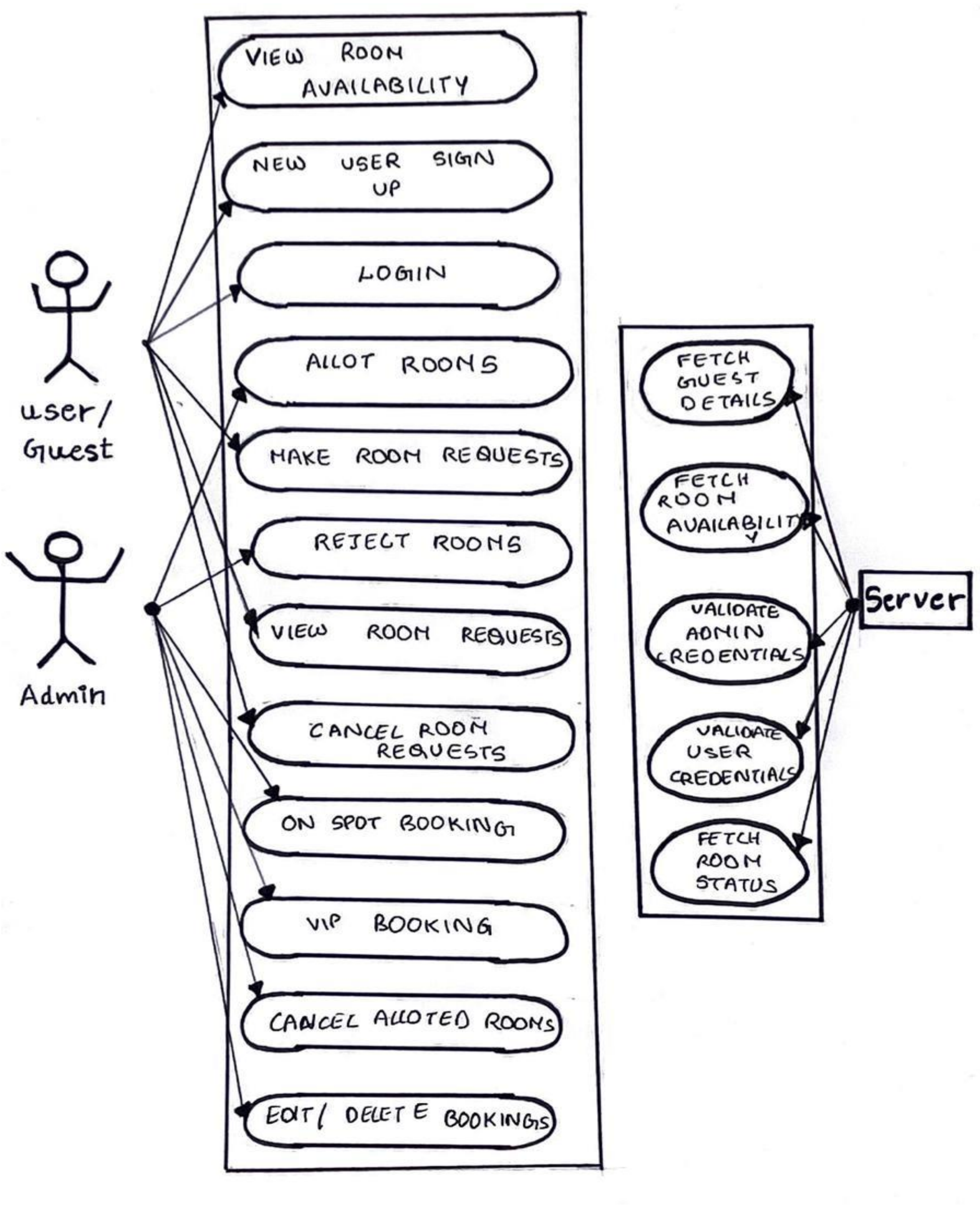
c. Low Priority: Cancel Request, Deny Room Requests.

ii. Validation: Validate use cases with hotel staff, management, and IT team to ensure accuracy and completeness.

VI. Document Use Cases:

i. Use Case Diagram: Create a visual representation of use cases and actors using UML notation.

UML Diagram



By systematically identifying, detailing, and validating use cases, one can ensure that the website provides apt and efficient functionality.

Code

I. Main Function Frontend

```
<!DOCTYPE html>

<?php

            session_start();

            include("dbconnect.php");

            require_once("login_check.php"); ?>

<html lang="en">

<head>

<meta charset="UTF-8">

<meta name="viewport" content="width=device-width, initial-scale=1.0">

  <title>User Dashboard</title>

  <link
    href=https://cdn.jsdelivr.net/npm/bootstrap-icons/font/bootstrap-icons.css rel="stylesheet">

   <link rel="stylesheet" href="./stylesheet.css">

</head>

<body>

    <nav class="navbar navbar-expand-lg">

        <div class="container-fluid">

            <a class="navbar-brand" href="#"><img src="./Resoruces/LOGO_PDF_jpg.jpg"
height="29" alt="AuraSuites"> Aura Suites</a>

            <button class="navbar-toggler" type="button" data-bs-toggle="collapse" data-bs-
target="#navbarSupportedContent"

                aria-controls="navbarSupportedContent" aria-expanded="false" aria-label="Toggle
navigation">
```

```
      <span class="navbar-toggler-icon"></span>
    </button>
    <div class="collapse navbar-collapse" id="navbarSupportedContent">
      <ul class="navbar-nav me-auto mb-2 mb-lg-0">
        <li class="nav-item">
          <a class="nav-link home-link" aria-current="page" href="./index.php">Home</a>
        </li>
        <li class="nav-item">
          <a class="nav-link user-login-link" href="./UserLogin.php">User Login</a>
        </li>
        <li class="nav-item">
          <a class="nav-link admin-login-link" href="./AdminLogin.php">Admin Login</a>
        </li>
        <li class="nav-item">
          <a class="nav-link admin-login-link" href="./index.php">Logout</a>
        </li>
        <li class="nav-item dropdown">
          <a class="nav-link dropdown-toggle" href="#" role="button" data-bs-toggle="dropdown"
            aria-expanded="false">
            More
          </a>
          <ul class="dropdown-menu">
            <li><a class="dropdown-item" href="./rooms.html">Rooms</a></li>
```

```
                            <li><a class="dropdown-item" href="./amenities.html">Amenities</a></li>
                            <li><a class="dropdown-item" href="./testimonials1.html">Testimonials</a></li>
                        </ul>
                    </li>
                </ul>
            </div>
        </div>
    </nav>
    <div class="container dashboard-container">
        <div class="row">
            <div class="col-md-4">
                <div class="card">
                    <div class="card-body">
                        <h5 class="card-title">View Bookings</h5>
                        <p class="card-text">Check all your bookings and details.</p>
                        <a href="./show_entries.php" class="btn btn-custom">View</a>
                    </div>
                </div>
            </div>
            <div class="col-md-4">
                <div class="card">
                    <div class="card-body">
                        <h5 class="card-title">New Booking</h5>
                        <p class="card-text">Make a new booking with us.</p>
                        <a href="./guest_details_form.php" class="btn btn-custom">Book Now</a>
                    </div>
                </div>
            </div>
            <div class="col-md-4">
                <div class="card">
                    <div class="card-body">
                        <h5 class="card-title">Cancel Bookings</h5>
                        <p class="card-text">Cancel your existing bookings.</p>
                        <a href="./cancel1.php" class="btn btn-custom">Cancel</a>
                    </div>
                </div>
            </div>
        </div>
    </div>
    <footer class="footer">
        <div class="container">
            <div class="row">
                <div class="col-md-4"></div>
                <div class="col-md-4 text-center">
                    <a href="#" class="fa fa-facebook"></a>
                    <a href="#" class="fa fa-twitter"></a>
                    <a href="#" class="fa fa-instagram"></a>
                </div>
                <div class="col-md-4"></div>
                </div>

                <p>&copy; 2024 Aura Suites. All rights reserved.</p>

                <p><a href="mailto:auraa.suites@gmail.com">auraa.suites@gmail.com</a></p>

            </div>

        </footer>

        <script src="https://cdn.jsdelivr.net/npm/bootstrap@5.3.3/dist/js/bootstrap.bundle.min.js"
    integrity="sha384-
    YvpcrYf0tY3lHB60NNkmXc5s9fDVZLESaAA55NDzOxhy9GkcIdslK1eN7N6jIeHz"
    crossorigin="anonymous"></script>

    </body>

    </html>
```

II. Main Function Backend

```
<?php

if (isset($_POST['submit'])) {

    if ($_POST['coming_from'] == 'allot_reject.php') {

        if ($_POST['accept_reject'] == 'Yes') {

            $tstatus = 'allotted';

            $sql = "SELECT * FROM room_status WHERE gid='$_POST[gid]'";

            $result = $conn->query($sql);

            $number_of_records = mysqli_num_rows($result);

            if ($number_of_records == 0) {

             $sql = "INSERT INTO room_status (gid, from_date, to_date, room_id,
            status_of_request) VALUES ('$_POST[gid]', '$_POST[arrival_date]',
            '$_POST[departure_date]', '$_POST[room_id]', '$tstatus')";

             $result = $conn->query($sql);

            } else {
```

```
$sql = "UPDATE room_status SET from_date='$_POST[arrival_date]',
to_date='$_POST[departure_date]', room_id='$_POST[room_id]',
status_of_request='$tstatus' WHERE gid='$_POST[gid]'";

$result = $conn->query($sql);

}

$sql = "UPDATE room_master SET current_status='$tstatus' WHERE
room_id='$_POST[room_id]'";

$result = $conn->query($sql);

$userEmail = 'mynameispurnaa@gmail.com';

$mail = new PHPMailer(true);

try {

    $mail->SMTPDebug = 0;

    $mail->isSMTP();

    $mail->Host = 'smtp.gmail.com';

    $mail->SMTPAuth = true;

    $mail->Username = 'auraa.suites@gmail.com';

    $mail->Password = 'vhac uwne iaha qleh';

    $mail->SMTPSecure = 'tls';

    $mail->Port = 587;

    $mail->setFrom('auraa.suites@gmail.com', 'Aura Suites');

    $mail->addAddress($userEmail);

    $mail->isHTML(true);

    $mail->Subject = 'Confirmation Mail - Room Allotment';

    $mail->Body = '<html><body><div class="message-content">

     <p>Hello User!</p>
```

```
             <p>We are delighted to inform you that your accommodation request has been confirmed. We cannot wait to welcome you to our suites. We will send you the payment details shortly!</p>
             <p>Best Regards,<br>Aura Suites</p>
             </div></body></html>';
            $mail->send();
            echo '<div style="text-align:center;color:green;">Message sent to the recipient</div>';
        } catch (Exception $e) {
            echo "Message could not be sent. Mailer Error: {$mail->ErrorInfo}";
        }
    } else {
        $tstatus = 'rejected';
        $sql = "SELECT * FROM room_status WHERE gid='$_POST[gid]'";
        $result = $conn->query($sql);
        $number_of_records = mysqli_num_rows($result);
        if ($number_of_records == 0) {
            $sql = "INSERT INTO room_status (gid, from_date, to_date, room_id, status_of_request)
                VALUES ('$_POST[gid]', '$_POST[arrival_date]', '$_POST[departure_date]', '$_POST[room_id]', '$tstatus')";
            $result = $conn->query($sql);
        } else {
            $sql = "UPDATE room_status SET from_date='$_POST[arrival_date]', to_date='$_POST[departure_date]', room_id='$_POST[room_id]', status_of_request='$tstatus' WHERE gid='$_POST[gid]'";
           $result = $conn->query($sql);
        }
        $userEmail = 'mynameispurnaa@gmail.com';
        $mail = new PHPMailer(true);
        try {
            $mail->SMTPDebug = 0;
            $mail->isSMTP();
            $mail->Host = 'smtp.gmail.com';
            $mail->SMTPAuth = true;
            $mail->Username = 'auraa.suites@gmail.com';
            $mail->Password = 'vhac uwne iaha qleh';
            $mail->SMTPSecure = 'tls';
            $mail->Port = 587;
            $mail->setFrom('auraa.suites@gmail.com', 'Aura Suites');
            $mail->addAddress($userEmail);
            $mail->isHTML(true);
            $mail->Subject = 'Rejection Mail - Room Allotment';
            $mail->Body = '<html><body><div class="message-content">
                        <p>Hello User!</p>
                        <p>We are extremely sorry to inform you that your accommodation
request has been cancelled. We are entirely booked. Please try again next time!</p>
                        <p>Best Regards,<br>Aura Suites</p>
                        </div></body></html>';
                      $mail->send();
            echo '<div style="text-align:center;color:green;">Message sent to the
recipient</div>';
```

```
            } catch (Exception $e) {
                echo "Message could not be sent. Mailer Error: {$mail->ErrorInfo}";
            }
        }
    }
}
if ($_POST['coming_from'] == 'cancel.php' && $_POST['yesno'] == 'Yes') {
    $sql1 = "SELECT * FROM room_status WHERE gid ='$_POST[gid]'";
    $result1 = $conn->query($sql1);
    $number_of_records_1 = mysqli_num_rows($result1);
    $row1 = mysqli_fetch_array($result1);
    $troom_id = $row1["room_id"];
    $tstatus = 'Cancelled';
    $sql = "UPDATE room_status SET status_of_request='$tstatus' WHERE gid='$_POST[gid]'";
    $result = $conn->query($sql);
    $tstatus1 = 'free';
    $sql = "UPDATE room_master SET current_status='$tstatus1' WHERE room_id='$troom_id'";
    $result = $conn->query($sql);
}
if ($_SESSION['SetAdmin'] == 'admin') {
    $sql = "SELECT * FROM guest_details";
} else {
    $sql = "SELECT * FROM guest_details WHERE lid='$_SESSION[lid]'";
```

```
}
$result = $conn->query($sql);
if ($result->num_rows > 0) {
    echo "<table border='1'>
            <tr>
                <th>Guest ID</th>
                <th>Guest Name</th>
                <th>Mobile Number</th>
                <th>Address</th>
                <th>Room Type</th>
                <th>Arrival Date</th>
                <th>Departure Date</th>
                <th>Actions</th>
                <th>Allot/Reject</th>
                <th>Cancel<br>Allotment</th>
            </tr>";
    while ($row = $result->fetch_assoc()) {
        if ($_SESSION['SetAdmin'] == 'admin') {
            echo "<tr>
                    <td>" . $row["gid"] . "</td>
                    <td>" . $row["guest_name"] . "</td>
                    <td>" . $row["mobile_number"] . "</td>
                    <td>" . $row["address"] . "</td>
                    <td>" . $row["room_type"] . "</td>
                    <td>" . $row["arrival_date"] . "</td>
                    <td>" . $row["departure_date"] . "</td>

                    <td>

                        <a href='edit.php?id=" . $row["gid"] . "'>Edit</a>

                        <a href='delete.php?id=" . $row["gid"] . "'>Delete</a>

                    </td>";


            $tgid = $row["gid"];

            $sql1 = "SELECT * FROM room_status WHERE gid ='$tgid'";

            $result1 = $conn->query($sql1);

            $number_of_records_1 = mysqli_num_rows($result1);

            if ($number_of_records_1 > 0) {

               while ($row1 = mysqli_fetch_array($result1)) {

                    $temp_status = $row1["status_of_request"];

                    echo "<td><a href='allot_reject.php?id=".$row["gid"] . "'>$temp_status</a></td>

                          <td><a href='cancel.php?id=" . $row["gid"] . "'>-NA-</a></td>";

                }

            } else {

                echo "<td><a href='allot_reject.php?id=" . $row["gid"] . "'>Allot/Reject</a></td>

                      <td><a href='cancel.php?id=" . $row["gid"] . "'>Yes OR No</a></td>";

            }

            echo "</tr>";

        } else {

            echo "<tr>

                    <td>" . $row["gid"] . "</td>

                    <td>" . $row["guest_name"] . "</td>
```

```
                    <td>" . $row["mobile_number"] . "</td>

                    <td>" . $row["address"] . "</td>

                    <td>" . $row["room_type"] . "</td>

                    <td>" . $row["arrival_date"] . "</td>

                    <td>" . $row["departure_date"] . "</td>

                    <td>

                        <a href='edit.php?id=" . $row["gid"] . "'>Edit</a>

                        <a href='delete.php?id=" . $row["gid"] . "'>Delete</a>

                    </td>

                </tr>";

        }

    }

    echo "</table>";

} else {

    echo "0 results";

}

$conn->close();

?>
```

Test Cases

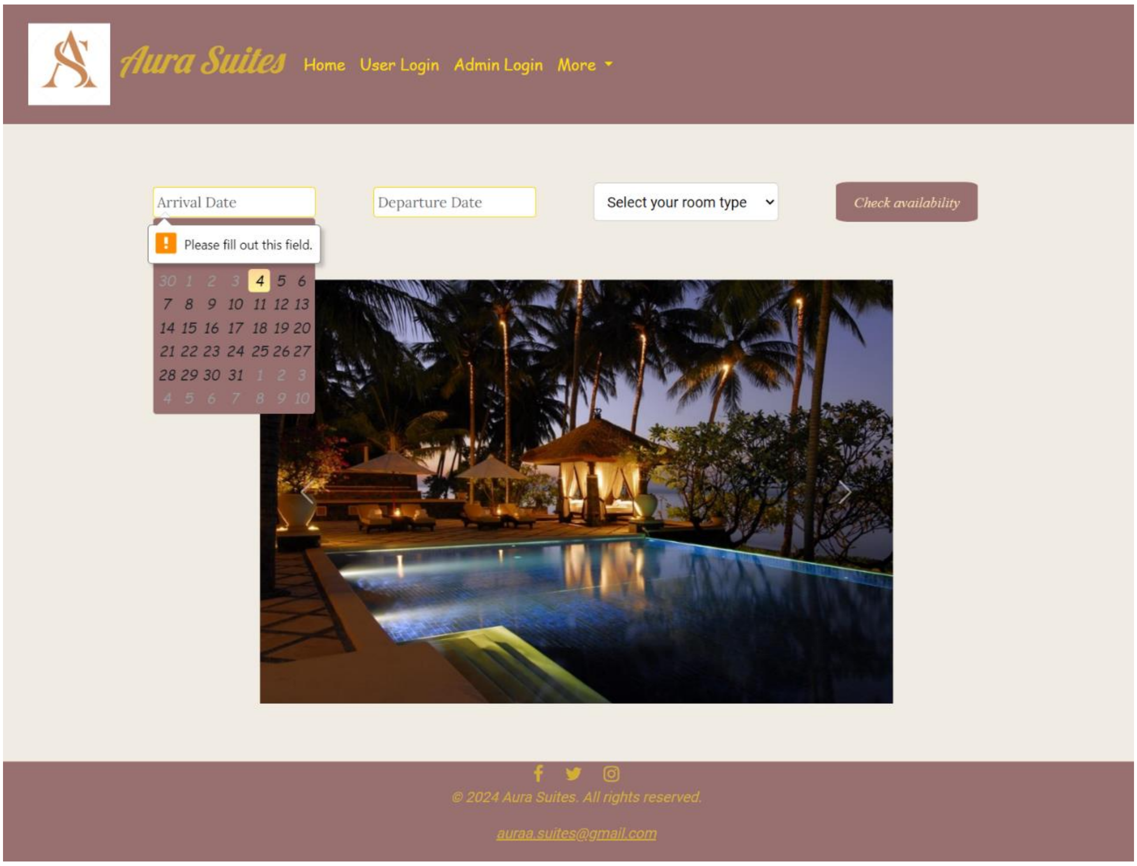
Sl No	Test Case	Expected Result	Test Case Result	Test Case Passed or Not
1	Sign In			
	a. Sign In with valid details.	User is signed in successfully.	User is signed in successfully.	Yes
	b. Sign In with invalid details/already registered credentials	Error message is displayed.	Error message is displayed.	Yes
2	Log In			
	a. Log In with valid credentials	User is logged in successfully.	User is logged in successfully.	Yes
	b. Login with invalid credentials	Error message is displayed.	Error message is displayed.	Yes
3	Check for Room availability	Guests can view available rooms based on their preferences and selected dates.	Guests can view available rooms based on their preferences and selected dates.	Yes
4	Make Room Request	Guests can request a room reservation by filling their basic details, desired room type and their desired	Guests can request a room reservation by filling their basic details, desired room type and their desired dates from their dashboard.	Yes

		dates from their dashboard.		
5	View Requests	Guests can view their current and past room requests from their dashboard.	Guests can view their current and past room requests from their dashboard.	Yes
6	Cancel Request	Guests can cancel their existing room requests from their user dashboard.	Guests can cancel their existing room requests from their user dashboard.	Yes
7	Edit/Delete Request	Guests can edit or delete their room requests from their dashboard before the request is processed.	Guests can edit or delete their room requests from their dashboard before the request is processed.	Yes
8	Allot Room Requests	Admin can allocate available rooms to guests based on their requests.	Admin can allocate available rooms to guests based on their requests.	Yes
9	Deny Room Requests	Admins can deny room requests based on room availability.	Admins can deny room requests based on room availability.	Yes
10	Cancel Allotted Room Requests	Admins can cancel an allotted room request based on urgent demands/ administrative purposes.	Admins can cancel an allotted room request based on urgent demands/ administrative purposes.	Yes

13	Generate Notifications	Notifications in the form of emails are sent to guests from the official email of the restaurant after significant actions like new user sign in, room requests accepted or denied or if a room allotment is cancelled.	Notifications in the form of emails are sent to guests from the official email of the restaurant after significant actions like new user sign in, room requests accepted or denied or if a room allotment is cancelled.	Yes

Result Analysis

I. Index Page



Please fill out this field.

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a. Description

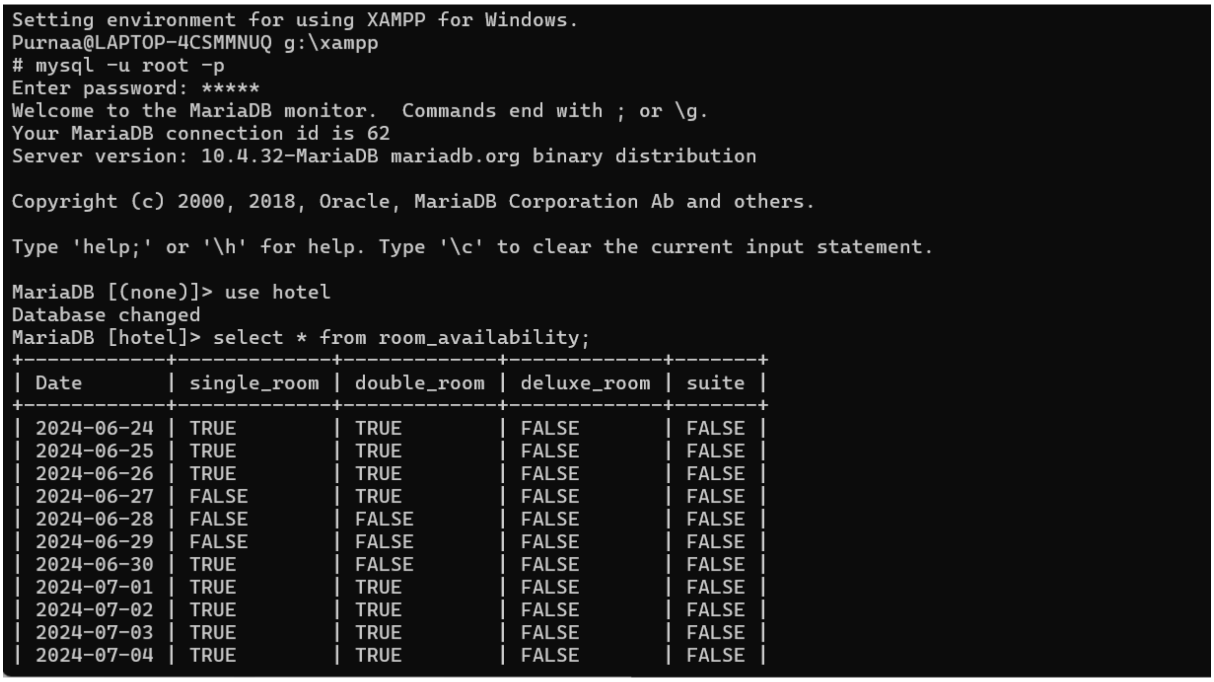
The index or front page is designed using HTML, CSS, and Bootstrap. It consists of a navbar leading to the login and signup pages. Below the navbar lies the check availability column. Upon entering the arrival, departure date and room type, the website checks with the database. It returns if there are any rooms available, making the page incredibly user-friendly. The page also features a carousel showcasing stunning pictures of the resort. The calendar is created using JQuery and JQuery UI plugins.

b. Validations

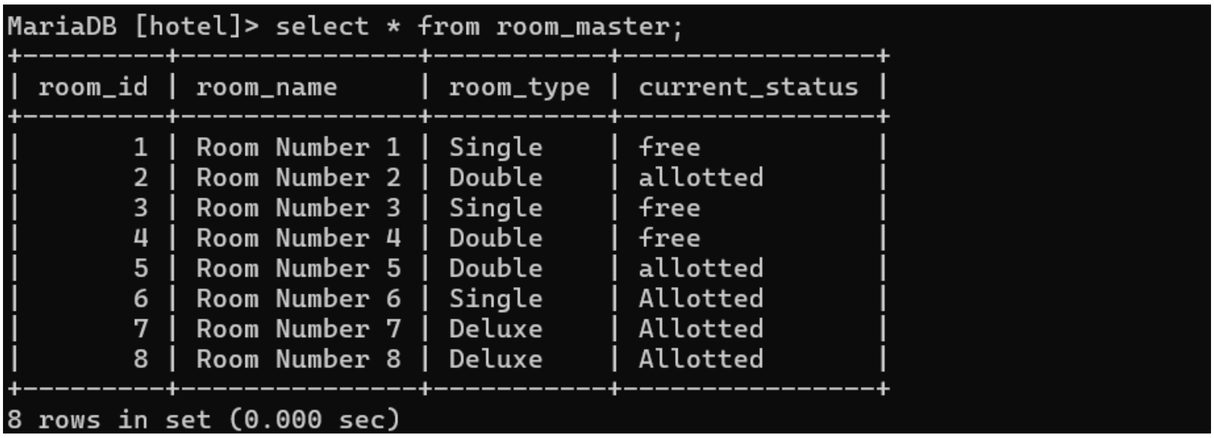
- The calendar shows the current date, and previous dates are disabled.
- The form does not take empty inputs.

c. Backend

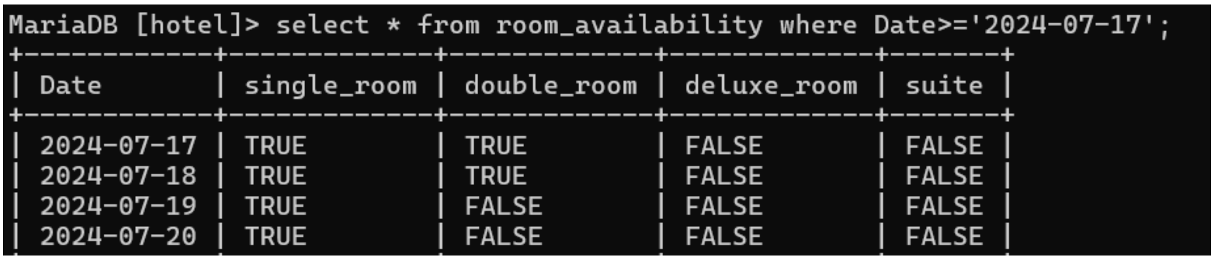
Once the form is submitted (By clicking 'Check Availability'), the PHP code directs the page to the MySQL database. A table named 'room_status' contains all the bookings made so far. A table named ‘room_availability’ contains if a room type is available in the given date or not. A code runs to see available rooms for the given dates and displays a message accordingly.



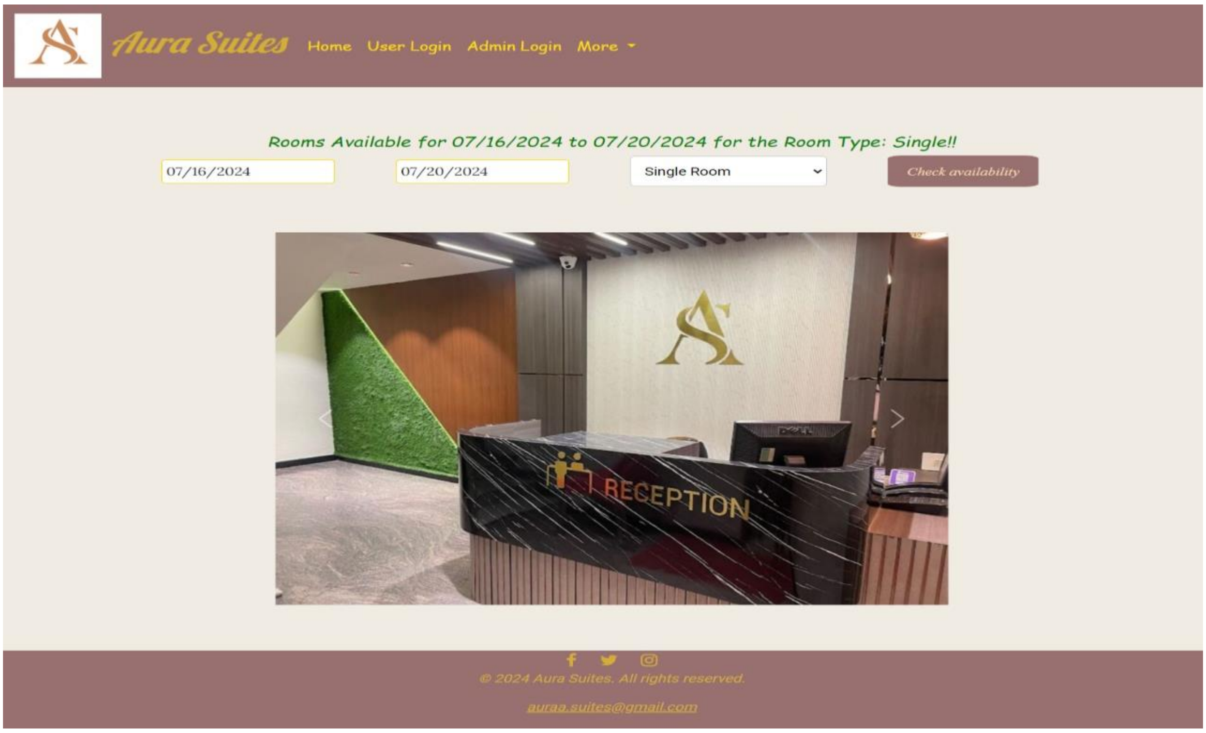
```
Setting environment for using XAMPP for Windows.
Purnaa@LAPTOP-4CSMMNUQ g:\xampp
# mysql -u root -p
Enter password: *****
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 62
Server version: 10.4.32-MariaDB mariadb.org binary distribution

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [(none)]> use hotel
Database changed
MariaDB [hotel]> select * from room_availability;
+------------+-------------+-------------+-------------+-------+
| Date       | single_room | double_room | deluxe_room | suite |
+------------+-------------+-------------+-------------+-------+
| 2024-06-24 | TRUE        | TRUE        | FALSE       | FALSE |
| 2024-06-25 | TRUE        | TRUE        | FALSE       | FALSE |
| 2024-06-26 | TRUE        | TRUE        | FALSE       | FALSE |
| 2024-06-27 | FALSE       | TRUE        | FALSE       | FALSE |
| 2024-06-28 | FALSE       | FALSE       | FALSE       | FALSE |
| 2024-06-29 | FALSE       | FALSE       | FALSE       | FALSE |
| 2024-06-30 | TRUE        | FALSE       | FALSE       | FALSE |
| 2024-07-01 | TRUE        | TRUE        | FALSE       | FALSE |
| 2024-07-02 | TRUE        | TRUE        | FALSE       | FALSE |
| 2024-07-03 | TRUE        | TRUE        | FALSE       | FALSE |
| 2024-07-04 | TRUE        | TRUE        | FALSE       | FALSE |
```



```
MariaDB [hotel]> select * from room_master;
+---------+---------------+-----------+----------------+
| room_id | room_name     | room_type | current_status |
+---------+---------------+-----------+----------------+
|       1 | Room Number 1 | Single    | free           |
|       2 | Room Number 2 | Double    | allotted       |
|       3 | Room Number 3 | Single    | free           |
|       4 | Room Number 4 | Double    | free           |
|       5 | Room Number 5 | Double    | allotted       |
|       6 | Room Number 6 | Single    | Allotted       |
|       7 | Room Number 7 | Deluxe    | Allotted       |
|       8 | Room Number 8 | Deluxe    | Allotted       |
+---------+---------------+-----------+----------------+
8 rows in set (0.000 sec)
```



```
MariaDB [hotel]> select * from room_availability where Date>='2024-07-17';
+------------+-------------+-------------+-------------+-------+
| Date       | single_room | double_room | deluxe_room | suite |
+------------+-------------+-------------+-------------+-------+
| 2024-07-17 | TRUE        | TRUE        | FALSE       | FALSE |
| 2024-07-18 | TRUE        | TRUE        | FALSE       | FALSE |
| 2024-07-19 | TRUE        | FALSE       | FALSE       | FALSE |
| 2024-07-20 | TRUE        | FALSE       | FALSE       | FALSE |
```



Rooms Available for 07/16/2024 to 07/20/2024 for the Room Type: Single!!

07/16/2024 07/20/2024 Single Room

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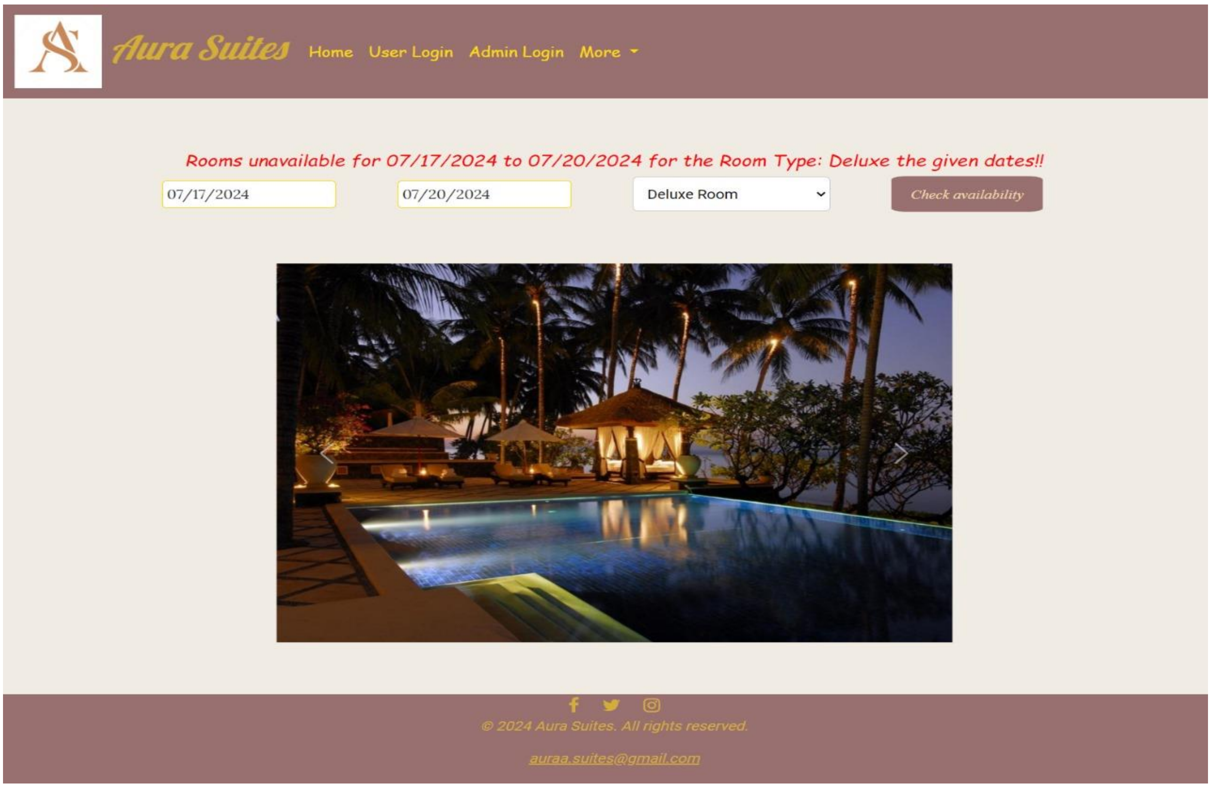

Rooms unavailable for 07/17/2024 to 07/20/2024 for the Room Type: Deluxe the given dates!!

07/17/2024 07/20/2024 Deluxe Room

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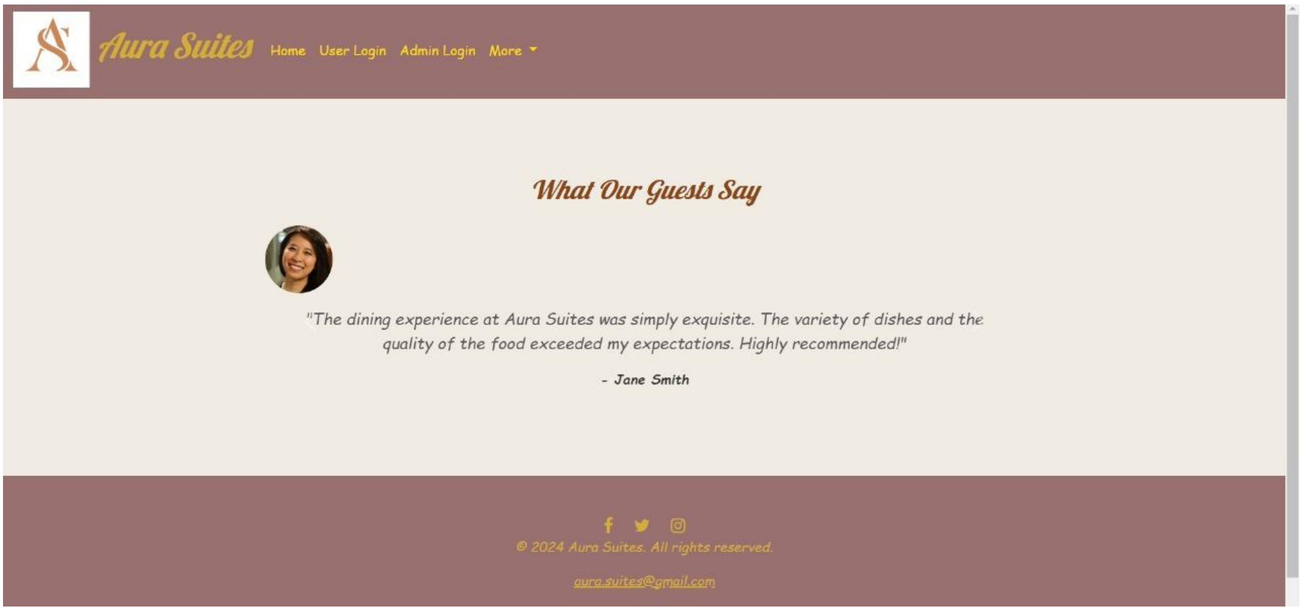
II. Displaying Testimonials, Rooms, and Amenities

a. Description

The pages for displaying testimonials, rooms, and amenities are meticulously crafted using HTML, CSS, and Bootstrap, ensuring a seamless and engaging user experience. Each page features a consistent navbar for easy navigation, aligning with the overall theme and design of the website. These pages are available under the **"More"** section in the navbar for easy access. These pages are purely front-end, created using HTML, CSS, and Bootstrap, with no backend or API integration. Bootstrap's card component, carousel and grid system ensure a great responsive design on all devices.

- **Testimonials Page**

  This page showcases genuine feedback from the guests, highlighting their experiences at the resort. The testimonials are displayed in an elegant carousel, with each card containing a guest's name, photo, and review.



What Our Guests Say

"The dining experience at Aura Suites was simply exquisite. The variety of dishes and the quality of the food exceeded my expectations. Highly recommended!"

- Jane Smith

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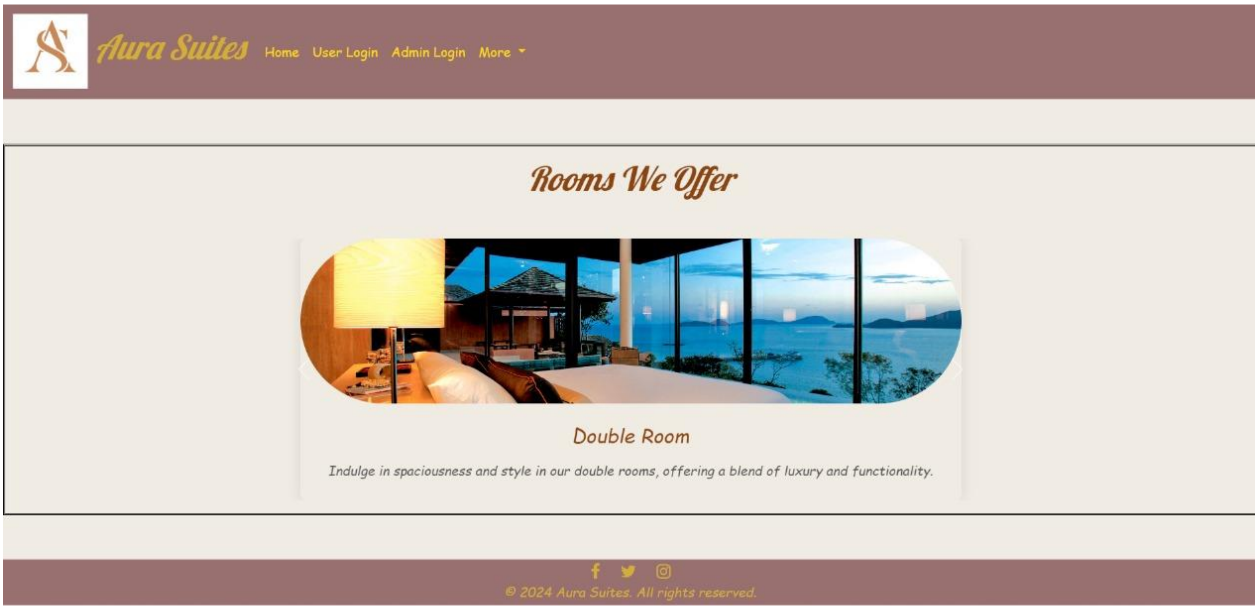
- **Rooms Page**

  The rooms page provides detailed information about the various room types available at the resort. Each room type is displayed in a card layout featuring images and descriptions.

- **Amenities Page**

  The amenities page highlights the various facilities and services available at the resort. Like the rooms page, amenities are displayed in a card layout with images and descriptions combined in a carousel. This page ensures that guests are well-informed about the luxurious amenities they can enjoy during their stay.



Rooms We Offer

Double Room

Indulge in spaciousness and style in our double rooms, offering a blend of luxury and functionality.

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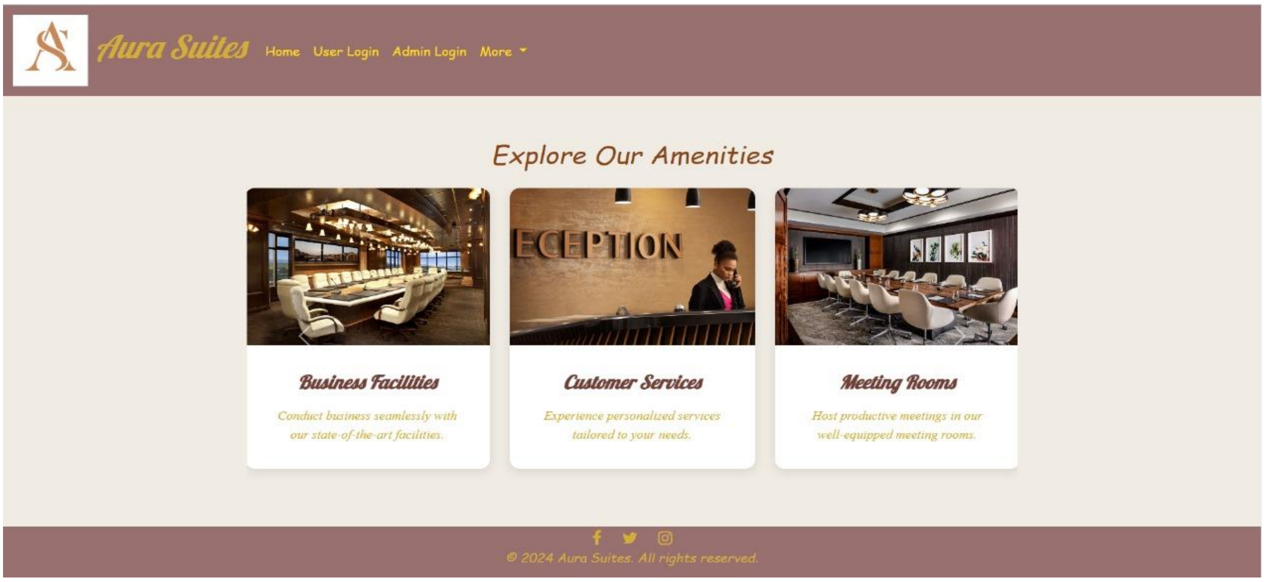

Explore Our Amenities

Business Facilities

Conduct business seamlessly with our state-of-the-art facilities.

Customer Services

Experience personalized services tailored to your needs.

Meeting Rooms

Host productive meetings in our well-equipped meeting rooms.

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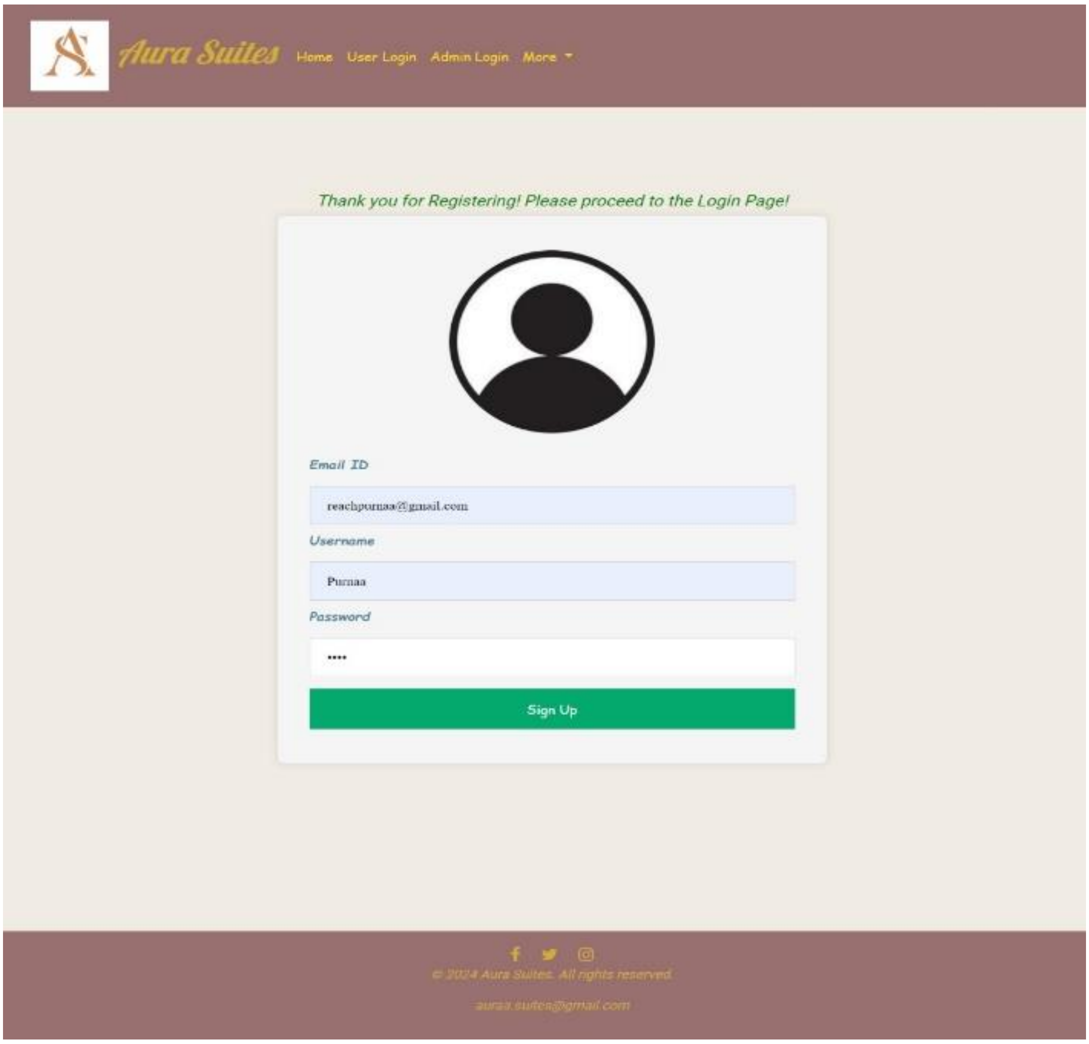
III. SignUp Page

a. Description

Once the user checks the room availability, the user can proceed to the SignUp page. A message is sent to the user's registered email ID upon signing up. This feature is executed using the class' PHP mailer'.



Thank you for Registering! Please proceed to the Login Page!

Email ID: reachpurnaa@gmail.com

Username: Purnaa

Password: ••••

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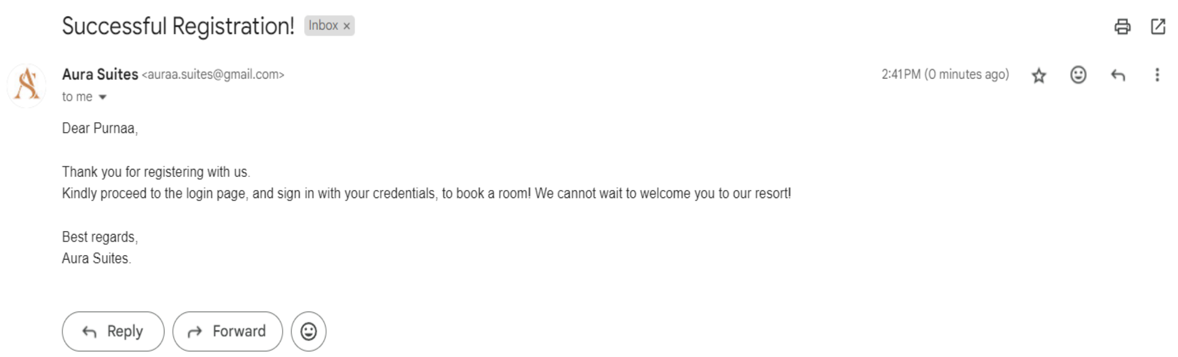


Successful Registration!

Aura Suites <auraa.suites@gmail.com>
to me

2:41 PM (0 minutes ago)

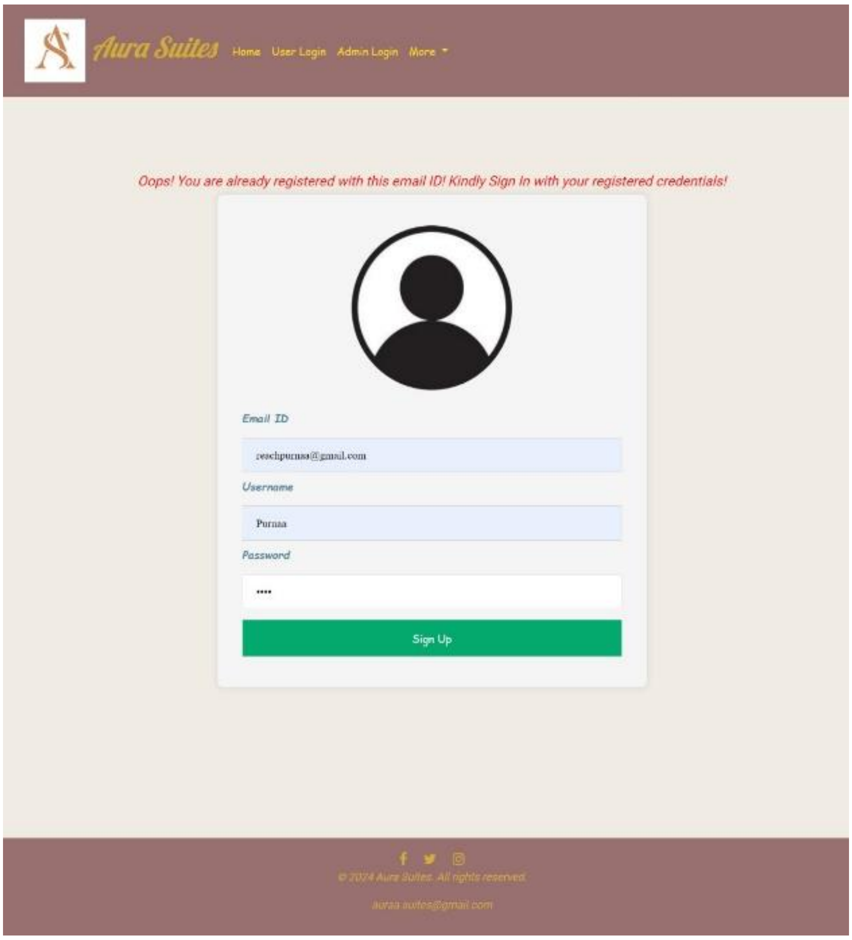
Dear Purnaa,

Thank you for registering with us.
Kindly proceed to the login page, and sign in with your credentials, to book a room! We cannot wait to welcome you to our resort!

Best regards,
Aura Suites.

b. Validation

- All input fields are mandatory.
- The same email cannot be registered twice.



Oops! You are already registered with this email ID! Kindly Sign in with your registered credentials!

Email ID: reachpurnaa@gmail.com

Username: Purnaa

Password: ••••

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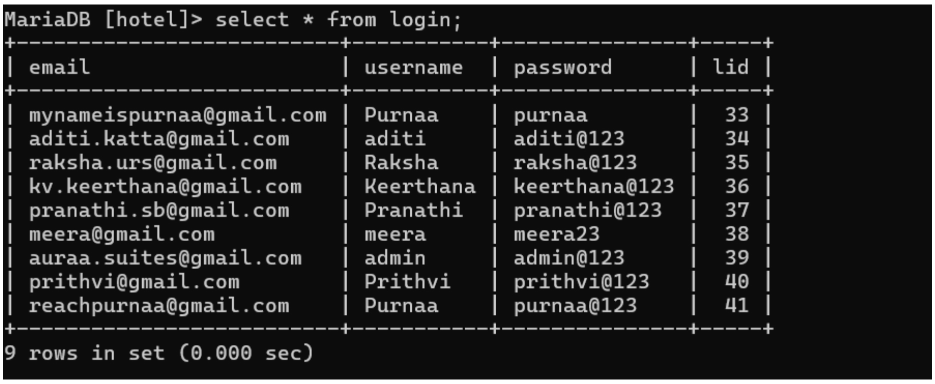
c. Backend

The PHP code directs the page to the MySQL database upon form submission. The inputs are inserted into a table named 'login'. The table consists of a column named 'lid', which is auto incremented and unique to every guest. It also acts as the primary key.



```
MariaDB [hotel]> select * from login;
+--------------------------+-----------+---------------+-----+
| email                    | username  | password      | lid |
+--------------------------+-----------+---------------+-----+
| mynameispurnaa@gmail.com | Purnaa    | purnaa        |  33 |
| aditi.katta@gmail.com    | aditi     | aditi@123     |  34 |
| raksha.urs@gmail.com     | Raksha    | raksha@123    |  35 |
| kv.keerthana@gmail.com   | Keerthana | keerthana@123 |  36 |
| pranathi.sb@gmail.com    | Pranathi  | pranathi@123  |  37 |
| meera@gmail.com          | meera     | meera23       |  38 |
| auraa.suites@gmail.com   | admin     | admin@123     |  39 |
| prithvi@gmail.com        | Prithvi   | prithvi@123   |  40 |
| reachpurnaa@gmail.com    | Purnaa    | purnaa@123    |  41 |
+--------------------------+-----------+---------------+-----+
9 rows in set (0.000 sec)
```

IV. Login Page

a. Description

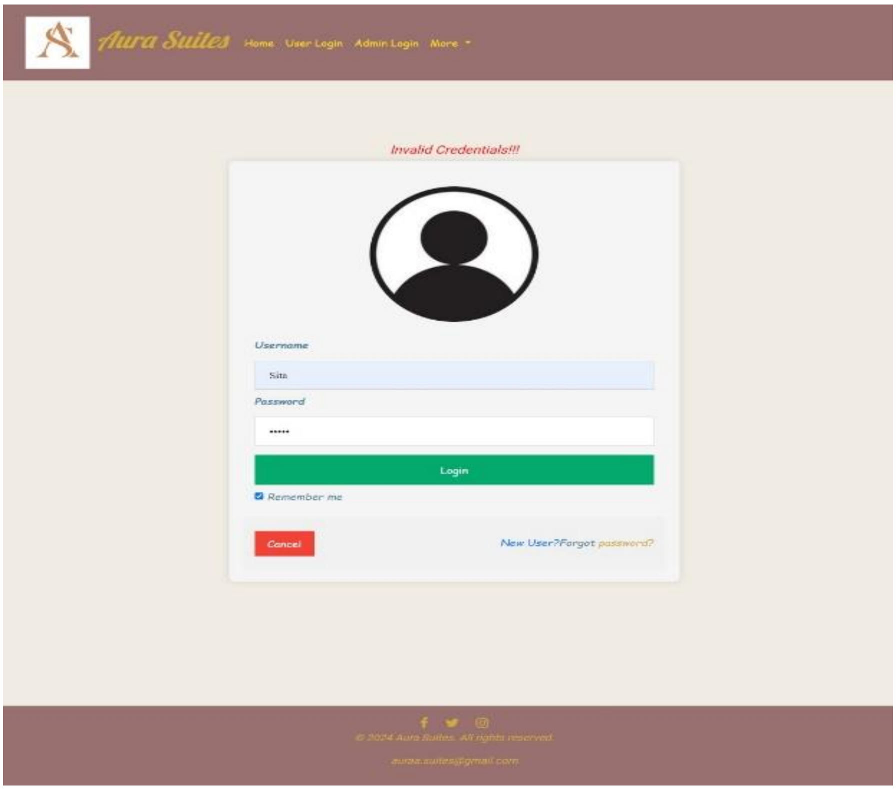
After signing up, the user can login to access his dashboard**.**

b. Validation

- All input fields are mandatory.
- Until username and password are verified, the user cannot access the dashboard.

c. Backend

The input details (Username and Password) are stored in a temporary variable. These are credentials compared with the ‘login’ table in the database. If they match, the user is allowed to access his dashboard.



Invalid Credentials!!!

Username

Sita

Password

•••••

☑ Remember me

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V. User Dashboard

a. Description

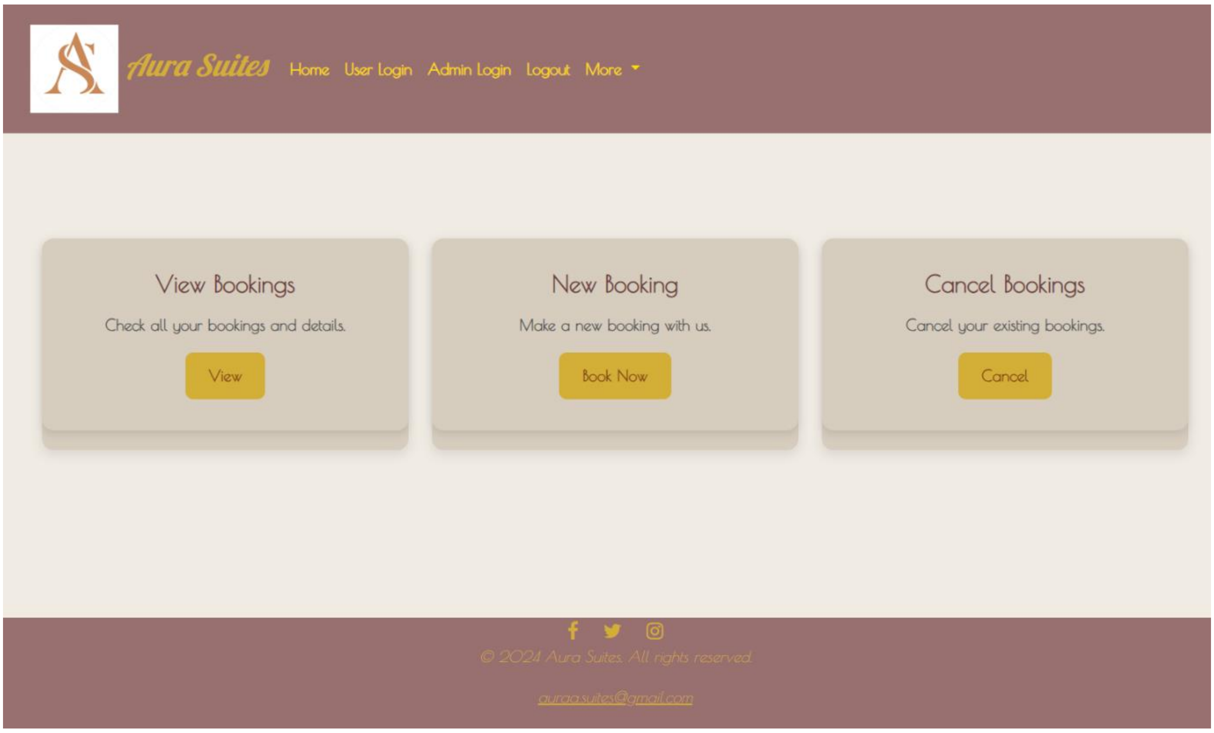
Upon logging in, the user dashboard offers three primary options through neatly designed cards: View Bookings, New Booking, and Cancel Bookings.

b. Validation

Use of session variable for the login page. The session variable is destroyed once the user logs out. This ensures that the user has to log in whenever he wants to access the dashboard.

c. Backend

The guest details are entered into a database table named 'guest_details'.



View Bookings

Check all your bookings and details.

New Booking

Make a new booking with us.

Cancel Bookings

Cancel your existing bookings.

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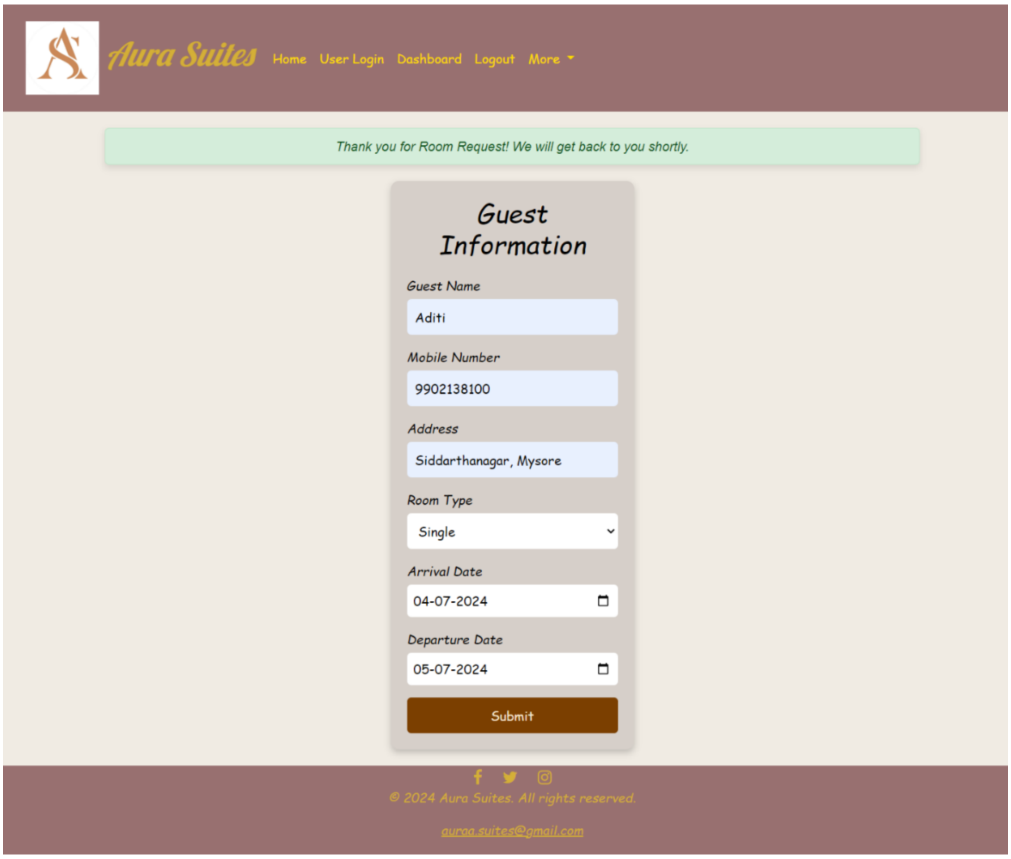
- **New Booking**

The "New Booking" card allows users to submit a new request for rooms to be booked for their desired dates. The User is asked for basic details, and the request is submitted. Upon submission, the system checks room availability. The User cannot submit another request with the same dates again.



Thank you for Room Request! We will get back to you shortly.

Guest Information

Guest Name: Aditi

Mobile Number: 9902138100

Address: Siddarthanagar, Mysore

Room Type: Single

Arrival Date: 04-07-2024

Departure Date: 05-07-2024

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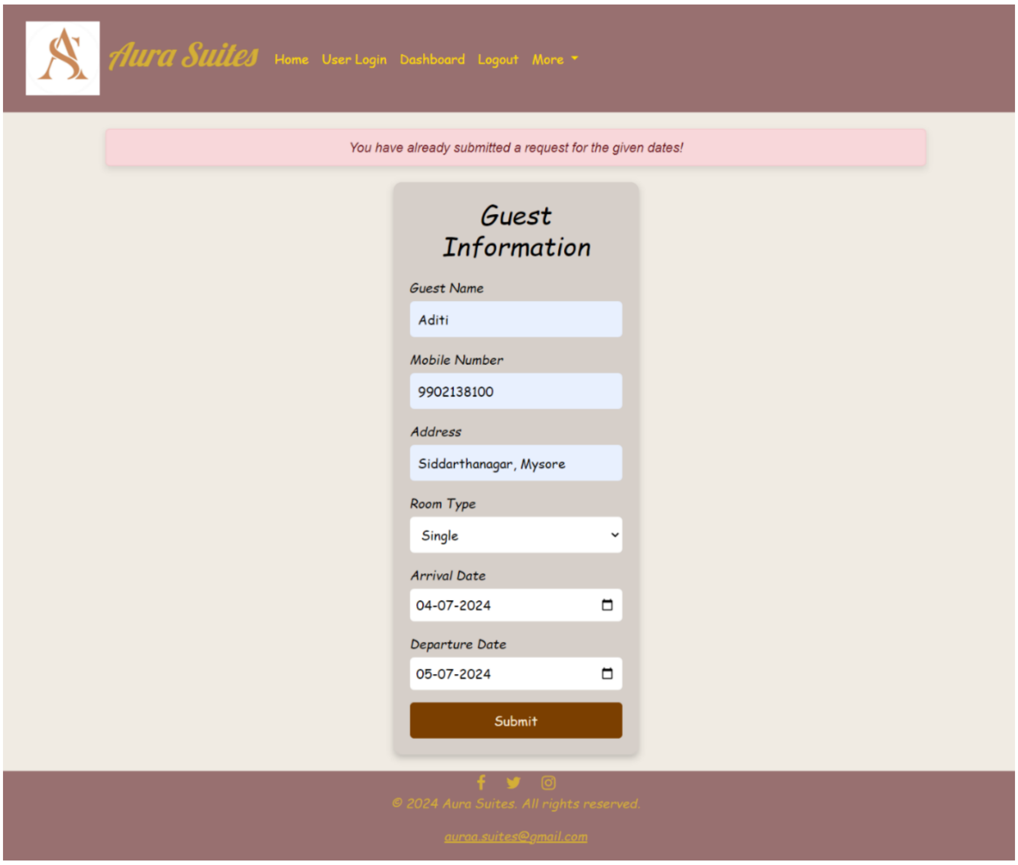

You have already submitted a request for the given dates!

Guest Information

Guest Name: Aditi

Mobile Number: 9902138100

Address: Siddarthanagar, Mysore

Room Type: Single

Arrival Date: 04-07-2024

Departure Date: 05-07-2024

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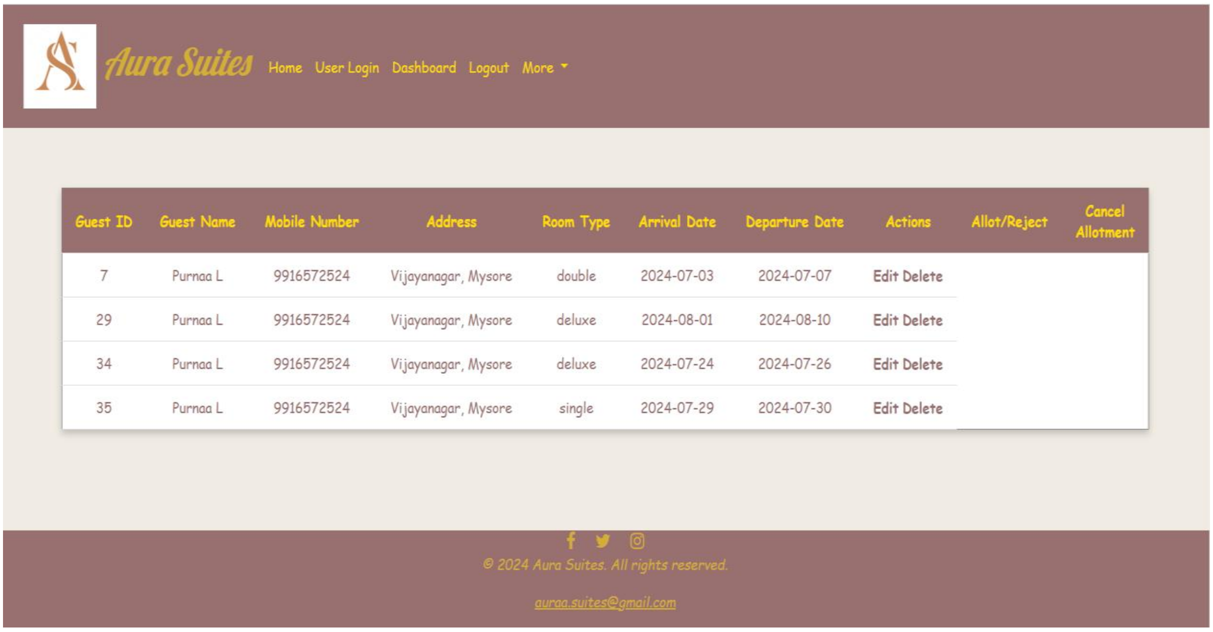
- **View Bookings**

  This section utilises a queue data structure (First Come, First Serve) to display all the requests submitted by the user. Each request has options to edit or delete, ensuring flexibility and control over the user's room booking process.



Guest ID	Guest Name	Mobile Number	Address	Room Type	Arrival Date	Departure Date	Actions	Allot/Reject	Cancel Allotment
7	Purnaa L	9916572524	Vijayanagar, Mysore	double	2024-07-03	2024-07-07	Edit Delete		
29	Purnaa L	9916572524	Vijayanagar, Mysore	deluxe	2024-08-01	2024-08-10	Edit Delete		
34	Purnaa L	9916572524	Vijayanagar, Mysore	deluxe	2024-07-24	2024-07-26	Edit Delete		
35	Purnaa L	9916572524	Vijayanagar, Mysore	single	2024-07-29	2024-07-30	Edit Delete		

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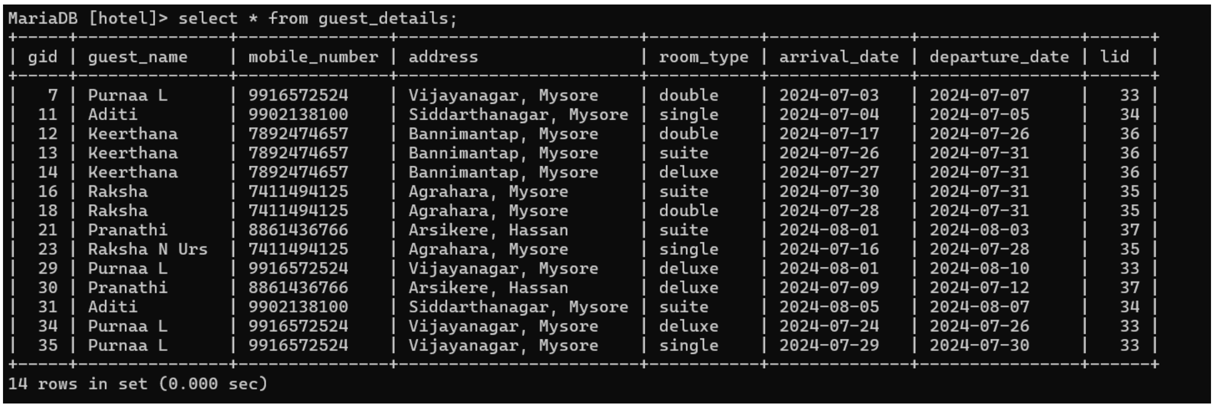
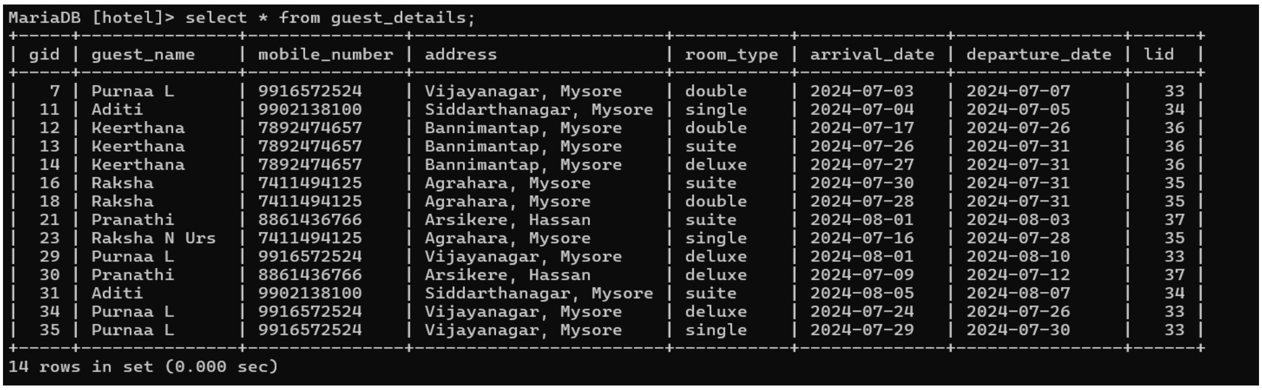
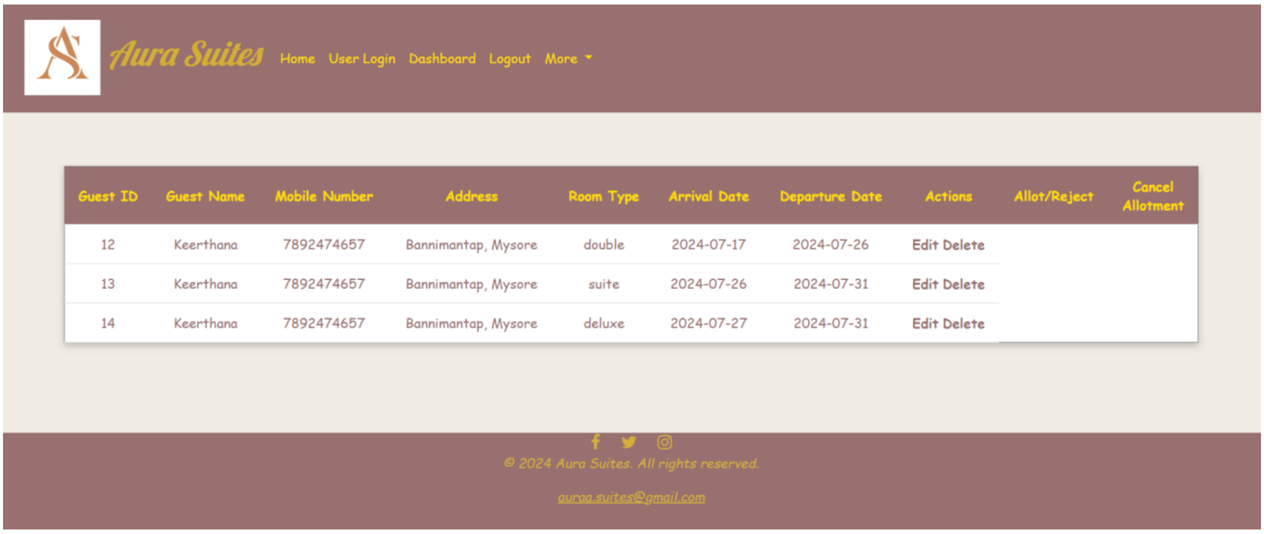


```
MariaDB [hotel]> select * from guest_details;
+-----+----------------+---------------+-------------------------+-----------+--------------+----------------+------+
| gid | guest_name     | mobile_number | address                 | room_type | arrival_date | departure_date | lid  |
+-----+----------------+---------------+-------------------------+-----------+--------------+----------------+------+
|   7 | Purnaa L       | 9916572524    | Vijayanagar, Mysore     | double    | 2024-07-03   | 2024-07-07     |   33 |
|  11 | Aditi          | 9902138100    | Siddarthanagar, Mysore  | single    | 2024-07-04   | 2024-07-05     |   34 |
|  12 | Keerthana      | 7892474657    | Bannimantap, Mysore     | double    | 2024-07-17   | 2024-07-26     |   36 |
|  13 | Keerthana      | 7892474657    | Bannimantap, Mysore     | suite     | 2024-07-26   | 2024-07-31     |   36 |
|  14 | Keerthana      | 7892474657    | Bannimantap, Mysore     | deluxe    | 2024-07-27   | 2024-07-31     |   36 |
|  16 | Raksha         | 7411494125    | Agrahara, Mysore        | suite     | 2024-07-30   | 2024-07-31     |   35 |
|  18 | Raksha         | 7411494125    | Agrahara, Mysore        | double    | 2024-07-28   | 2024-07-31     |   35 |
|  21 | Pranathi       | 8861436766    | Arsikere, Hassan        | suite     | 2024-08-01   | 2024-08-03     |   37 |
|  23 | Raksha N Urs   | 7411494125    | Agrahara, Mysore        | single    | 2024-07-16   | 2024-07-28     |   35 |
|  29 | Purnaa L       | 9916572524    | Vijayanagar, Mysore     | deluxe    | 2024-08-01   | 2024-08-10     |   33 |
|  30 | Pranathi       | 8861436766    | Arsikere, Hassan        | deluxe    | 2024-07-09   | 2024-07-12     |   37 |
|  31 | Aditi          | 9902138100    | Siddarthanagar, Mysore  | suite     | 2024-08-05   | 2024-08-07     |   34 |
|  34 | Purnaa L       | 9916572524    | Vijayanagar, Mysore     | deluxe    | 2024-07-24   | 2024-07-26     |   33 |
|  35 | Purnaa L       | 9916572524    | Vijayanagar, Mysore     | single    | 2024-07-29   | 2024-07-30     |   33 |
+-----+----------------+---------------+-------------------------+-----------+--------------+----------------+------+
14 rows in set (0.000 sec)
```

- **Delete Request: Before Deleting**

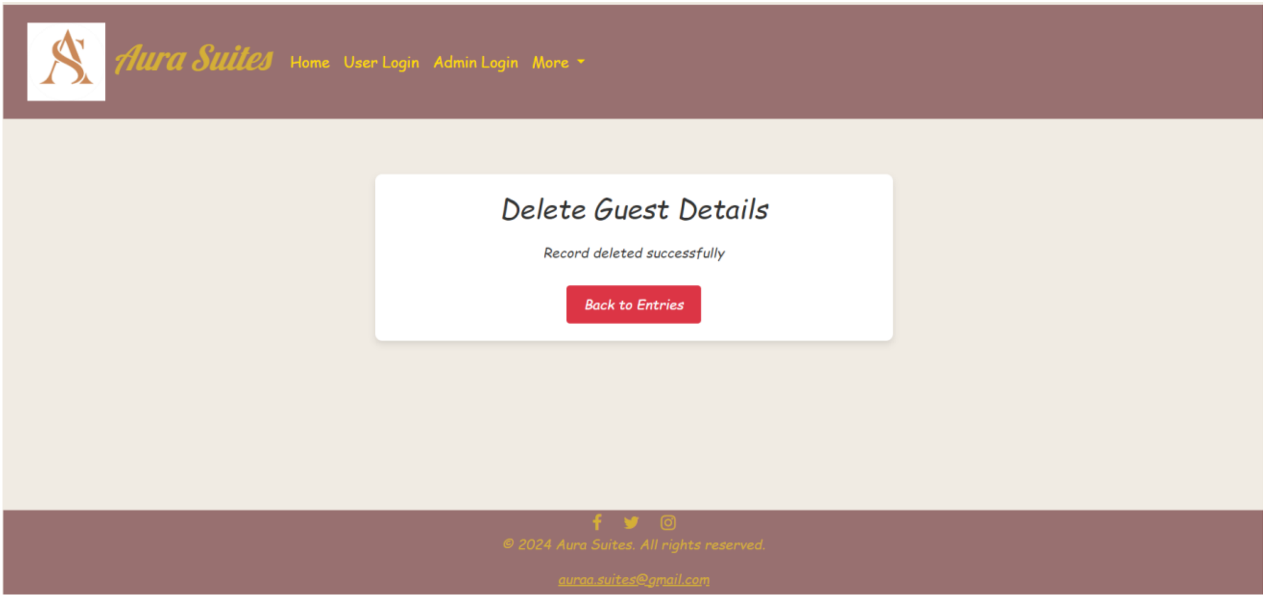


```
MariaDB [hotel]> select * from guest_details;
+-----+--------------+---------------+------------------------+-----------+--------------+----------------+-----+
| gid | guest_name   | mobile_number | address                | room_type | arrival_date | departure_date | lid |
+-----+--------------+---------------+------------------------+-----------+--------------+----------------+-----+
|   7 | Purnaa L     | 9916572524    | Vijayanagar, Mysore    | double    | 2024-07-03   | 2024-07-07     |  33 |
|  11 | Aditi        | 9902138100    | Siddarthanagar, Mysore | single    | 2024-07-04   | 2024-07-05     |  34 |
|  12 | Keerthana    | 7892474657    | Bannimantap, Mysore    | double    | 2024-07-17   | 2024-07-26     |  36 |
|  13 | Keerthana    | 7892474657    | Bannimantap, Mysore    | suite     | 2024-07-26   | 2024-07-31     |  36 |
|  14 | Keerthana    | 7892474657    | Bannimantap, Mysore    | deluxe    | 2024-07-27   | 2024-07-31     |  36 |
|  16 | Raksha       | 7411494125    | Agrahara, Mysore       | suite     | 2024-07-30   | 2024-07-31     |  35 |
|  18 | Raksha       | 7411494125    | Agrahara, Mysore       | double    | 2024-07-28   | 2024-07-31     |  35 |
|  21 | Pranathi     | 8861436766    | Arsikere, Hassan       | suite     | 2024-08-01   | 2024-08-03     |  37 |
|  23 | Raksha N Urs | 7411494125    | Agrahara, Mysore       | single    | 2024-07-16   | 2024-07-28     |  35 |
|  29 | Purnaa L     | 9916572524    | Vijayanagar, Mysore    | deluxe    | 2024-08-01   | 2024-08-10     |  33 |
|  30 | Pranathi     | 8861436766    | Arsikere, Hassan       | deluxe    | 2024-07-09   | 2024-07-12     |  37 |
|  31 | Aditi        | 9902138100    | Siddarthanagar, Mysore | suite     | 2024-08-05   | 2024-08-07     |  34 |
|  34 | Purnaa L     | 9916572524    | Vijayanagar, Mysore    | deluxe    | 2024-07-24   | 2024-07-26     |  33 |
|  35 | Purnaa L     | 9916572524    | Vijayanagar, Mysore    | single    | 2024-07-29   | 2024-07-30     |  33 |
+-----+--------------+---------------+------------------------+-----------+--------------+----------------+-----+
14 rows in set (0.000 sec)
```



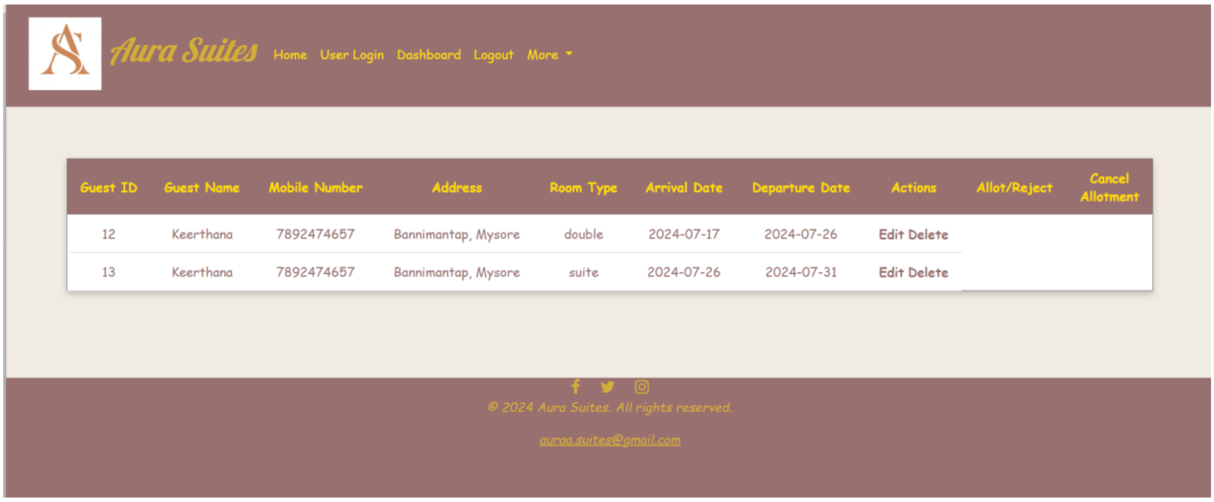
Guest ID	Guest Name	Mobile Number	Address	Room Type	Arrival Date	Departure Date	Actions	Allot/Reject	Cancel Allotment
12	Keerthana	7892474657	Bannimantap, Mysore	double	2024-07-17	2024-07-26	Edit Delete		
13	Keerthana	7892474657	Bannimantap, Mysore	suite	2024-07-26	2024-07-31	Edit Delete		
14	Keerthana	7892474657	Bannimantap, Mysore	deluxe	2024-07-27	2024-07-31	Edit Delete		

- **Delete Request: After Deleting**



Delete Guest Details

Record deleted successfully



Guest ID	Guest Name	Mobile Number	Address	Room Type	Arrival Date	Departure Date	Actions	Allot/Reject	Cancel Allotment
12	Keerthana	7892474657	Bannimantap, Mysore	double	2024-07-17	2024-07-26	Edit Delete		
13	Keerthana	7892474657	Bannimantap, Mysore	suite	2024-07-26	2024-07-31	Edit Delete		

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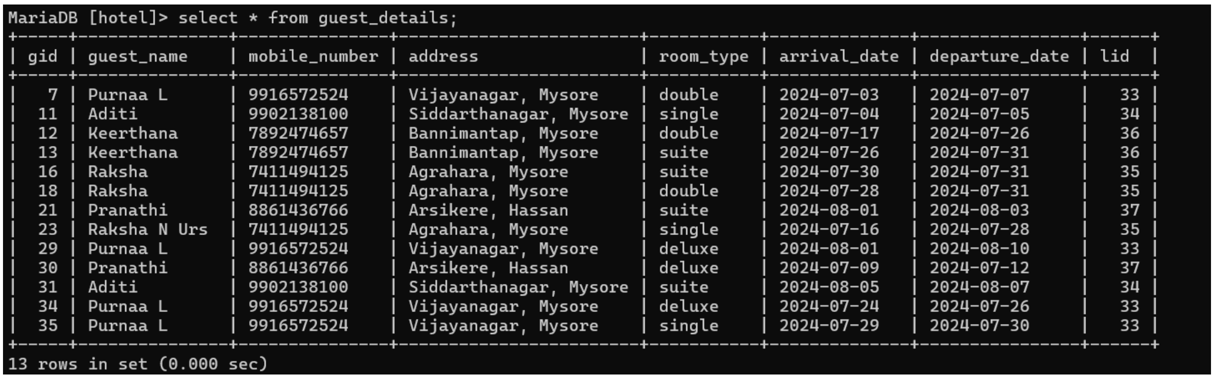
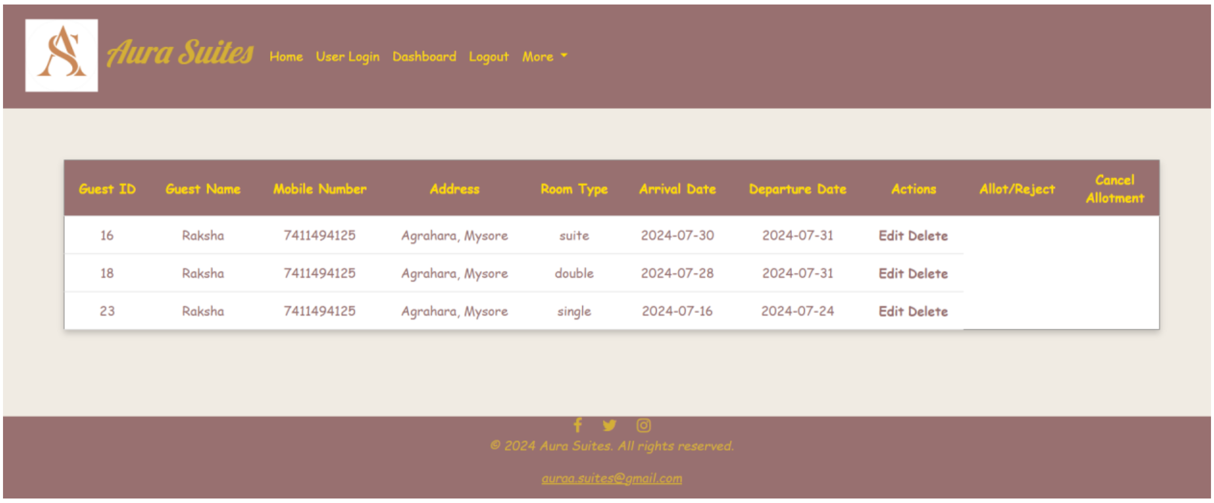


```
MariaDB [hotel]> select * from guest_details;
+-----+---------------+---------------+-------------------------+-----------+--------------+----------------+------+
| gid | guest_name    | mobile_number | address                 | room_type | arrival_date | departure_date | lid  |
+-----+---------------+---------------+-------------------------+-----------+--------------+----------------+------+
|   7 | Purnaa L      | 9916572524    | Vijayanagar, Mysore     | double    | 2024-07-03   | 2024-07-07     |   33 |
|  11 | Aditi         | 9902138100    | Siddarthanagar, Mysore  | single    | 2024-07-04   | 2024-07-05     |   34 |
|  12 | Keerthana     | 7892474657    | Bannimantap, Mysore     | double    | 2024-07-17   | 2024-07-26     |   36 |
|  13 | Keerthana     | 7892474657    | Bannimantap, Mysore     | suite     | 2024-07-26   | 2024-07-31     |   36 |
|  16 | Raksha        | 7411494125    | Agrahara, Mysore        | suite     | 2024-07-30   | 2024-07-31     |   35 |
|  18 | Raksha        | 7411494125    | Agrahara, Mysore        | double    | 2024-07-28   | 2024-07-31     |   35 |
|  21 | Pranathi      | 8861436766    | Arsikere, Hassan        | suite     | 2024-08-01   | 2024-08-03     |   37 |
|  23 | Raksha N Urs  | 7411494125    | Agrahara, Mysore        | single    | 2024-07-16   | 2024-07-28     |   35 |
|  29 | Purnaa L      | 9916572524    | Vijayanagar, Mysore     | deluxe    | 2024-08-01   | 2024-08-10     |   33 |
|  30 | Pranathi      | 8861436766    | Arsikere, Hassan        | deluxe    | 2024-07-09   | 2024-07-12     |   37 |
|  31 | Aditi         | 9902138100    | Siddarthanagar, Mysore  | suite     | 2024-08-05   | 2024-08-07     |   34 |
|  34 | Purnaa L      | 9916572524    | Vijayanagar, Mysore     | deluxe    | 2024-07-24   | 2024-07-26     |   33 |
|  35 | Purnaa L      | 9916572524    | Vijayanagar, Mysore     | single    | 2024-07-29   | 2024-07-30     |   33 |
+-----+---------------+---------------+-------------------------+-----------+--------------+----------------+------+
13 rows in set (0.000 sec)
```

- **Edit Details: Before Editing**



Guest ID	Guest Name	Mobile Number	Address	Room Type	Arrival Date	Departure Date	Actions	Allot/Reject	Cancel Allotment
16	Raksha	7411494125	Agrahara, Mysore	suite	2024-07-30	2024-07-31	Edit Delete		
18	Raksha	7411494125	Agrahara, Mysore	double	2024-07-28	2024-07-31	Edit Delete		
23	Raksha	7411494125	Agrahara, Mysore	single	2024-07-16	2024-07-24	Edit Delete		

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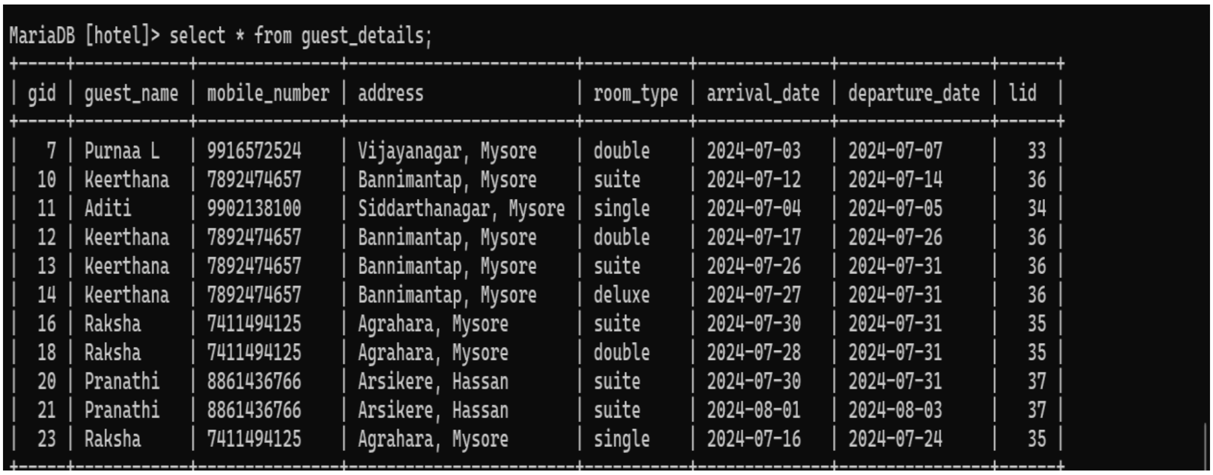
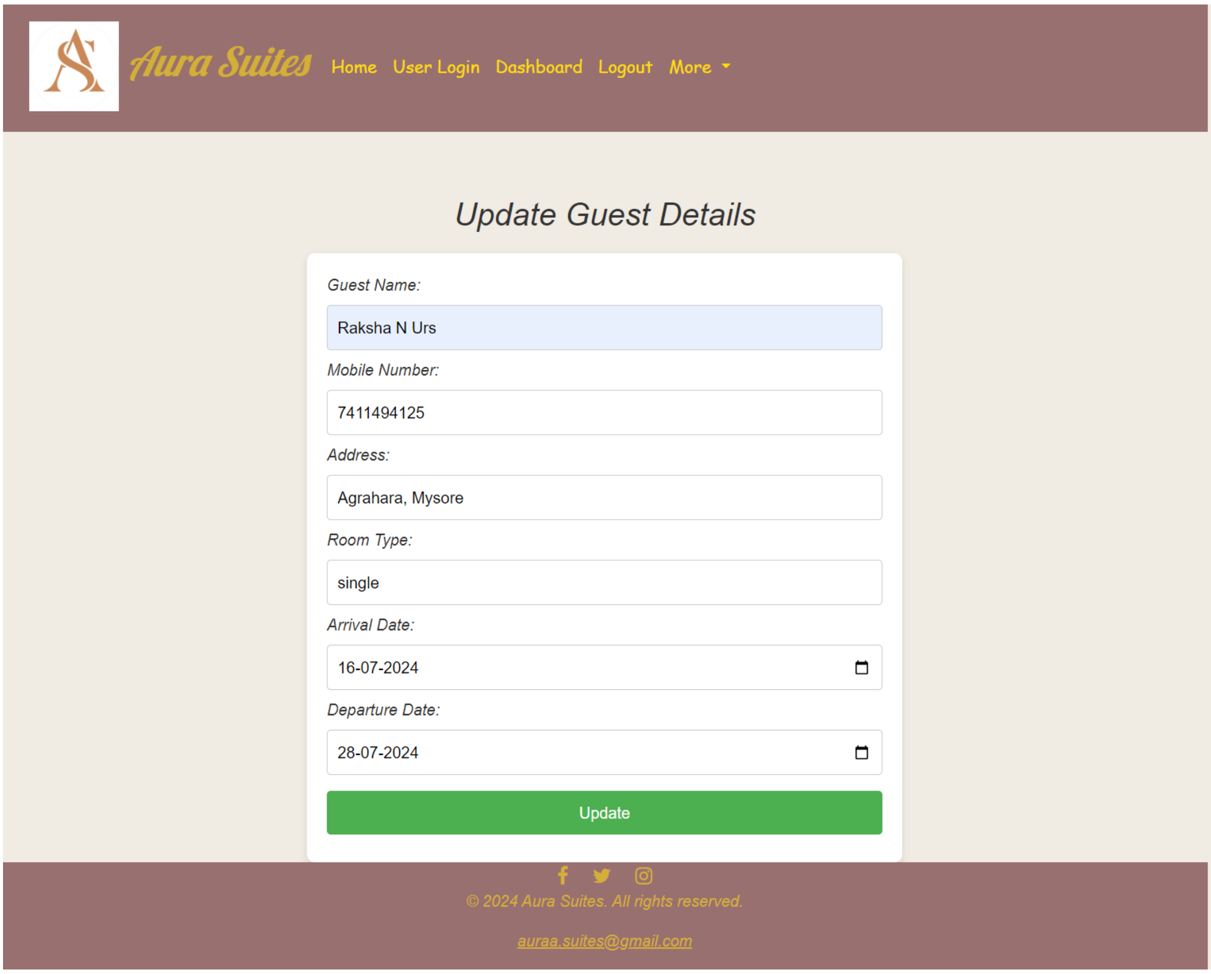


```
MariaDB [hotel]> select * from guest_details;
+-----+------------+--------------+------------------------+-----------+--------------+----------------+-----+
| gid | guest_name | mobile_number | address               | room_type | arrival_date | departure_date | lid |
+-----+------------+--------------+------------------------+-----------+--------------+----------------+-----+
|   7 | Purnaa L   | 9916572524   | Vijayanagar, Mysore    | double    | 2024-07-03   | 2024-07-07     |  33 |
|  10 | Keerthana  | 7892474657   | Bannimantap, Mysore    | suite     | 2024-07-12   | 2024-07-14     |  36 |
|  11 | Aditi      | 9902138100   | Siddarthanagar, Mysore | single    | 2024-07-04   | 2024-07-05     |  34 |
|  12 | Keerthana  | 7892474657   | Bannimantap, Mysore    | double    | 2024-07-17   | 2024-07-26     |  36 |
|  13 | Keerthana  | 7892474657   | Bannimantap, Mysore    | suite     | 2024-07-26   | 2024-07-31     |  36 |
|  14 | Keerthana  | 7892474657   | Bannimantap, Mysore    | deluxe    | 2024-07-27   | 2024-07-31     |  36 |
|  16 | Raksha     | 7411494125   | Agrahara, Mysore       | suite     | 2024-07-30   | 2024-07-31     |  35 |
|  18 | Raksha     | 7411494125   | Agrahara, Mysore       | double    | 2024-07-28   | 2024-07-31     |  35 |
|  20 | Pranathi   | 8861436766   | Arsikere, Hassan       | suite     | 2024-07-30   | 2024-07-31     |  37 |
|  21 | Pranathi   | 8861436766   | Arsikere, Hassan       | suite     | 2024-08-01   | 2024-08-03     |  37 |
|  23 | Raksha     | 7411494125   | Agrahara, Mysore       | single    | 2024-07-16   | 2024-07-24     |  35 |
+-----+------------+--------------+------------------------+-----------+--------------+----------------+-----+
```



Update Guest Details

Guest Name: Raksha N Urs

Mobile Number: 7411494125

Address: Agrahara, Mysore

Room Type: single

Arrival Date: 16-07-2024

Departure Date: 28-07-2024

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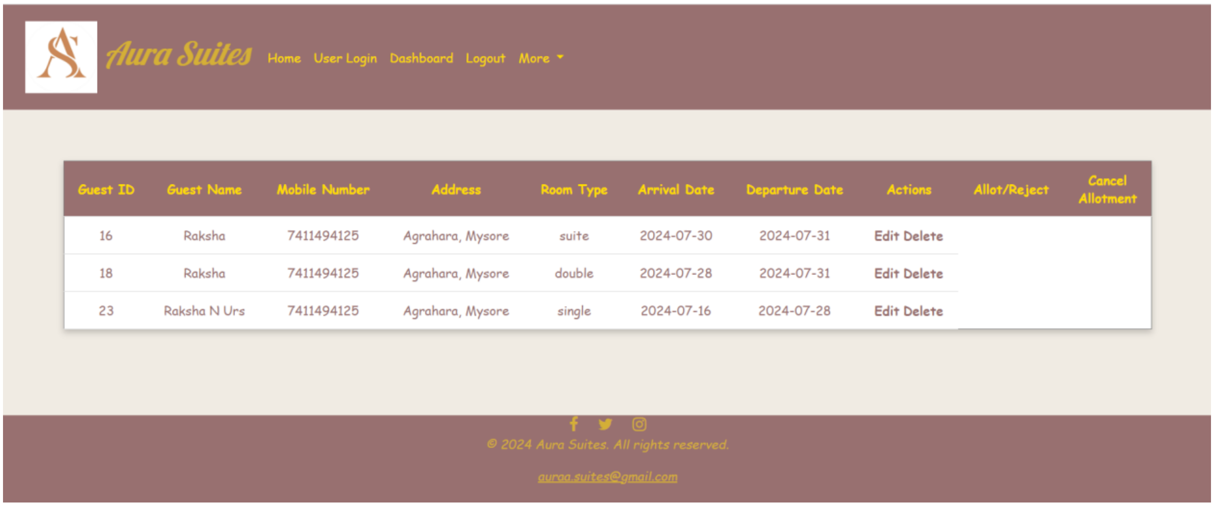
- **Edit Details: After Editing**



Guest ID	Guest Name	Mobile Number	Address	Room Type	Arrival Date	Departure Date	Actions	Allot/Reject	Cancel Allotment
16	Raksha	7411494125	Agrahara, Mysore	suite	2024-07-30	2024-07-31	Edit Delete		
18	Raksha	7411494125	Agrahara, Mysore	double	2024-07-28	2024-07-31	Edit Delete		
23	Raksha N Urs	7411494125	Agrahara, Mysore	single	2024-07-16	2024-07-28	Edit Delete		

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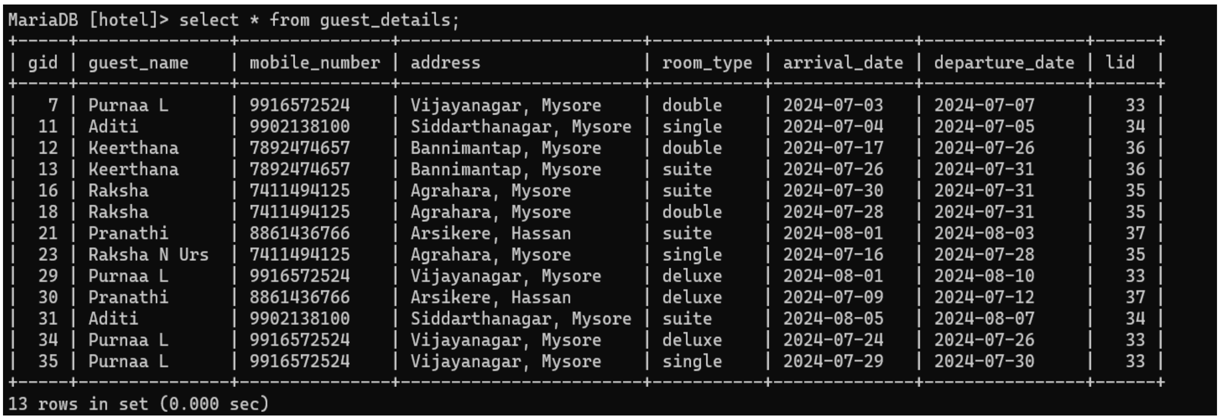
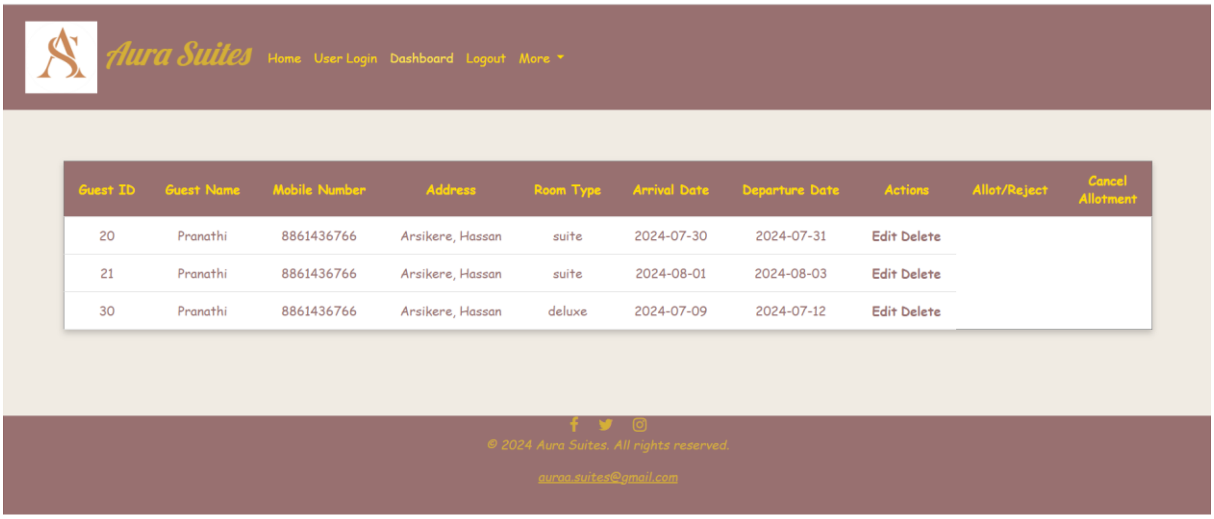


```
MariaDB [hotel]> select * from guest_details;
+-----+--------------+---------------+------------------------+-----------+--------------+----------------+------+
| gid | guest_name   | mobile_number | address                | room_type | arrival_date | departure_date | lid  |
+-----+--------------+---------------+------------------------+-----------+--------------+----------------+------+
|   7 | Purnaa L     | 9916572524    | Vijayanagar, Mysore    | double    | 2024-07-03   | 2024-07-07     |   33 |
|  11 | Aditi        | 9902138100    | Siddarthanagar, Mysore | single    | 2024-07-04   | 2024-07-05     |   34 |
|  12 | Keerthana    | 7892474657    | Bannimantap, Mysore    | double    | 2024-07-17   | 2024-07-26     |   36 |
|  13 | Keerthana    | 7892474657    | Bannimantap, Mysore    | suite     | 2024-07-26   | 2024-07-31     |   36 |
|  16 | Raksha       | 7411494125    | Agrahara, Mysore       | suite     | 2024-07-30   | 2024-07-31     |   35 |
|  18 | Raksha       | 7411494125    | Agrahara, Mysore       | double    | 2024-07-28   | 2024-07-31     |   35 |
|  21 | Pranathi     | 8861436766    | Arsikere, Hassan       | suite     | 2024-08-01   | 2024-08-03     |   37 |
|  23 | Raksha N Urs | 7411494125    | Agrahara, Mysore       | single    | 2024-07-16   | 2024-07-28     |   35 |
|  29 | Purnaa L     | 9916572524    | Vijayanagar, Mysore    | deluxe    | 2024-08-01   | 2024-08-10     |   33 |
|  30 | Pranathi     | 8861436766    | Arsikere, Hassan       | deluxe    | 2024-07-09   | 2024-07-12     |   37 |
|  31 | Aditi        | 9902138100    | Siddarthanagar, Mysore | suite     | 2024-08-05   | 2024-08-07     |   34 |
|  34 | Purnaa L     | 9916572524    | Vijayanagar, Mysore    | deluxe    | 2024-07-24   | 2024-07-26     |   33 |
|  35 | Purnaa L     | 9916572524    | Vijayanagar, Mysore    | single    | 2024-07-29   | 2024-07-30     |   33 |
+-----+--------------+---------------+------------------------+-----------+--------------+----------------+------+
13 rows in set (0.000 sec)
```

- **Cancel Request: Before Cancelling**



Guest ID	Guest Name	Mobile Number	Address	Room Type	Arrival Date	Departure Date	Actions	Allot/Reject	Cancel Allotment
20	Pranathi	8861436766	Arsikere, Hassan	suite	2024-07-30	2024-07-31	Edit Delete		
21	Pranathi	8861436766	Arsikere, Hassan	suite	2024-08-01	2024-08-03	Edit Delete		
30	Pranathi	8861436766	Arsikere, Hassan	deluxe	2024-07-09	2024-07-12	Edit Delete		

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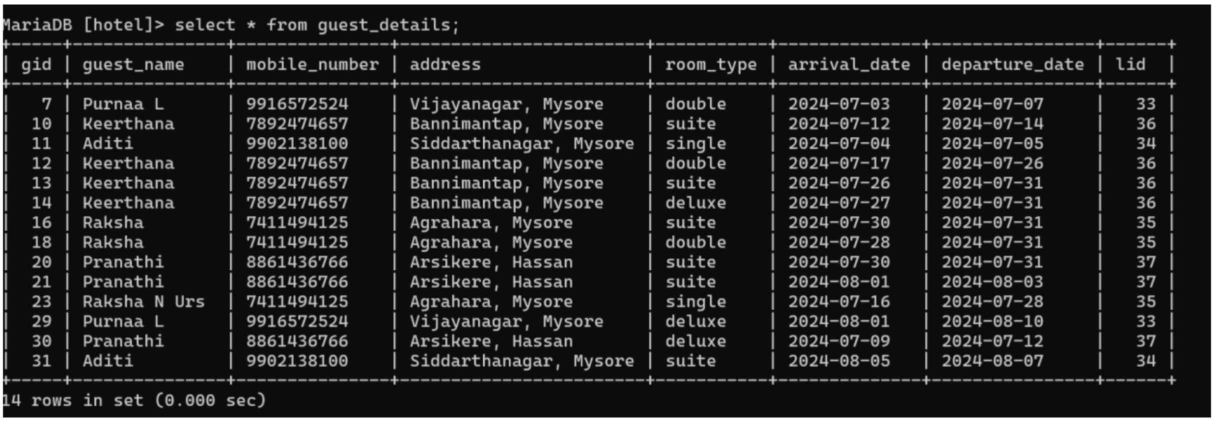
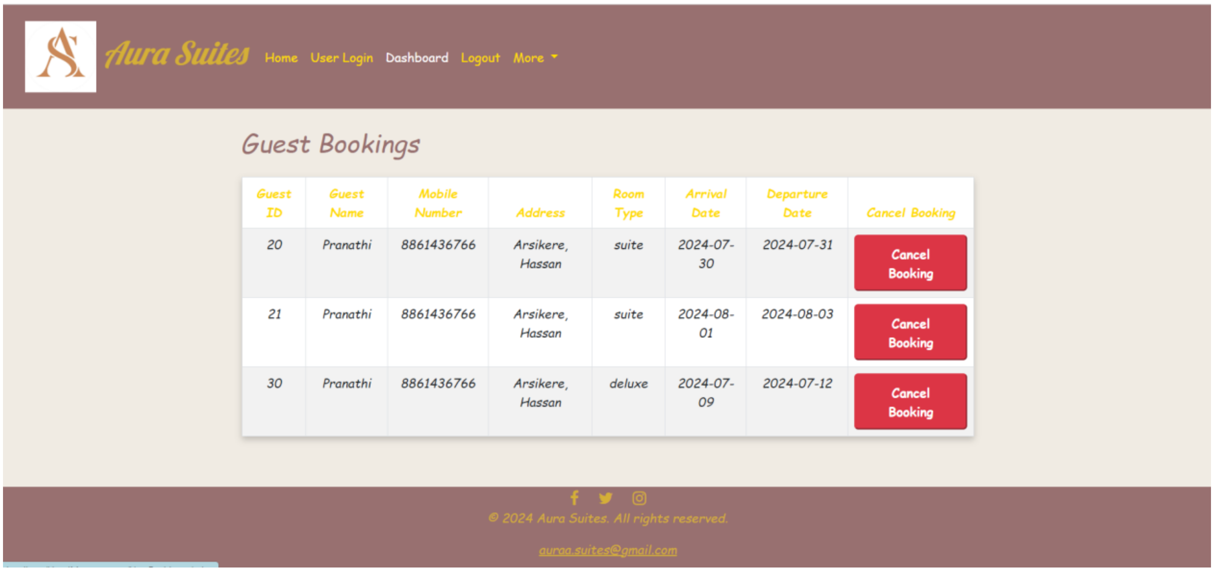


```
MariaDB [hotel]> select * from guest_details;
+-----+---------------+---------------+------------------------+-----------+--------------+----------------+-----+
| gid | guest_name    | mobile_number | address                | room_type | arrival_date | departure_date | lid |
+-----+---------------+---------------+------------------------+-----------+--------------+----------------+-----+
|   7 | Purnaa L      | 9916572524    | Vijayanagar, Mysore    | double    | 2024-07-03   | 2024-07-07     |  33 |
|  10 | Keerthana     | 7892474657    | Bannimantap, Mysore    | suite     | 2024-07-12   | 2024-07-14     |  36 |
|  11 | Aditi         | 9902138100    | Siddarthanagar, Mysore | single    | 2024-07-04   | 2024-07-05     |  34 |
|  12 | Keerthana     | 7892474657    | Bannimantap, Mysore    | double    | 2024-07-17   | 2024-07-26     |  36 |
|  13 | Keerthana     | 7892474657    | Bannimantap, Mysore    | suite     | 2024-07-26   | 2024-07-31     |  36 |
|  14 | Keerthana     | 7892474657    | Bannimantap, Mysore    | deluxe    | 2024-07-27   | 2024-07-31     |  36 |
|  16 | Raksha        | 7411494125    | Agrahara, Mysore       | suite     | 2024-07-30   | 2024-07-31     |  35 |
|  18 | Raksha        | 7411494125    | Agrahara, Mysore       | double    | 2024-07-28   | 2024-07-31     |  35 |
|  20 | Pranathi      | 8861436766    | Arsikere, Hassan       | suite     | 2024-07-30   | 2024-07-31     |  37 |
|  21 | Pranathi      | 8861436766    | Arsikere, Hassan       | suite     | 2024-08-01   | 2024-08-03     |  37 |
|  23 | Raksha N Urs  | 7411494125    | Agrahara, Mysore       | single    | 2024-07-16   | 2024-07-28     |  35 |
|  29 | Purnaa L      | 9916572524    | Vijayanagar, Mysore    | deluxe    | 2024-08-01   | 2024-08-10     |  33 |
|  30 | Pranathi      | 8861436766    | Arsikere, Hassan       | deluxe    | 2024-07-09   | 2024-07-12     |  37 |
|  31 | Aditi         | 9902138100    | Siddarthanagar, Mysore | suite     | 2024-08-05   | 2024-08-07     |  34 |
+-----+---------------+---------------+------------------------+-----------+--------------+----------------+-----+
14 rows in set (0.000 sec)
```



Guest Bookings

Guest ID	Guest Name	Mobile Number	Address	Room Type	Arrival Date	Departure Date	Cancel Booking
20	Pranathi	8861436766	Arsikere, Hassan	suite	2024-07-30	2024-07-31	Cancel Booking
21	Pranathi	8861436766	Arsikere, Hassan	suite	2024-08-01	2024-08-03	Cancel Booking
30	Pranathi	8861436766	Arsikere, Hassan	deluxe	2024-07-09	2024-07-12	Cancel Booking

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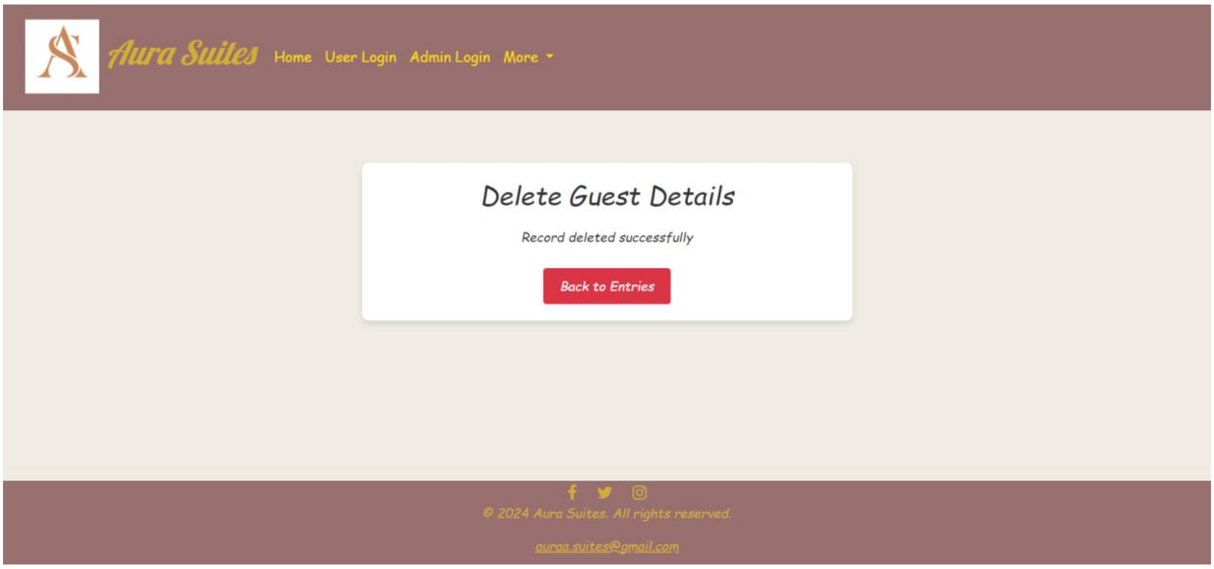
- **Cancel Request: After Cancelling**



Delete Guest Details

Record deleted successfully

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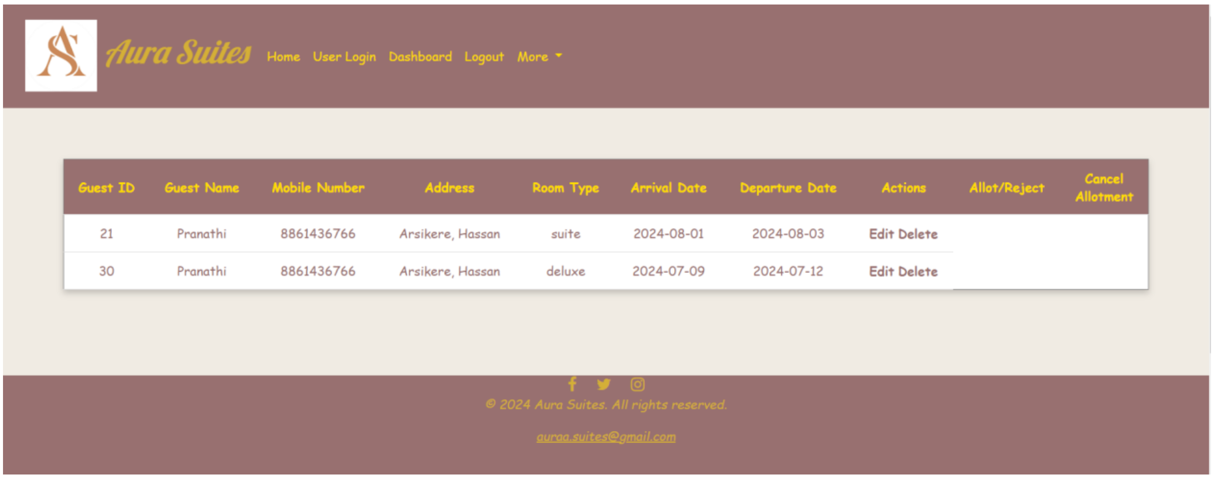

Guest ID	Guest Name	Mobile Number	Address	Room Type	Arrival Date	Departure Date	Actions	Allot/Reject	Cancel Allotment
21	Pranathi	8861436766	Arsikere, Hassan	suite	2024-08-01	2024-08-03	Edit Delete		
30	Pranathi	8861436766	Arsikere, Hassan	deluxe	2024-07-09	2024-07-12	Edit Delete		

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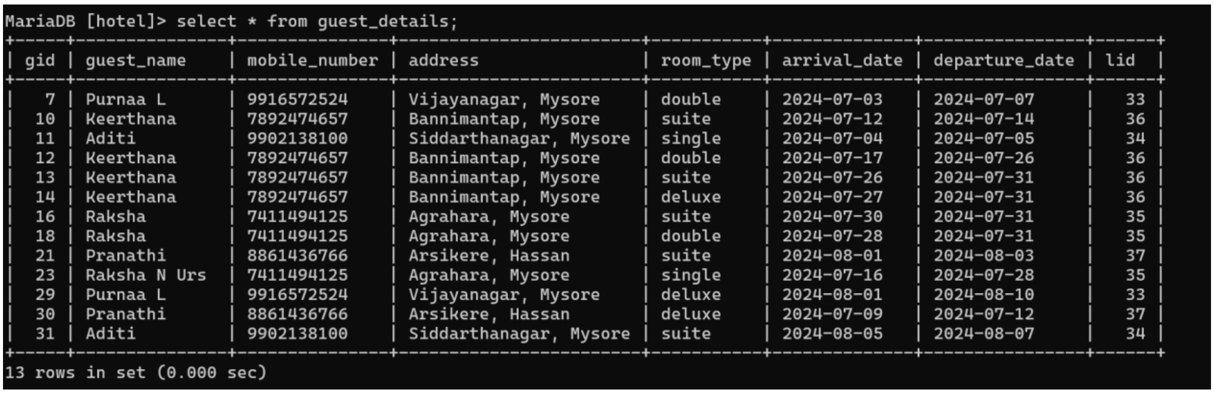


```
MariaDB [hotel]> select * from guest_details;
+-----+-----------------+---------------+------------------------+-----------+--------------+----------------+------+
| gid | guest_name      | mobile_number | address                | room_type | arrival_date | departure_date | lid  |
+-----+-----------------+---------------+------------------------+-----------+--------------+----------------+------+
|   7 | Purnaa L        | 9916572524    | Vijayanagar, Mysore    | double    | 2024-07-03   | 2024-07-07     |   33 |
|  10 | Keerthana       | 7892474657    | Bannimantap, Mysore    | suite     | 2024-07-12   | 2024-07-14     |   36 |
|  11 | Aditi           | 9902138100    | Siddarthanagar, Mysore | single    | 2024-07-04   | 2024-07-05     |   34 |
|  12 | Keerthana       | 7892474657    | Bannimantap, Mysore    | double    | 2024-07-17   | 2024-07-26     |   36 |
|  13 | Keerthana       | 7892474657    | Bannimantap, Mysore    | suite     | 2024-07-26   | 2024-07-31     |   36 |
|  14 | Keerthana       | 7892474657    | Bannimantap, Mysore    | deluxe    | 2024-07-27   | 2024-07-31     |   36 |
|  16 | Raksha          | 7411494125    | Agrahara, Mysore       | suite     | 2024-07-30   | 2024-07-31     |   35 |
|  18 | Raksha          | 7411494125    | Agrahara, Mysore       | double    | 2024-07-28   | 2024-07-31     |   35 |
|  21 | Pranathi        | 8861436766    | Arsikere, Hassan       | suite     | 2024-08-01   | 2024-08-03     |   37 |
|  23 | Raksha N Urs    | 7411494125    | Agrahara, Mysore       | single    | 2024-07-16   | 2024-07-28     |   35 |
|  29 | Purnaa L        | 9916572524    | Vijayanagar, Mysore    | deluxe    | 2024-08-01   | 2024-08-10     |   33 |
|  30 | Pranathi        | 8861436766    | Arsikere, Hassan       | deluxe    | 2024-07-09   | 2024-07-12     |   37 |
|  31 | Aditi           | 9902138100    | Siddarthanagar, Mysore | suite     | 2024-08-05   | 2024-08-07     |   34 |
+-----+-----------------+---------------+------------------------+-----------+--------------+----------------+------+
13 rows in set (0.000 sec)
```

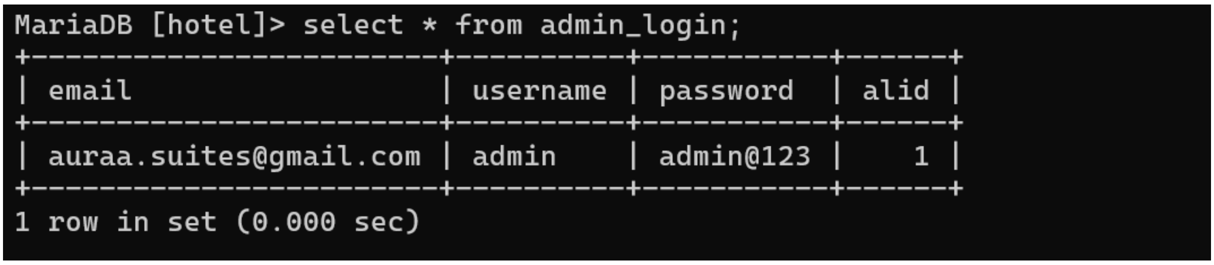
VI. Admin Login

a. Description

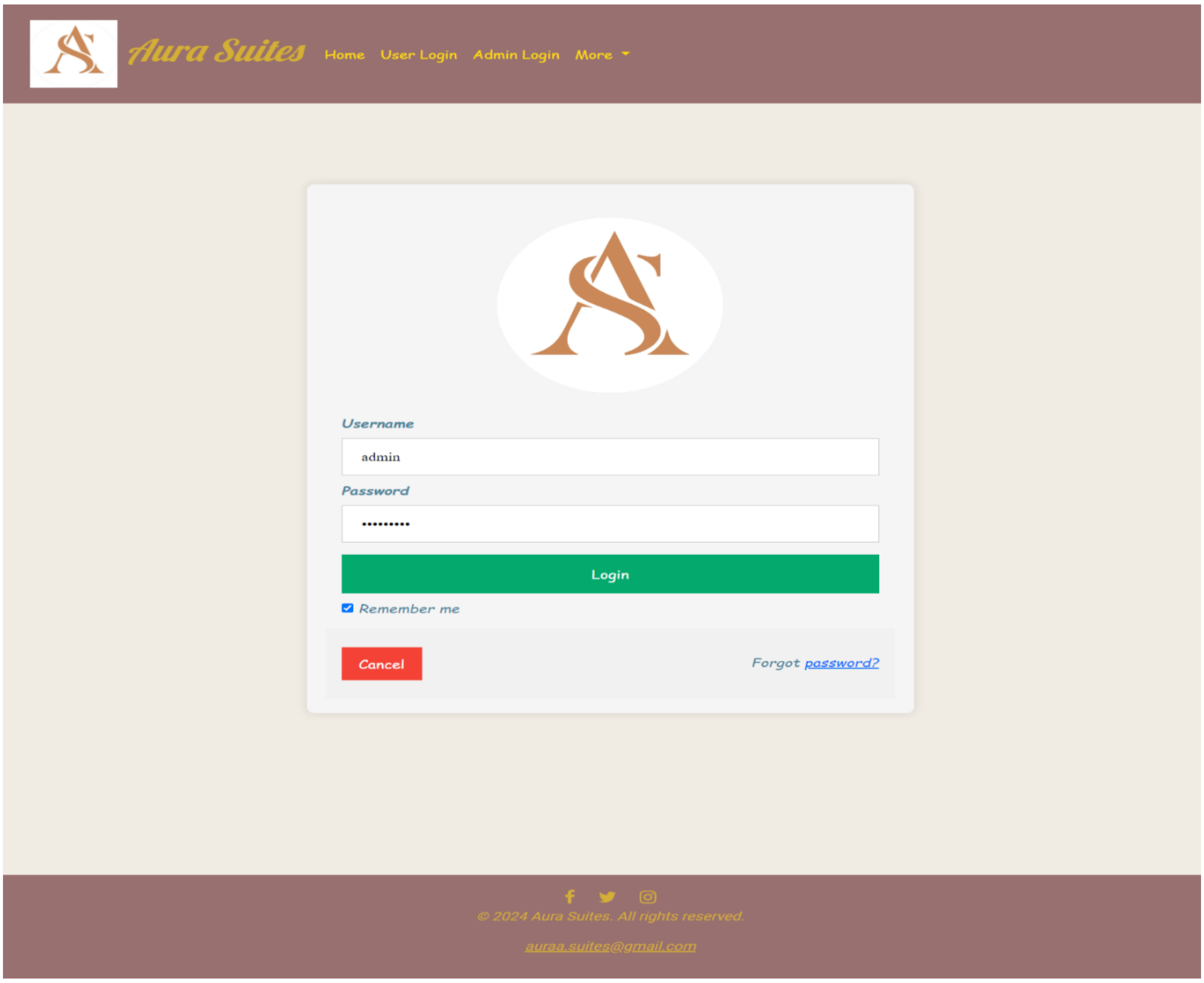
The Admin Login page uses HTML, CSS, and Bootstrap, ensuring a user-friendly and visually appealing interface. Administrators enter their credentials, verified against the admin_login table in the database. Successful authentication grants access to the admin dashboard.

b. Validation

The admin credentials are securely stored in the admin_login table, ensuring only authorised personnel can access the dashboard. This security measure protects sensitive booking data and administrative functions from unauthorised access.



```
MariaDB [hotel]> select * from admin_login;
+------------------------+----------+-----------+------+
| email                  | username | password  | alid |
+------------------------+----------+-----------+------+
| auraa.suites@gmail.com | admin    | admin@123 |    1 |
+------------------------+----------+-----------+------+
1 row in set (0.000 sec)
```



Username

admin

Password

•••••••••

☑ Remember me

Forgot password?

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VII. Admin Dashboard

a. Description

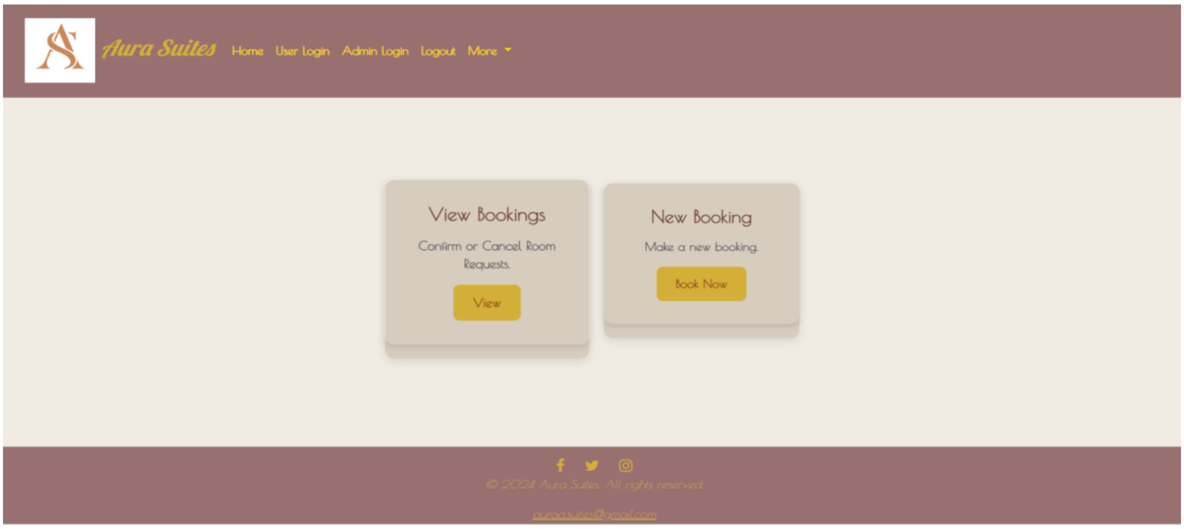
The Admin Dashboard is a comprehensive interface that provides administrators with essential functionalities to manage bookings efficiently. The dashboard features two main sections, each represented by intuitive cards for easy navigation: View Bookings and New Bookings.

b. Validation

Use of session variable for the login page. The session variable is destroyed once the admin logs out. This ensures that the admin has to log in whenever he wants to access the dashboard.

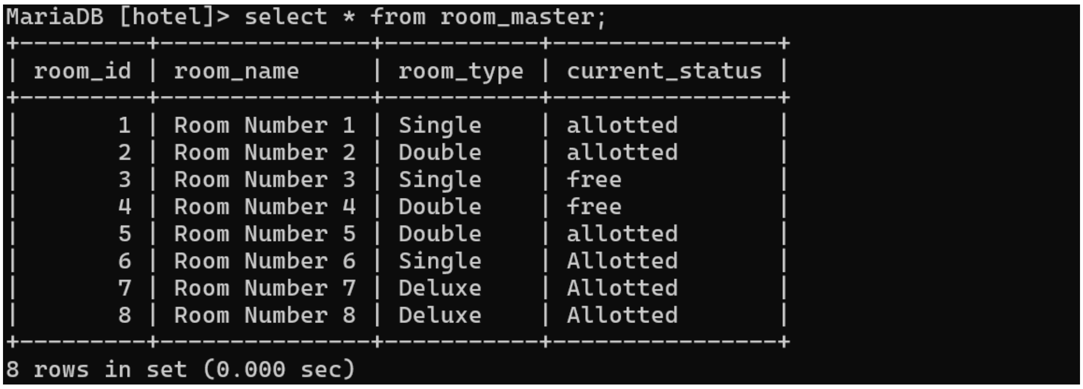
c. Backend

The guest details are stored into a database table named 'guest_details'. Requests are processed accordingly.

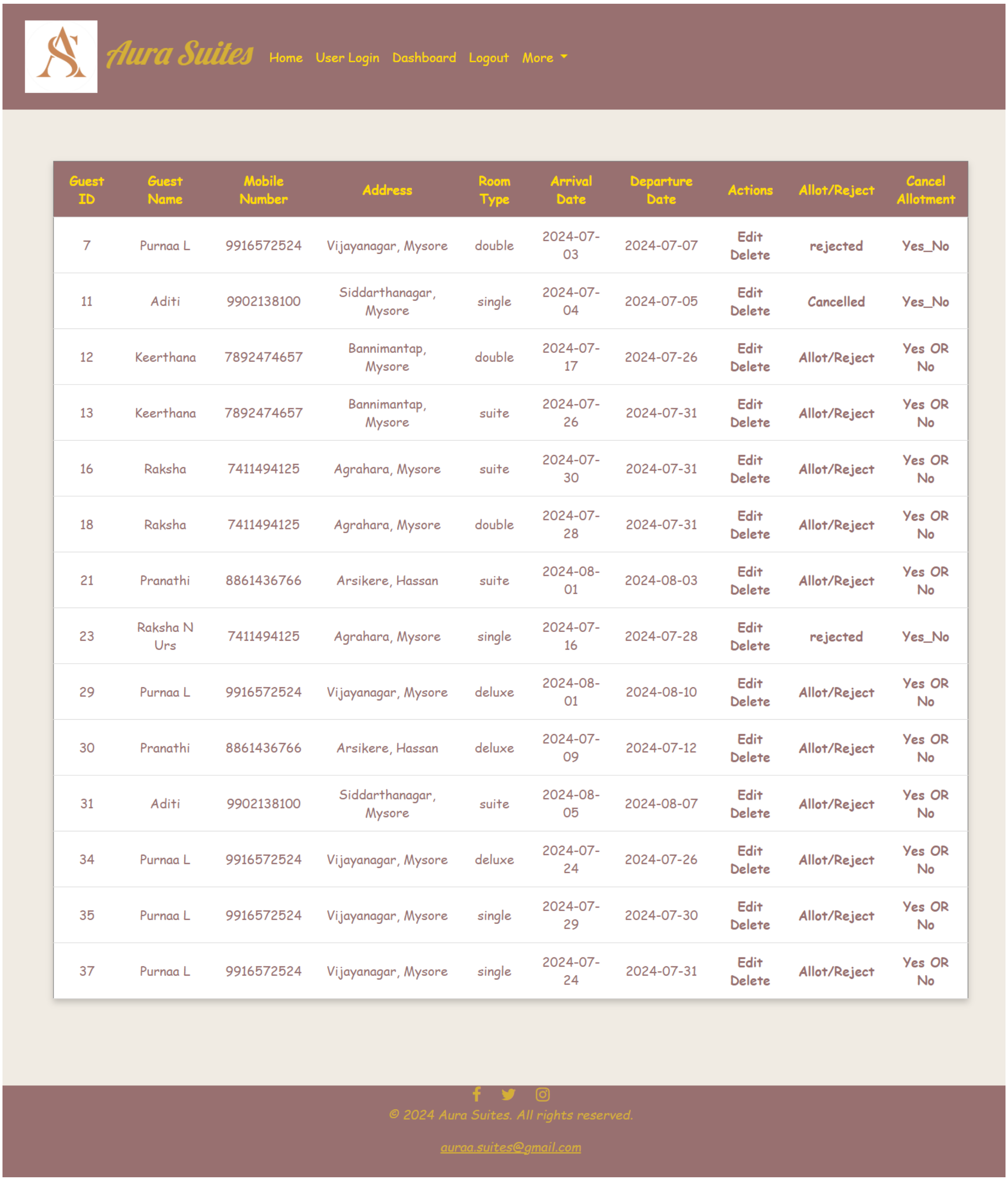


- **Admin View Requests**

The "View Bookings" feature allows administrators to manage room requests in the admin dashboard. Each booking request can be allotted or rejected. The request is processed by checking the availability in the room_master table. If a room is available, it is allotted to the user, a confirmation email is sent via PHPMailer, and the status in the room_master table is updated. If the request is rejected, a rejection email is sent, and the status in the room_master table is updated accordingly. Additionally, admins can cancel existing bookings and view detailed information about each request.



```
MariaDB [hotel]> select * from room_master;
+---------+---------------+-----------+----------------+
| room_id | room_name     | room_type | current_status |
+---------+---------------+-----------+----------------+
|       1 | Room Number 1 | Single    | allotted       |
|       2 | Room Number 2 | Double    | allotted       |
|       3 | Room Number 3 | Single    | free           |
|       4 | Room Number 4 | Double    | free           |
|       5 | Room Number 5 | Double    | allotted       |
|       6 | Room Number 6 | Single    | Allotted       |
|       7 | Room Number 7 | Deluxe    | Allotted       |
|       8 | Room Number 8 | Deluxe    | Allotted       |
+---------+---------------+-----------+----------------+
8 rows in set (0.000 sec)
```



Guest ID	Guest Name	Mobile Number	Address	Room Type	Arrival Date	Departure Date	Actions	Allot/Reject	Cancel Allotment
7	Purnaa L	9916572524	Vijayanagar, Mysore	double	2024-07-03	2024-07-07	Edit Delete	rejected	Yes_No
11	Aditi	9902138100	Siddarthanagar, Mysore	single	2024-07-04	2024-07-05	Edit Delete	Cancelled	Yes_No
12	Keerthana	7892474657	Bannimantap, Mysore	double	2024-07-17	2024-07-26	Edit Delete	Allot/Reject	Yes OR No
13	Keerthana	7892474657	Bannimantap, Mysore	suite	2024-07-26	2024-07-31	Edit Delete	Allot/Reject	Yes OR No
16	Raksha	7411494125	Agrahara, Mysore	suite	2024-07-30	2024-07-31	Edit Delete	Allot/Reject	Yes OR No
18	Raksha	7411494125	Agrahara, Mysore	double	2024-07-28	2024-07-31	Edit Delete	Allot/Reject	Yes OR No
21	Pranathi	8861436766	Arsikere, Hassan	suite	2024-08-01	2024-08-03	Edit Delete	Allot/Reject	Yes OR No
23	Raksha N Urs	7411494125	Agrahara, Mysore	single	2024-07-16	2024-07-28	Edit Delete	rejected	Yes_No
29	Purnaa L	9916572524	Vijayanagar, Mysore	deluxe	2024-08-01	2024-08-10	Edit Delete	Allot/Reject	Yes OR No
30	Pranathi	8861436766	Arsikere, Hassan	deluxe	2024-07-09	2024-07-12	Edit Delete	Allot/Reject	Yes OR No
31	Aditi	9902138100	Siddarthanagar, Mysore	suite	2024-08-05	2024-08-07	Edit Delete	Allot/Reject	Yes OR No
34	Purnaa L	9916572524	Vijayanagar, Mysore	deluxe	2024-07-24	2024-07-26	Edit Delete	Allot/Reject	Yes OR No
35	Purnaa L	9916572524	Vijayanagar, Mysore	single	2024-07-29	2024-07-30	Edit Delete	Allot/Reject	Yes OR No
37	Purnaa L	9916572524	Vijayanagar, Mysore	single	2024-07-24	2024-07-31	Edit Delete	Allot/Reject	Yes OR No

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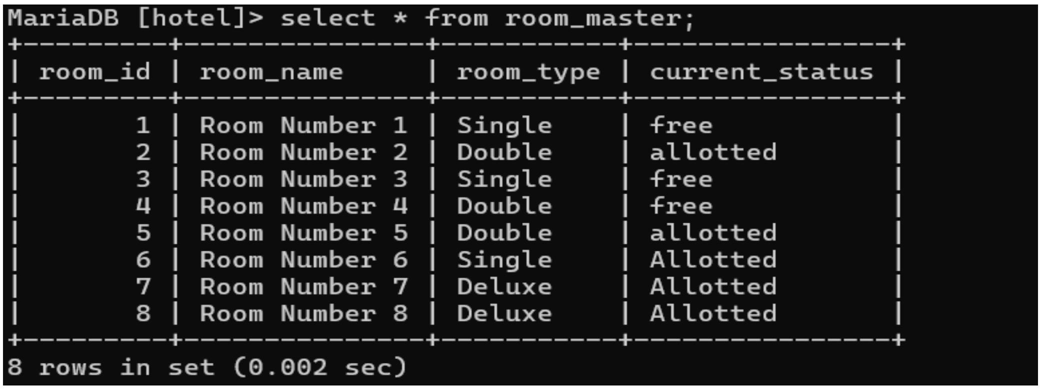
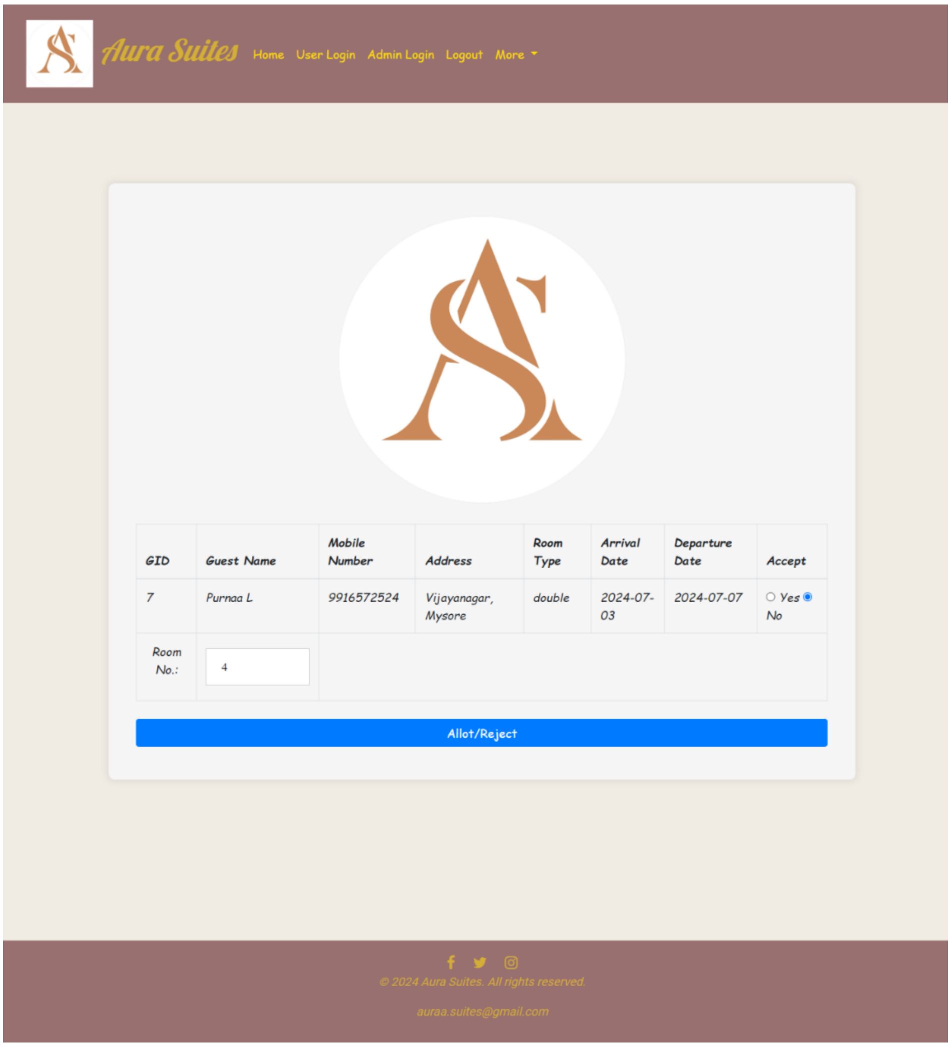
- **If room allotted (Before Allotment)**



```
MariaDB [hotel]> select * from room_master;
+---------+---------------+-----------+----------------+
| room_id | room_name     | room_type | current_status |
+---------+---------------+-----------+----------------+
|       1 | Room Number 1 | Single    | free           |
|       2 | Room Number 2 | Double    | allotted       |
|       3 | Room Number 3 | Single    | free           |
|       4 | Room Number 4 | Double    | free           |
|       5 | Room Number 5 | Double    | allotted       |
|       6 | Room Number 6 | Single    | Allotted       |
|       7 | Room Number 7 | Deluxe    | Allotted       |
|       8 | Room Number 8 | Deluxe    | Allotted       |
+---------+---------------+-----------+----------------+
8 rows in set (0.002 sec)
```



GID	Guest Name	Mobile Number	Address	Room Type	Arrival Date	Departure Date	Accept
7	Purnaa L	9916572524	Vijayanagar, Mysore	double	2024-07-03	2024-07-07	○ Yes ● No
Room No.:	4						

Allot/Reject

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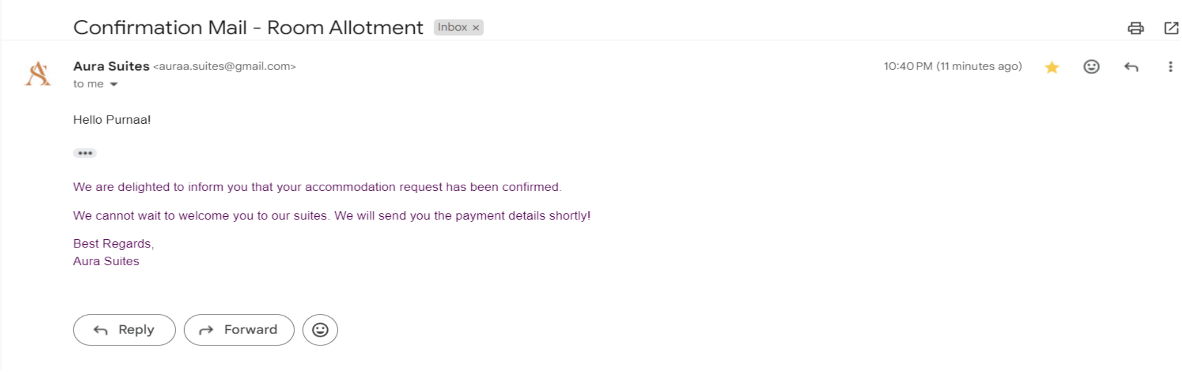
❖ If room allotted (After Allotment)



Confirmation Mail - Room Allotment

Aura Suites <auraa.suites@gmail.com>
to me

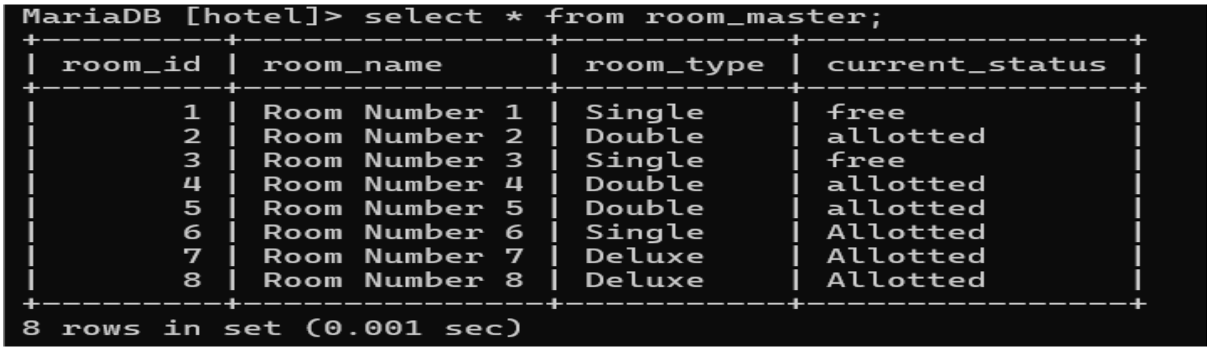
10:40 PM (11 minutes ago)

Hello Purnaa!

We are delighted to inform you that your accommodation request has been confirmed.

We cannot wait to welcome you to our suites. We will send you the payment details shortly!

Best Regards,
Aura Suites

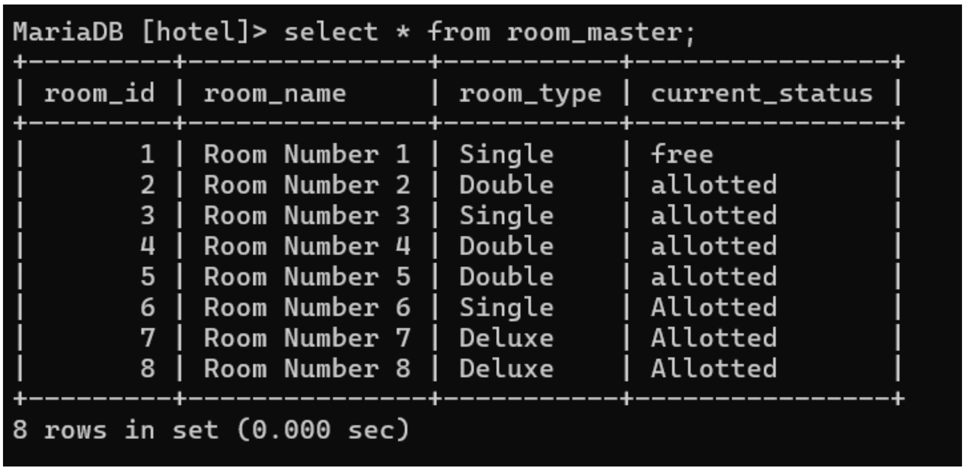


```
MariaDB [hotel]> select * from room_master;
+---------+---------------+-----------+----------------+
| room_id | room_name     | room_type | current_status |
+---------+---------------+-----------+----------------+
|       1 | Room Number 1 | Single    | free           |
|       2 | Room Number 2 | Double    | allotted       |
|       3 | Room Number 3 | Single    | free           |
|       4 | Room Number 4 | Double    | allotted       |
|       5 | Room Number 5 | Double    | allotted       |
|       6 | Room Number 6 | Single    | Allotted       |
|       7 | Room Number 7 | Deluxe    | Allotted       |
|       8 | Room Number 8 | Deluxe    | Allotted       |
+---------+---------------+-----------+----------------+
8 rows in set (0.001 sec)
```

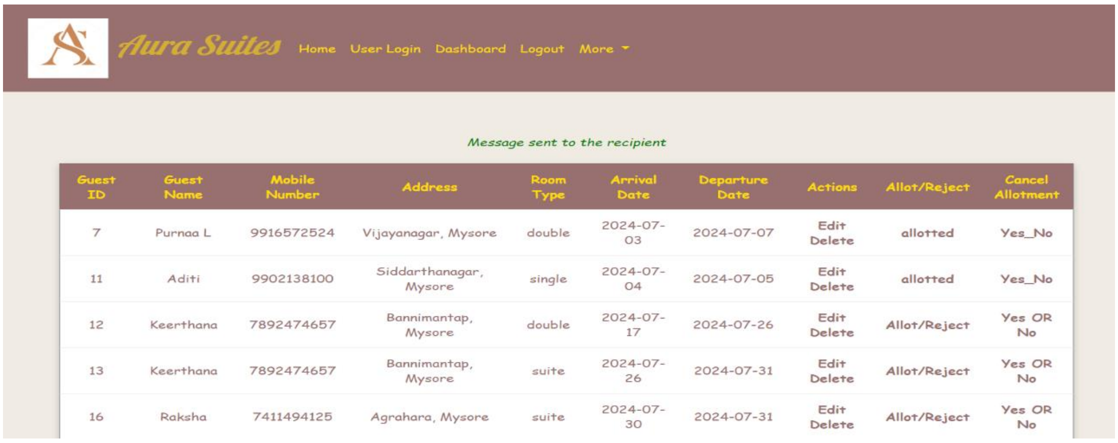
- **Cancellation of Allotted Rooms**

  The "Cancel Allotment" feature allows administrators to manage and cancel previously allotted room bookings. When a cancellation request is processed, the status in the room_master table is updated to reflect the room's availability. A cancellation email is sent to the user via PHPMailer, notifying them of the cancellation.

  ❖ **Before Cancelling:**



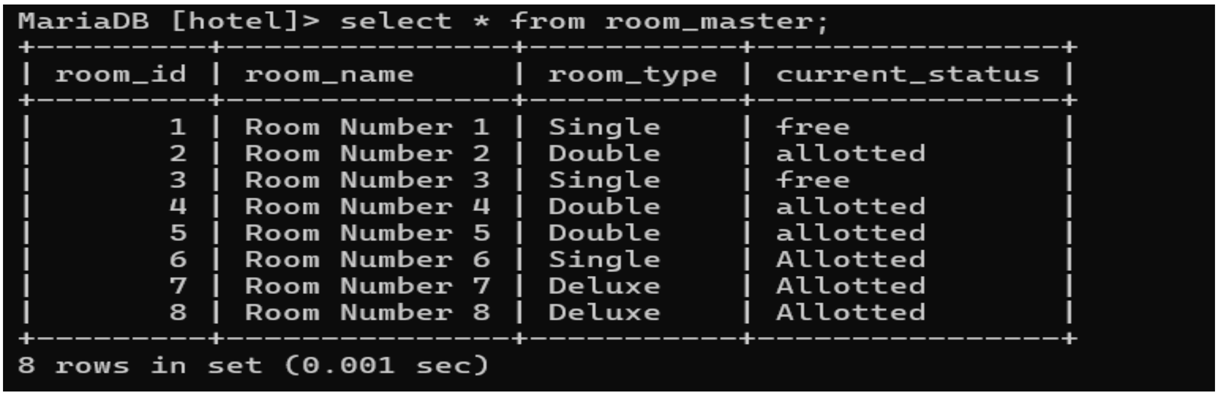
```
MariaDB [hotel]> select * from room_master;
+---------+---------------+-----------+----------------+
| room_id | room_name     | room_type | current_status |
+---------+---------------+-----------+----------------+
|       1 | Room Number 1 | Single    | free           |
|       2 | Room Number 2 | Double    | allotted       |
|       3 | Room Number 3 | Single    | allotted       |
|       4 | Room Number 4 | Double    | allotted       |
|       5 | Room Number 5 | Double    | allotted       |
|       6 | Room Number 6 | Single    | Allotted       |
|       7 | Room Number 7 | Deluxe    | Allotted       |
|       8 | Room Number 8 | Deluxe    | Allotted       |
+---------+---------------+-----------+----------------+
8 rows in set (0.000 sec)
```



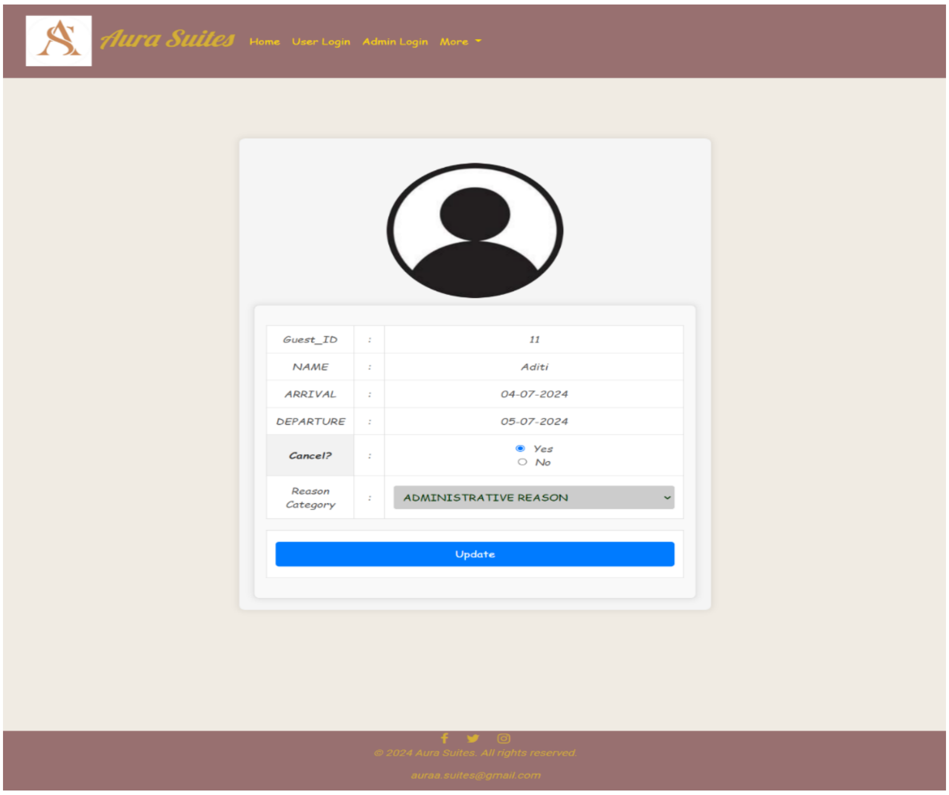
Message sent to the recipient

Guest ID	Guest Name	Mobile Number	Address	Room Type	Arrival Date	Departure Date	Actions	Allot/Reject	Cancel Allotment
7	Purnaa L	9916572524	Vijayanagar, Mysore	double	2024-07-03	2024-07-07	Edit Delete	allotted	Yes_No
11	Aditi	9902138100	Siddarthanagar, Mysore	single	2024-07-04	2024-07-05	Edit Delete	allotted	Yes_No
12	Keerthana	7892474657	Bannimantap, Mysore	double	2024-07-17	2024-07-26	Edit Delete	Allot/Reject	Yes OR No
13	Keerthana	7892474657	Bannimantap, Mysore	suite	2024-07-26	2024-07-31	Edit Delete	Allot/Reject	Yes OR No
16	Raksha	7411494125	Agrahara, Mysore	suite	2024-07-30	2024-07-31	Edit Delete	Allot/Reject	Yes OR No

❖ After Cancelling



```
MariaDB [hotel]> select * from room_master;
+---------+---------------+-----------+----------------+
| room_id | room_name     | room_type | current_status |
+---------+---------------+-----------+----------------+
|       1 | Room Number 1 | Single    | free           |
|       2 | Room Number 2 | Double    | allotted       |
|       3 | Room Number 3 | Single    | free           |
|       4 | Room Number 4 | Double    | allotted       |
|       5 | Room Number 5 | Double    | allotted       |
|       6 | Room Number 6 | Single    | Allotted       |
|       7 | Room Number 7 | Deluxe    | Allotted       |
|       8 | Room Number 8 | Deluxe    | Allotted       |
+---------+---------------+-----------+----------------+
8 rows in set (0.001 sec)
```



Guest_ID	:	11
NAME	:	Aditi
ARRIVAL	:	04-07-2024
DEPARTURE	:	05-07-2024
Cancel?	:	● Yes ○ No
Reason Category	:	ADMINISTRATIVE REASON

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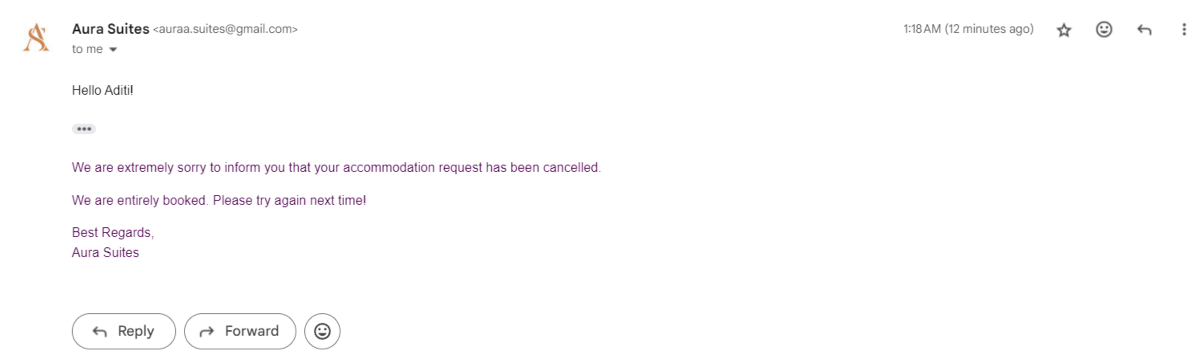


Aura Suites <auraa.suites@gmail.com>
to me

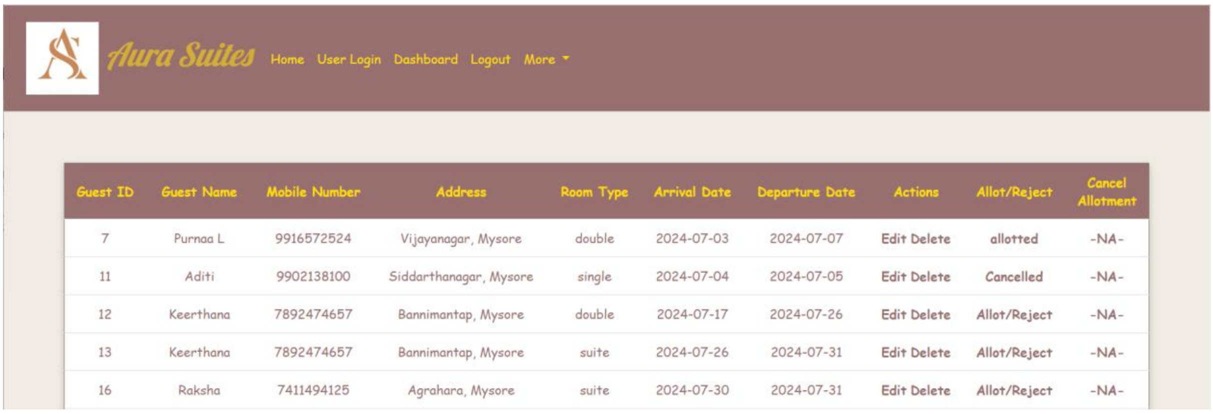
1:18 AM (12 minutes ago)

Hello Aditi!

We are extremely sorry to inform you that your accommodation request has been cancelled.

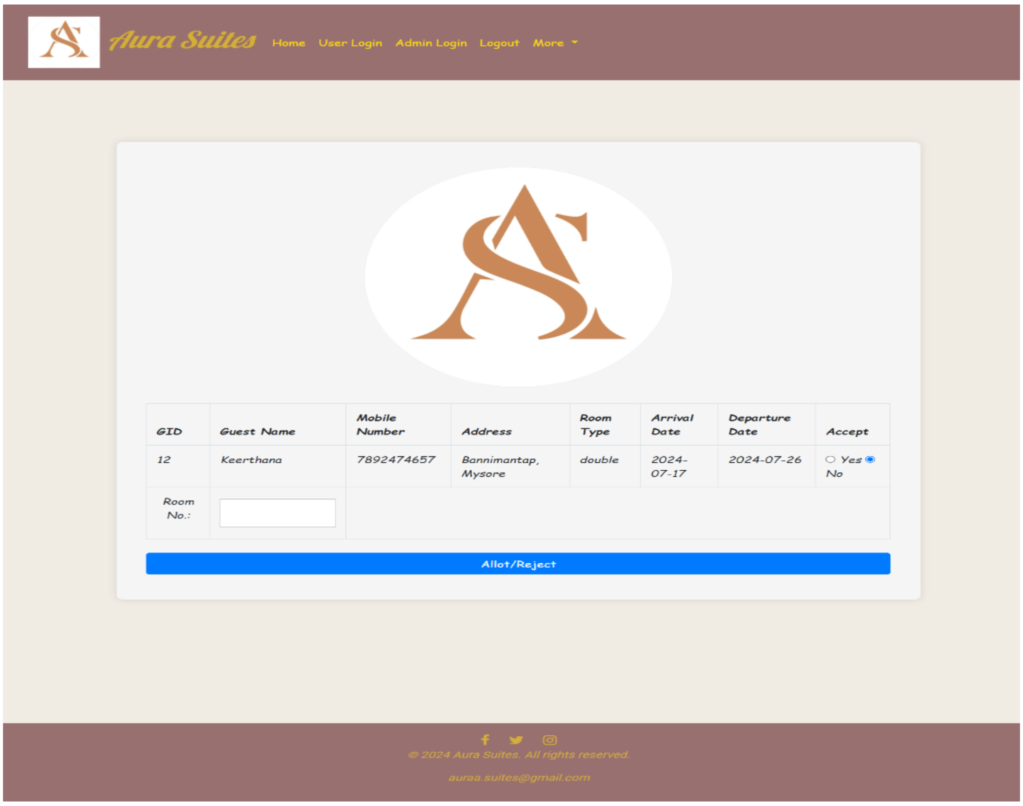
We are entirely booked. Please try again next time!

Best Regards,
Aura Suites



Guest ID	Guest Name	Mobile Number	Address	Room Type	Arrival Date	Departure Date	Actions	Allot/Reject	Cancel Allotment
7	Purnaa L	9916572524	Vijayanagar, Mysore	double	2024-07-03	2024-07-07	Edit Delete	allotted	-NA-
11	Aditi	9902138100	Siddarthanagar, Mysore	single	2024-07-04	2024-07-05	Edit Delete	Cancelled	-NA-
12	Keerthana	7892474657	Bannimantap, Mysore	double	2024-07-17	2024-07-26	Edit Delete	Allot/Reject	-NA-
13	Keerthana	7892474657	Bannimantap, Mysore	suite	2024-07-26	2024-07-31	Edit Delete	Allot/Reject	-NA-
16	Raksha	7411494125	Agrahara, Mysore	suite	2024-07-30	2024-07-31	Edit Delete	Allot/Reject	-NA-

- **Room Requests Rejected**



GID	Guest Name	Mobile Number	Address	Room Type	Arrival Date	Departure Date	Accept
12	Keerthana	7892474657	Bannimantap, Mysore	double	2024-07-17	2024-07-26	○ Yes ● No
Room No.:							

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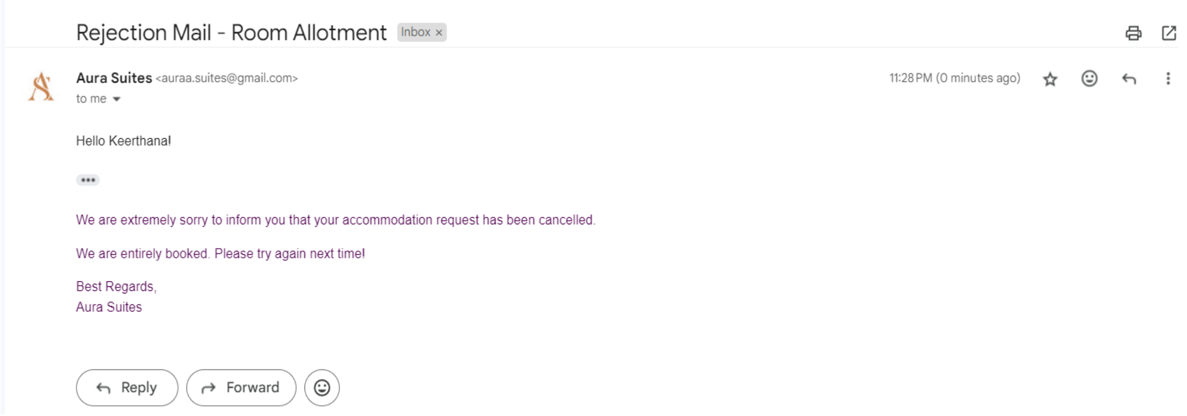

Rejection Mail - Room Allotment

Aura Suites <auraa.suites@gmail.com>
to me

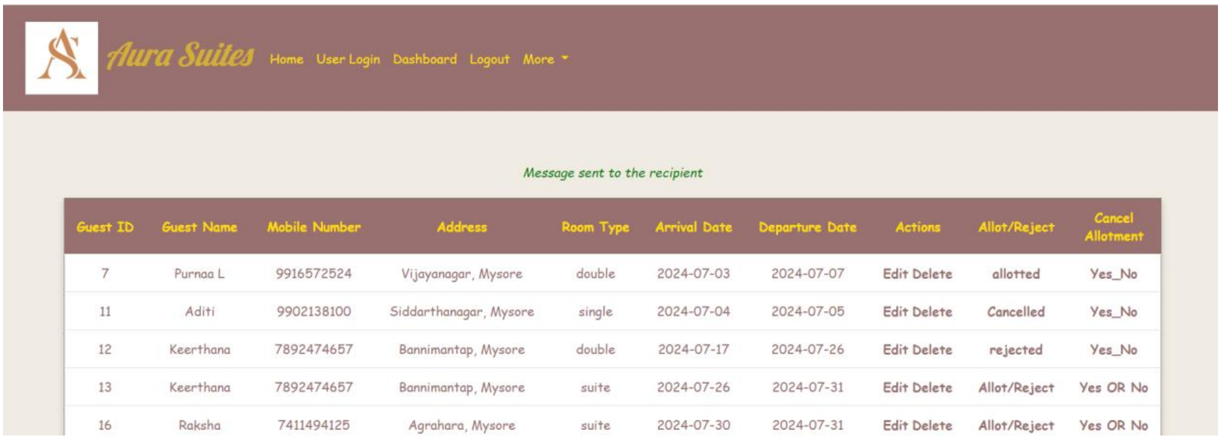
11:28 PM (0 minutes ago)

Hello Keerthana!

We are extremely sorry to inform you that your accommodation request has been cancelled.

We are entirely booked. Please try again next time!

Best Regards,
Aura Suites



Message sent to the recipient

Guest ID	Guest Name	Mobile Number	Address	Room Type	Arrival Date	Departure Date	Actions	Allot/Reject	Cancel Allotment
7	Purnaa L	9916572524	Vijayanagar, Mysore	double	2024-07-03	2024-07-07	Edit Delete	allotted	Yes_No
11	Aditi	9902138100	Siddarthanagar, Mysore	single	2024-07-04	2024-07-05	Edit Delete	Cancelled	Yes_No
12	Keerthana	7892474657	Bannimantap, Mysore	double	2024-07-17	2024-07-26	Edit Delete	rejected	Yes_No
13	Keerthana	7892474657	Bannimantap, Mysore	suite	2024-07-26	2024-07-31	Edit Delete	Allot/Reject	Yes OR No
16	Raksha	7411494125	Agrahara, Mysore	suite	2024-07-30	2024-07-31	Edit Delete	Allot/Reject	Yes OR No

Future Scope

I. Expansion to Sister-Suites

The project can be expanded to include other sister suites within the Aura network, enabling centralised monitoring and management. This expansion would streamline operations across multiple locations and enhance administrative efficiency.

II. Integration of Payment Gateways

Payment gateways can be integrated to facilitate online payments using methods like UPI or Net Banking. Additionally, a receipt generation process can be implemented to provide users with PDF receipts for their transactions, enhancing convenience and documentation.

III. Integration of Catering Services

To create a full-fledged hospitality system, the project can integrate catering services offered by the hotel. This addition would allow guests to manage their dining options seamlessly through the same platform used for room bookings and other services.

IV. Public Domain Hosting

The project should transition to a public domain hosting model, acquiring a domain name like www.aurasuites.in, for example, instead of hosting directly via a public IP. This approach improves accessibility, branding, and user trust, aligning with industry standards for online services.

V. Enhanced Password Security

Implementing encryption for storing passwords in the database ensures enhanced security. Passwords should be stored in an encoded format and accessed only through decoding mechanisms, adhering to best practices for data protection and privacy.

Conclusion

The development journey of Aura Suites, a sophisticated hotel management system, has been guided by a structured approach rooted in software engineering principles. From its inception, where initial requirements were gathered and high-level objectives defined, to the detailed feasibility study assessing economic, technical, and operational viability, each phase has played a crucial role in shaping a robust and scalable solution.

The feasibility study underscored the economic benefits of leveraging open-source technologies and cost-effective hosting solutions, ensuring a practical and sustainable implementation strategy. Technical feasibility was affirmed by adopting a modern technology stack—HTML, CSS, Bootstrap, JavaScript, PHP 8.3, and MySQL—facilitating seamless integration and future scalability.

Requirement engineering formed the backbone of Aura Suites' development, detailing intricate functionalities like room reservation management, guest services, and administrative controls. The iterative elicitation, elaboration, and validation process ensured that stakeholder needs were comprehensively addressed, leading to a detailed Software Requirements Specification (SRS) that serves as a blueprint for development and validation.

In conclusion, Aura Suites exemplifies how applying software engineering principles—efficiency, scalability, security, and user-centric design—can transform hotel management, optimizing operations, enhancing guest experiences, and maintaining competitiveness in the dynamic hospitality landscape.