



UE22CS352B - Object Oriented Analysis & Design

Resorts Management System

Submitted by:

Namitha Rayasam : PES1UG22CS373

Niharika Nandakumar : PES1UG22CS383

Nishita Gopi : PES1UG22CS397

Nitika Melayil : PES1UG22CS401

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Dr. Bhargavi Mokashi

January - May 2025

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

FACULTY OF ENGINEERING

PES UNIVERSITY

(Established under Karnataka Act
No. 16 of 2013) 100ft Ring Road,
Bengaluru – 560 085, Karnataka, India

Problem Statement:

Efficient management of guest bookings, facility availability, maintenance, and payments is crucial for smooth resort operations. Traditional or disconnected systems often lead to booking conflicts, miscommunication, and reduced guest satisfaction. This project aims to develop a centralized Resort Management System that addresses these challenges through streamlined processes and defined user roles. The system will support three main roles: Users, Managers, and Admins. Users can easily browse and book services, Managers handle daily operations and coordination, and Admins manage system configurations and access controls.

Key Features of the Resort Management System:

User Features

- **Resort Browsing:** Search and view available resorts with detailed information on room types, pricing, and availability.
- **Room Booking:** Book rooms with options to specify the number of guests, room preferences, and special requests.
- **Booking Status & History:** Check current booking status and view previous reservations.
- **Food Ordering:** Browse menus and place food orders directly from the resort restaurant or room service.

Manager Features

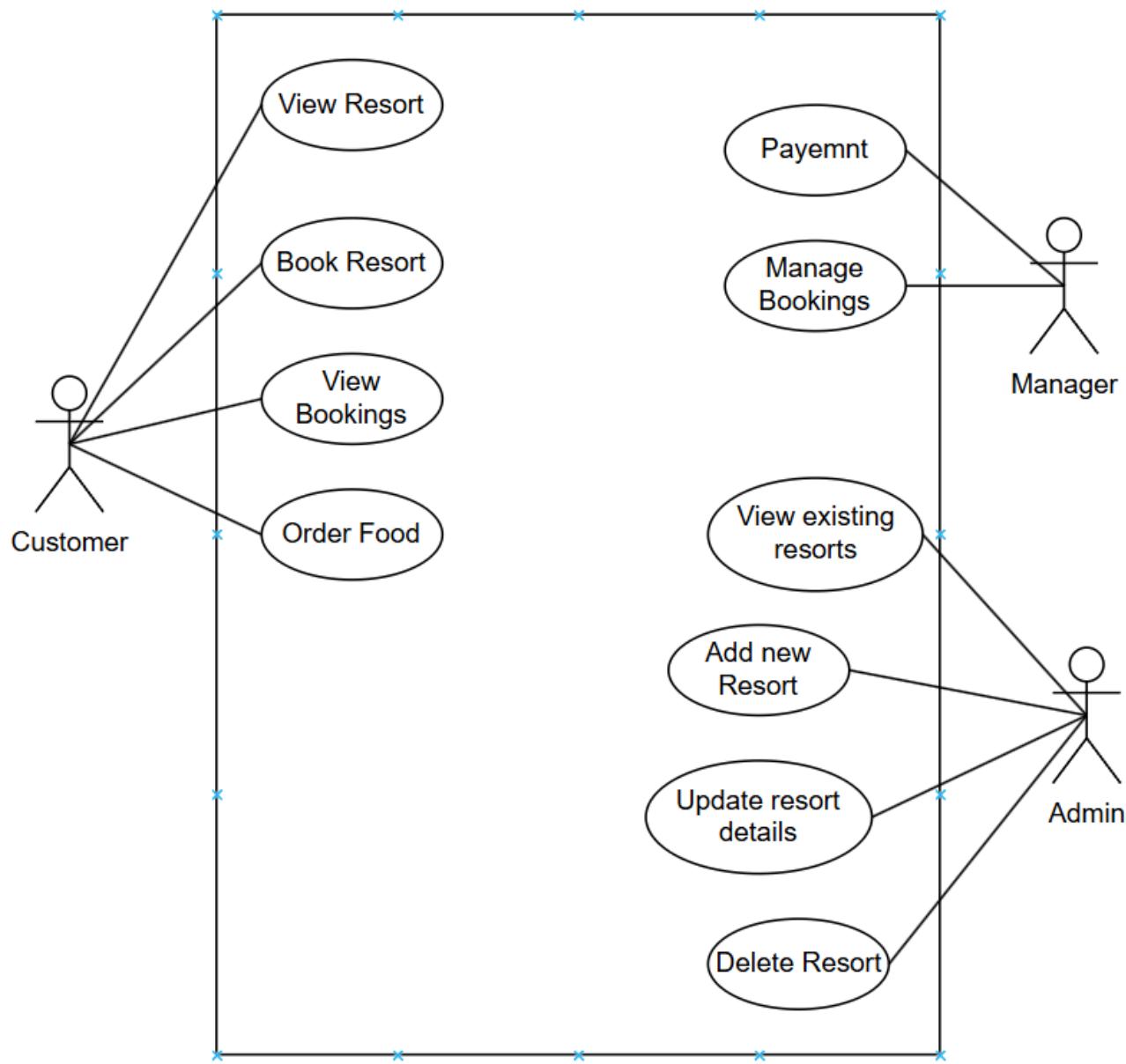
- **Manager Dashboard:** Access a feature-rich dashboard to oversee resort operations.
- **Booking Management:**
 - View and manage all bookings through an interactive booking list.
 - Update booking statuses (e.g., “Unchecked” to “Checked-in”).
 - Modify room allocations, including room count and specific room numbers.
- **Facility & Service Management:** Add or update resort-specific facilities and guest services.
- **Payment Tracking:** Handle guest payment records and update payment statuses.

Admin Features

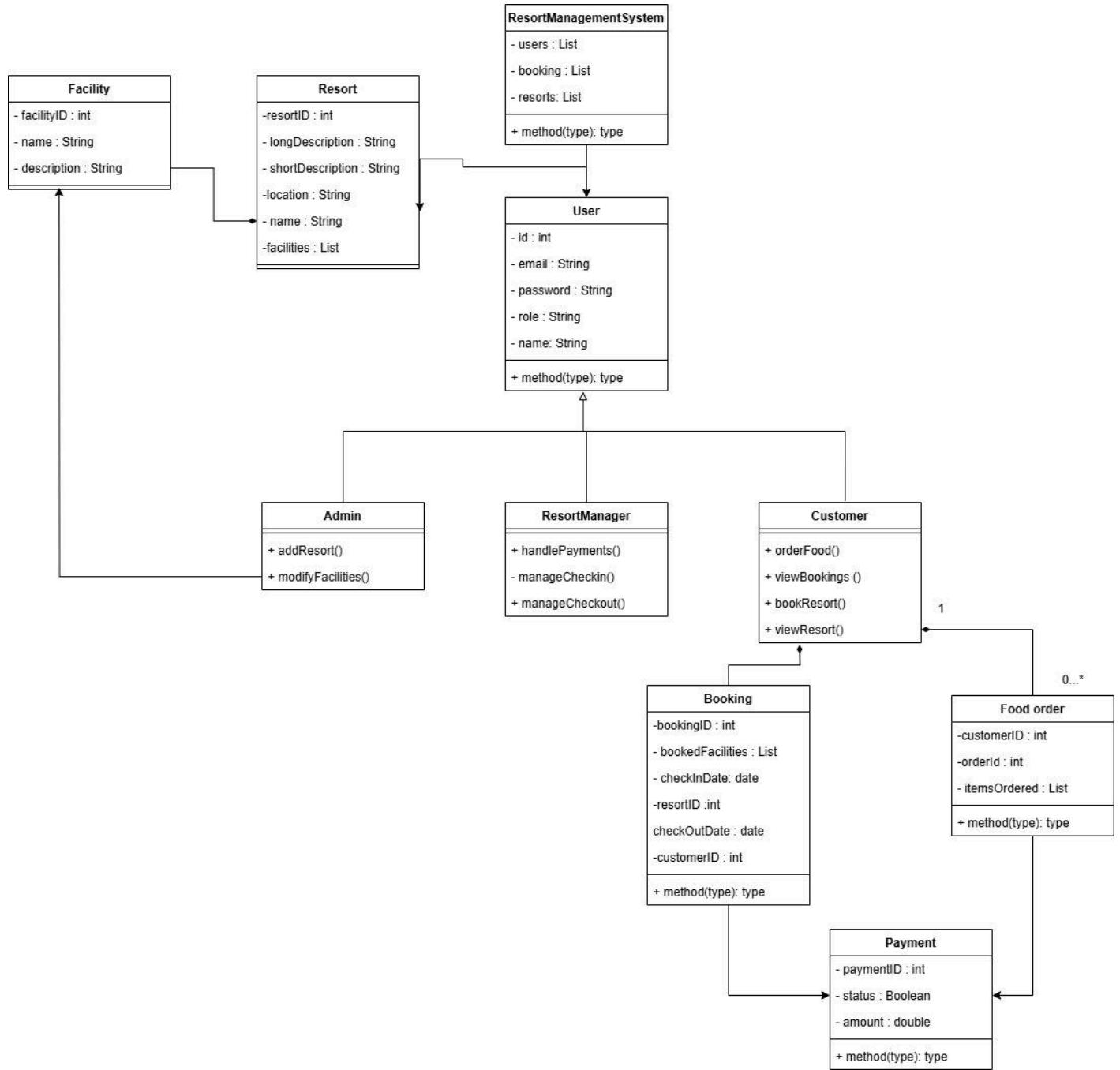
- **Admin Dashboard:** Access system-level tools for full operational control.
- **Resort Configuration:** Add and update resort details including name, location, images, and base pricing.
- **Global Facilities Management:** Control services available across all resorts.

Models

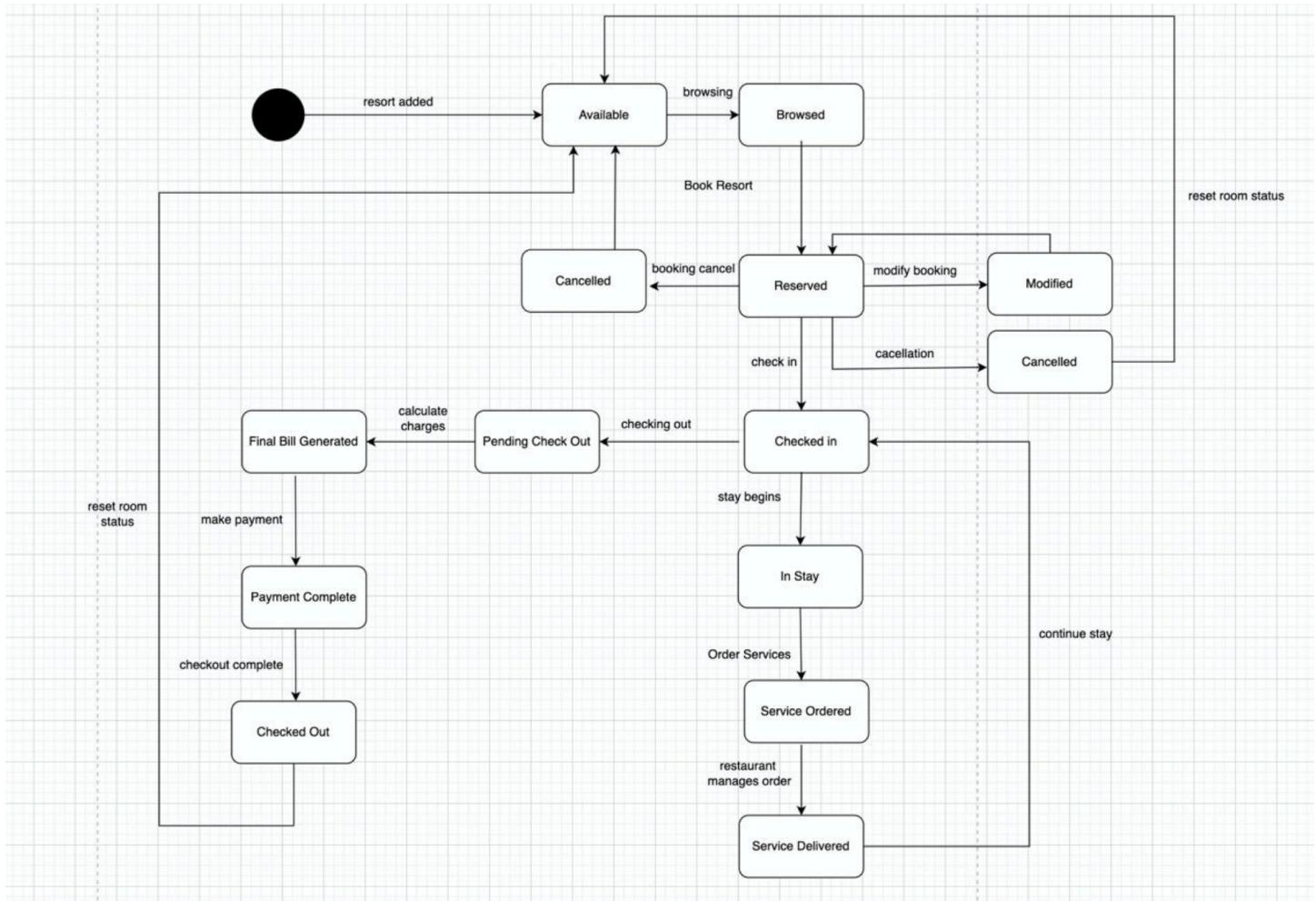
Use Case Diagram



Class Diagram

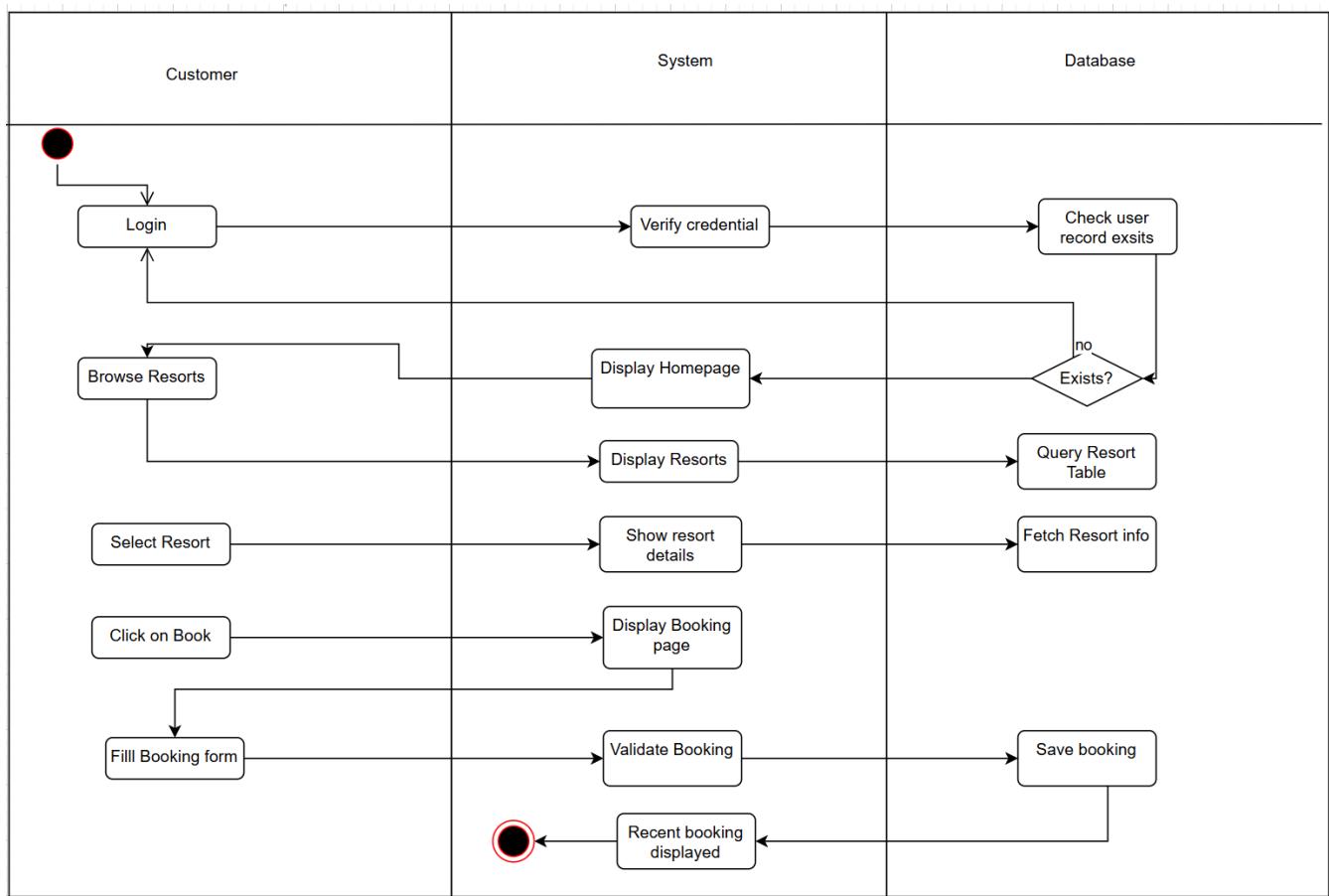


State Diagram

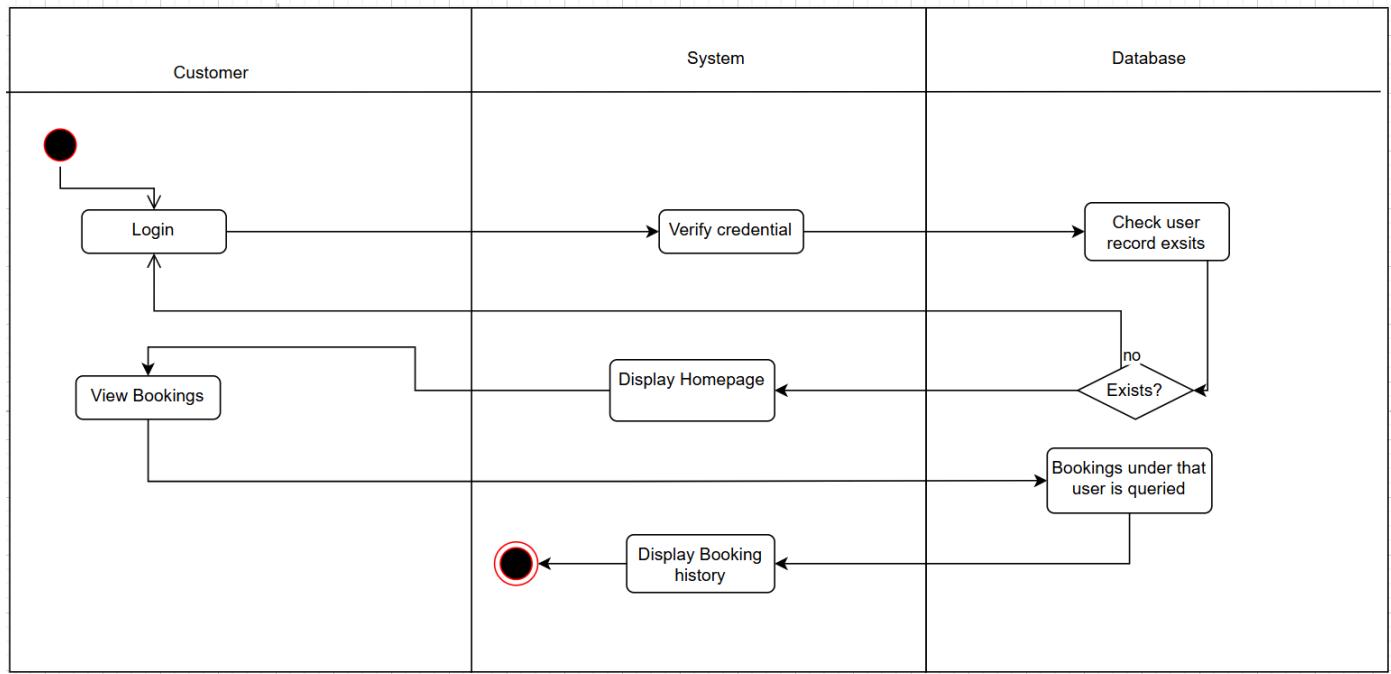


Activity Diagrams

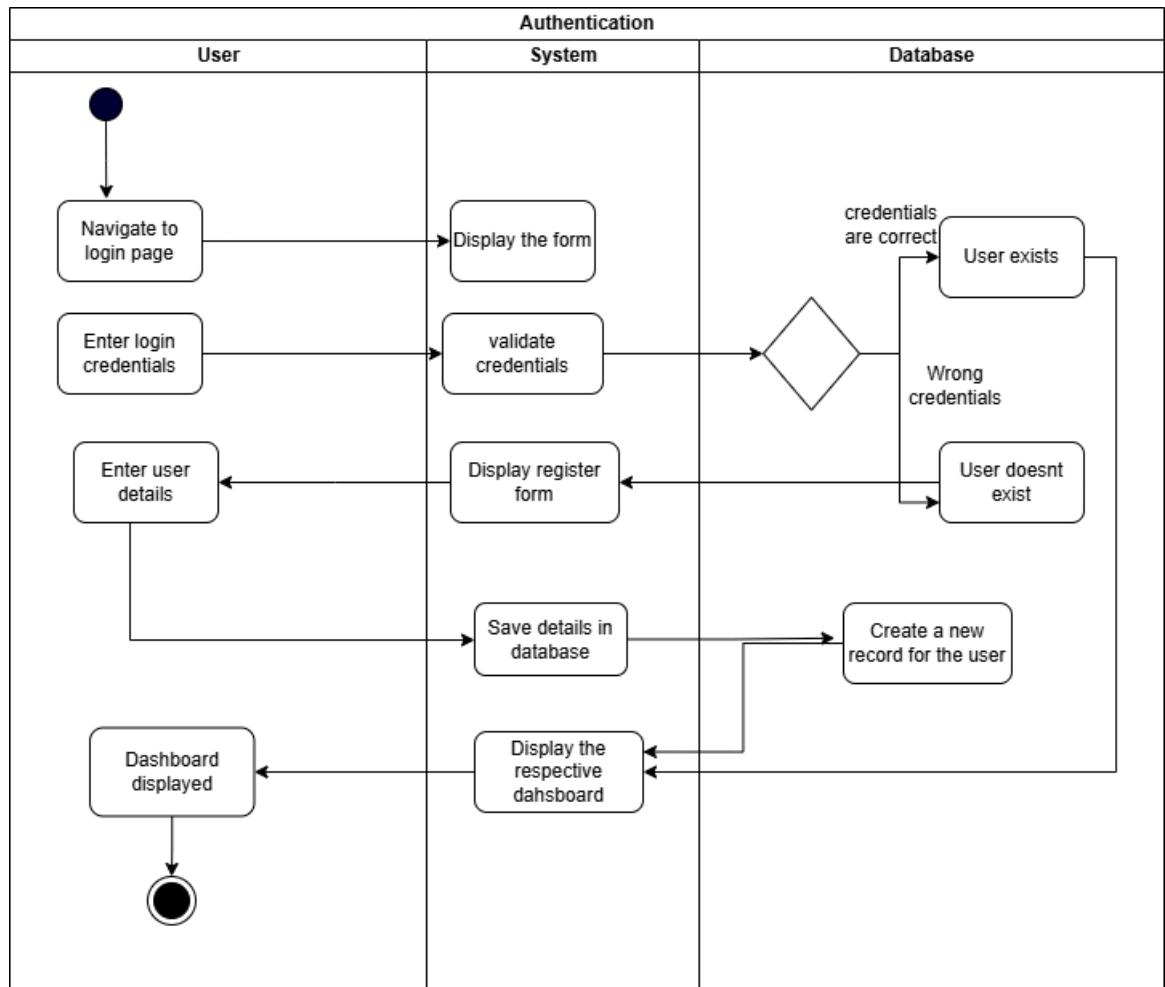
Major Use case : Booking Resort



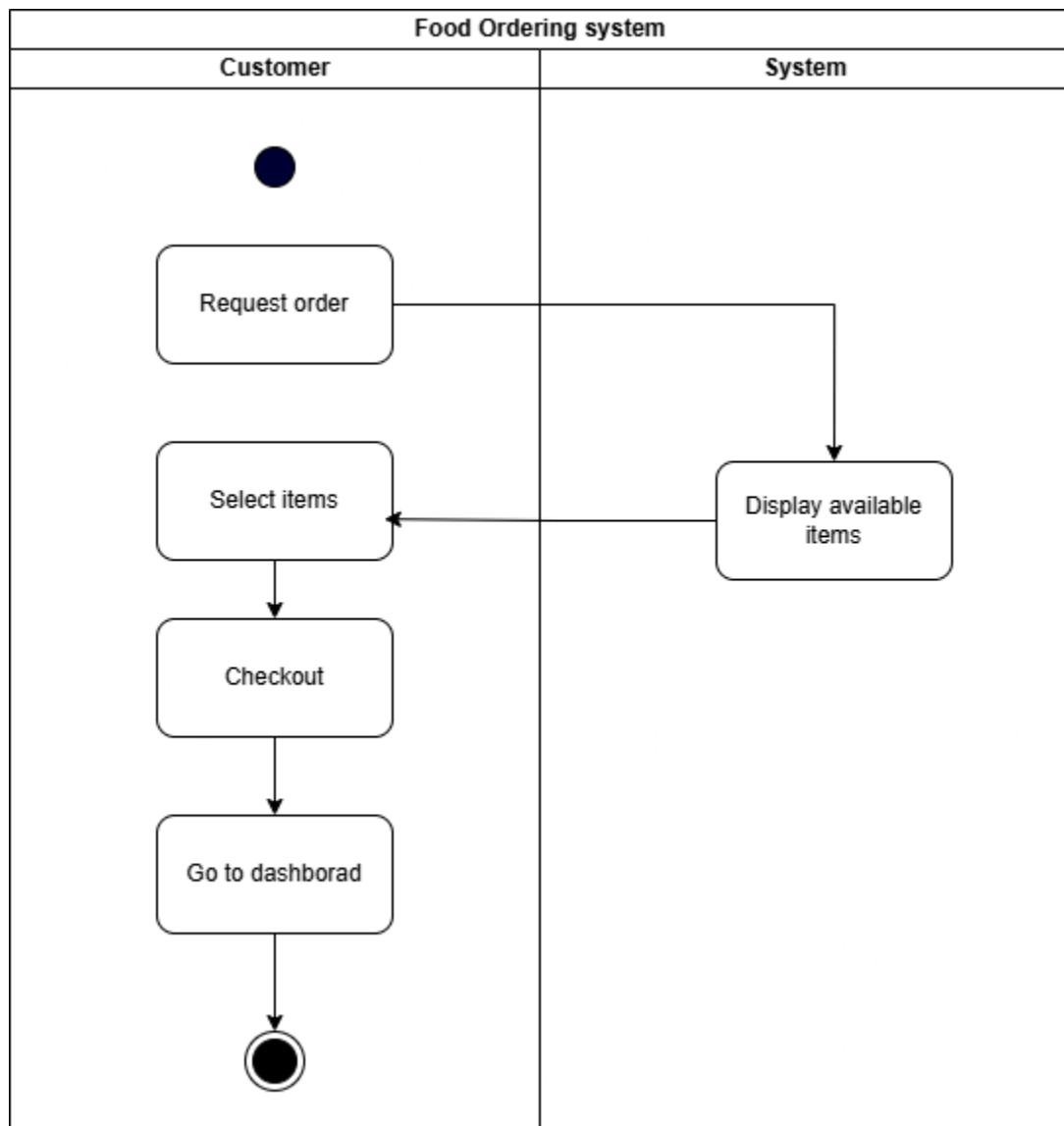
Minor Use case : View Booking Resort



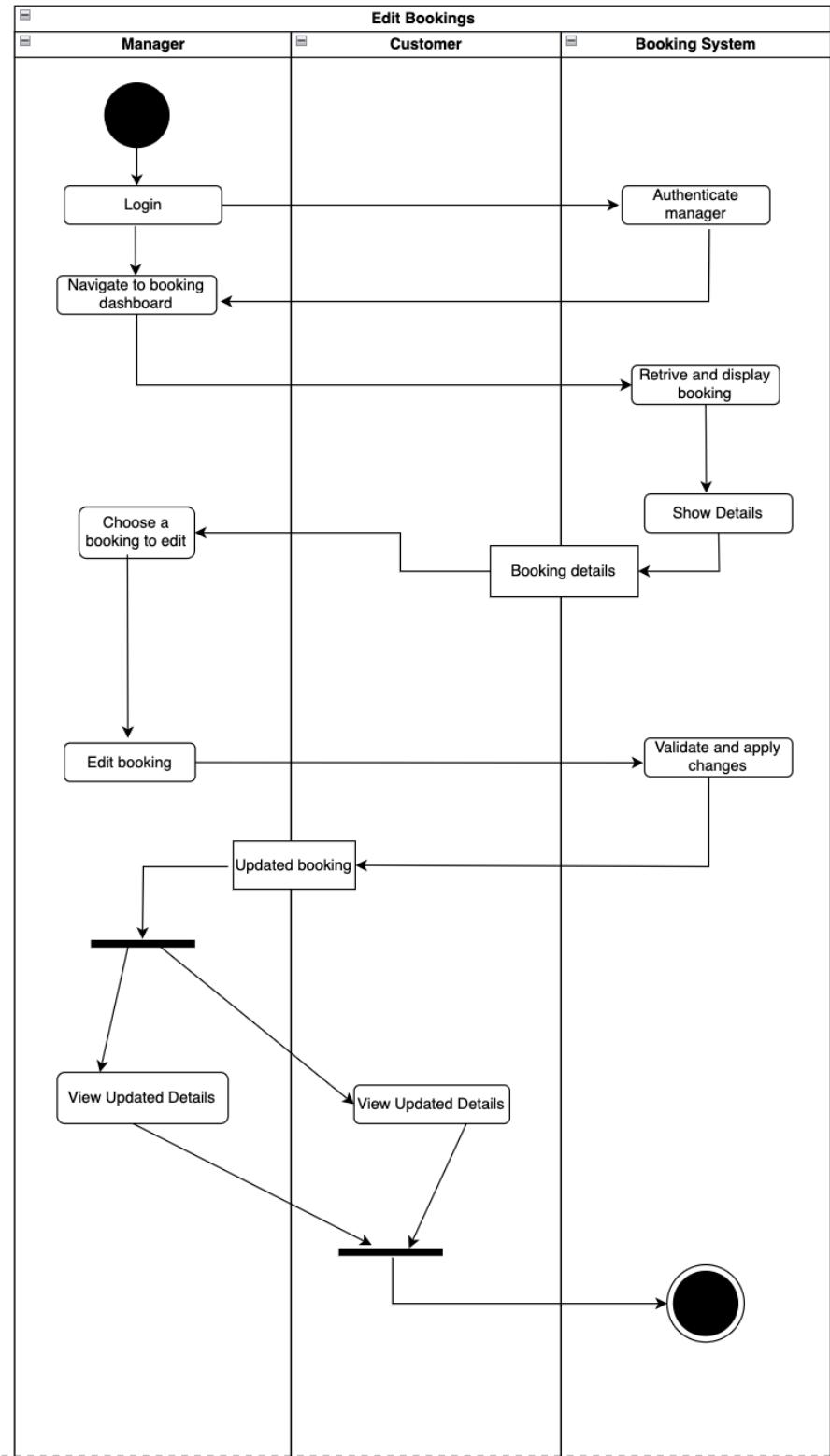
Major use case - Authentication



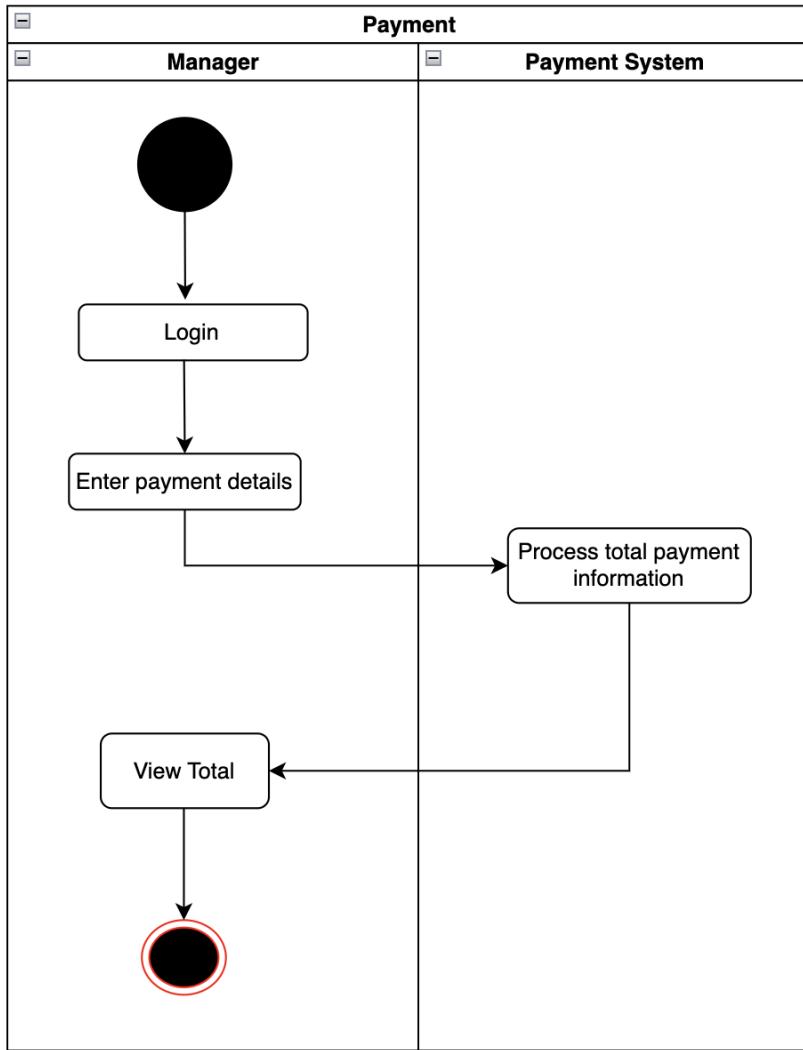
Minor use case - Food ordering



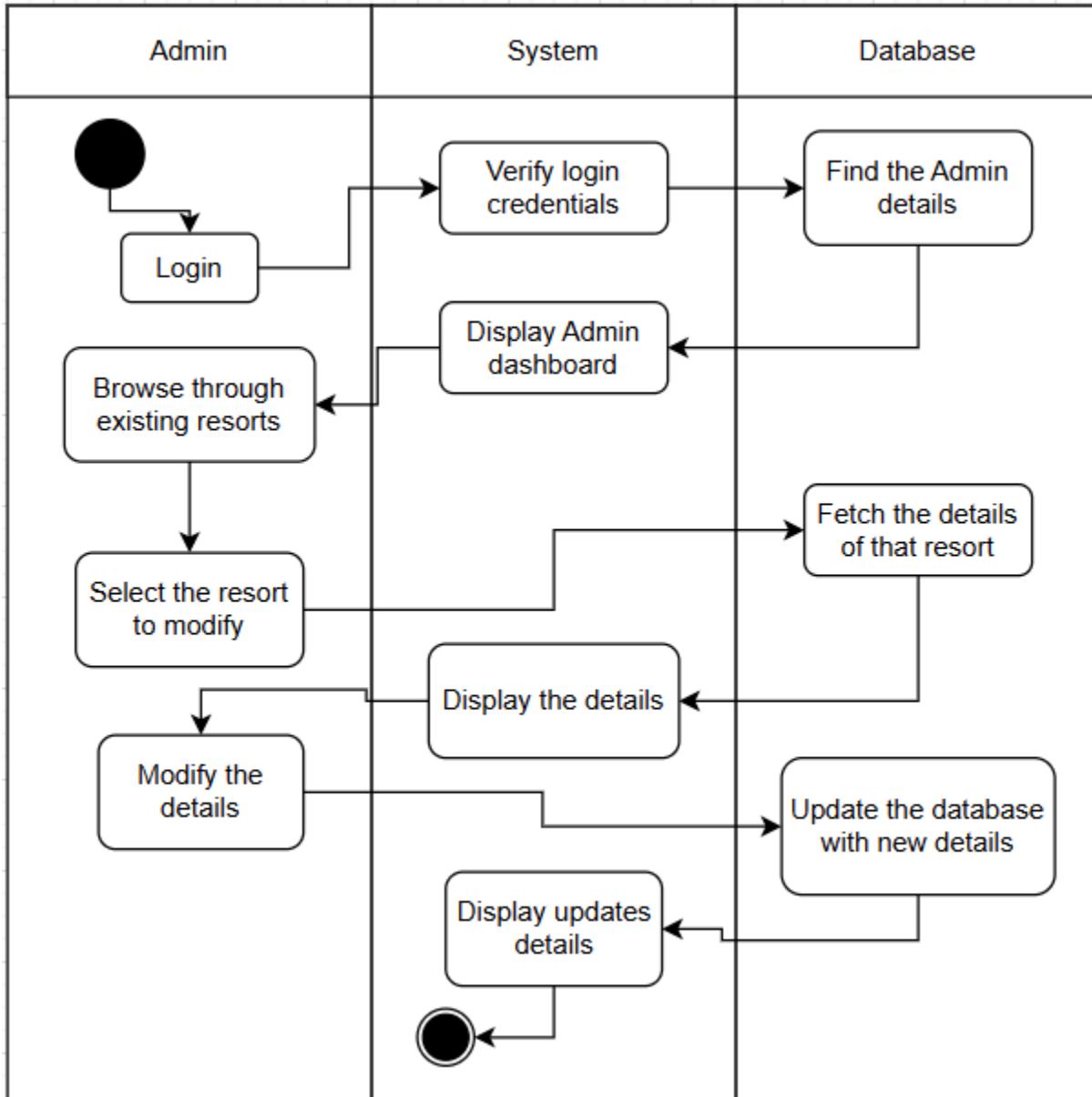
Major use case - Edit Bookings



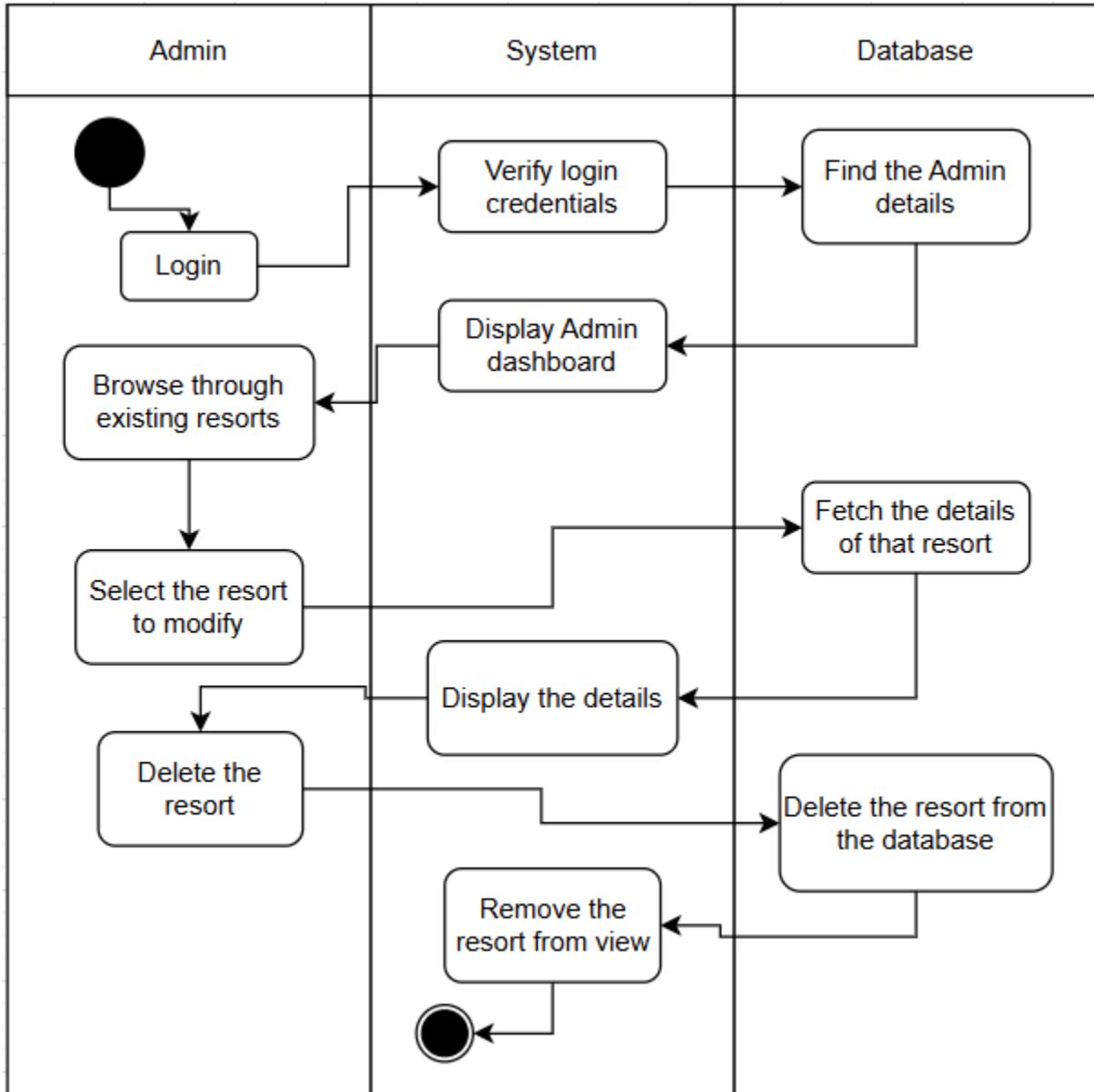
Minor use case - Payment



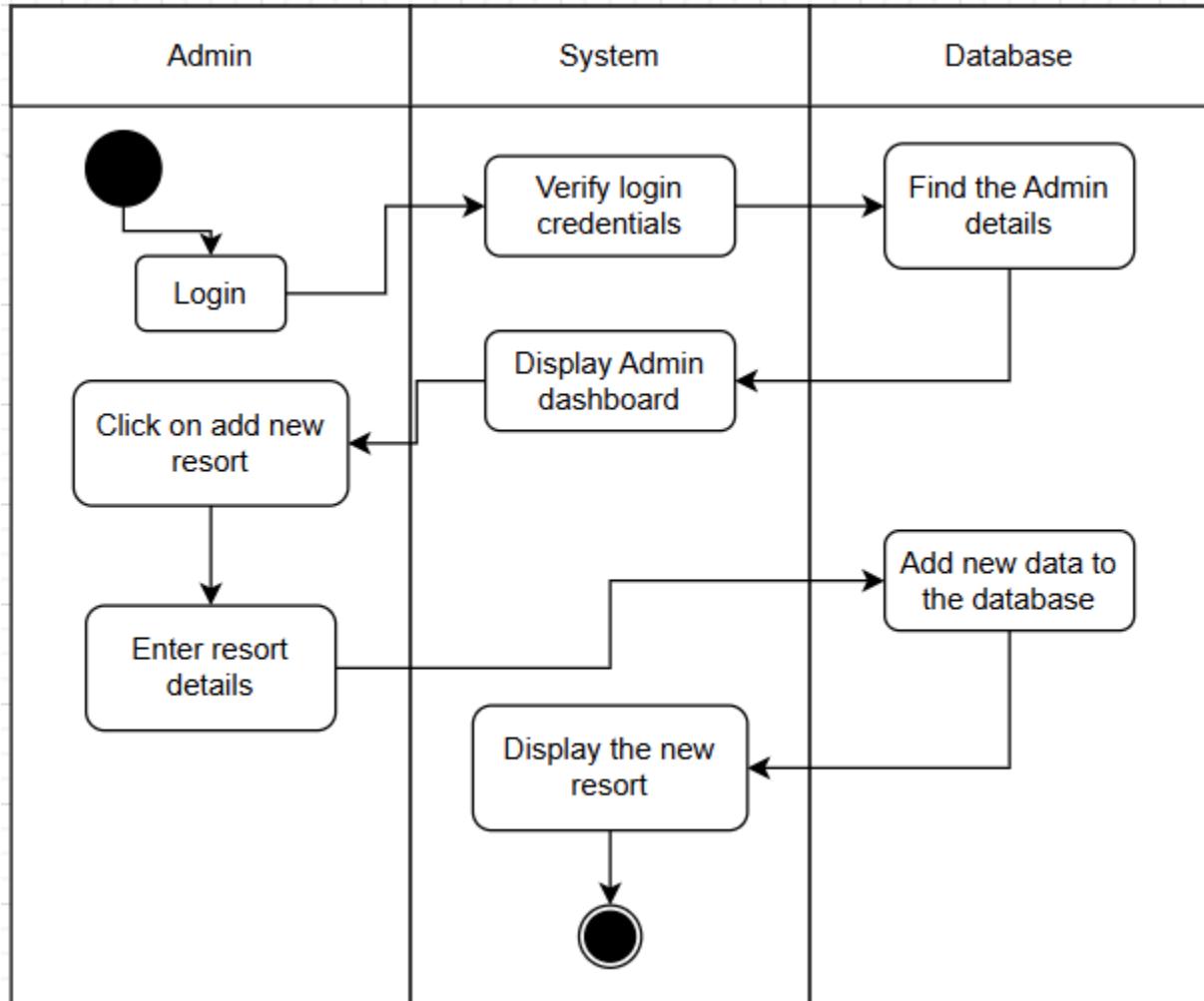
Major Use Case for Admin: Modifying Resort Details



Minor Use Case for Admin: Deleting Resorts



Minor Use Case for Admin: Deleting Resorts



Architecture Patterns, Design Principles, and Design Patterns:

1. Architecture Patterns

MODEL VIEW CONTROLLER (MVC) PATTERN

Model

- Model classes define the application's core data attributes.
- We use a custom DAO layer with JDBC and JdbcTemplate instead of Spring Data JPA to gain precise control over SQL queries. Each model has a corresponding DAO interface and implementation for handling CRUD operations.
- In our project, the model layer helps keep things organized by separating the data (like user details, bookings, or food items) from the parts of the code that handle user interaction

View

- We have separate views for different user roles:
 - **Customer:** Contains pages for booking resorts, viewing bookings, and ordering food
 - **Manager:** Contains pages for viewing all customer bookings and managing resort availability.
 - **Admin:** Contains pages for adding new resorts, modifying details about the existing resorts, and administrative control.

This role-based view design ensures that users see only the relevant features and data according to their permissions.

Controller

- Controllers handle API requests for different pages, ensuring each action is processed correctly.
- Controllers return the appropriate view or response to the UI, such as rendering the correct page or redirecting after successful actions.
- Controllers receive data from the UI, validate it, and interact with the service or DAO layer to save, update, or retrieve the necessary data from the database for further processing.

2. Design Principles

The following design principles are used in the project:

1. Information expert
 - a. Applied in DAO pages, which are responsible for having all the necessary info and logic
2. Low Coupling
 - a. Keeping data access logic inside DAO classes, separating controllers and services.
3. High Cohesion
 - a. Each class focused on a single purpose: The DAO files for data access and Services for business logic.
4. Controller
 - a. Controller fuels handles the system flow and delegates task to DAO
5. Single Responsibility Principle
 - a. Each component has one clearly defined responsibility.
6. Open/Closed Principle
 - a. Systems can be extended with new features without modifying existing logic.
7. Interface Segregation Principle
 - a. DAO interfaces only define methods needed by their entity, keeping them focused and lightweight.
8. Dependency Inversion Principle
 - a. High Modules (services) depend on abstractions , not concrete implementations.

3. Design Patterns

Food order

The food ordering function uses a command pattern, which makes it easy to add new actions like CancelOrderCommand or UpdateOrderCommand without changing existing code.

- PlaceOrderCommand implements OrderCommand and contains the order logic in execute().
- OrderInvoker holds a reference to a command and triggers it using execute().
- The OrderCommand interface defines a standard method for all commands.
- The controller sets the command in OrderInvoker and calls placeOrder() to execute it.

Facility

- The Facility class uses the Builder pattern, which simplifies object creation, especially when many optional parameters are involved.
- The static inner Builder class provides methods like setName() and setCost(), allowing for chainable and readable object construction.
- The build() method returns a Facility instance, enforcing immutability and cleaner instantiation.
- This pattern helps avoid multiple constructors and makes the code easier to maintain and extend.

Payment:

- The Payment module uses the Strategy pattern to dynamically choose different payment calculation algorithms based on context (e.g., standard vs. discounted pricing).
- The PaymentStrategy interface defines a common calculateTotal() method, implemented by both StandardPaymentStrategy and DiscountedPaymentStrategy.
- This allows the application to switch between strategies at runtime without modifying the Payment class, promoting open/closed principle and flexible business logic.

Booking :

The booking creation logic follows the Builder design pattern, which is ideal for constructing complex objects step-by-step and promotes code readability and maintainability.

- **Booking.Builder:**

Acts as a static inner class that stores all the fields required to create a Booking. It provides chainable setter methods like username(), arrivalDate(), roomType(), etc.

- **build() method:**

Finalizes the construction process by returning a new Booking instance, using the values supplied to the builder.

- **Private constructor in Booking:**

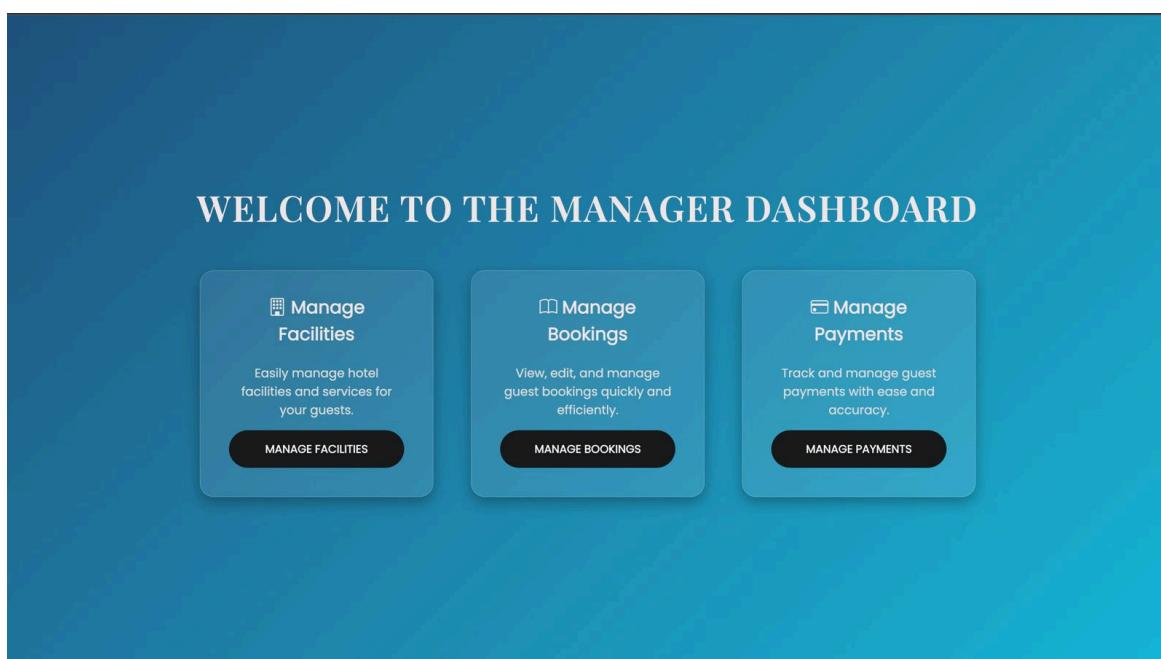
Accepts a Builder instance and initializes the fields, ensuring immutability and clean object creation.

Github link to the Codebase: <https://github.com/nishi1710/resort-management-1.git>

4. UI Screenshots

Manager:

1. ***Manager Dashboard:***



2. Add facility:

Welcome! Please provide the details of the new facility you wish to add.

Make sure to provide accurate information for the name, description, and room number of the facility.

Facility Cost Breakdown:

- **Room Cost:** ₹20,000 per night.
- **Conference Hall:** ₹5,000 per day.
- **Swimming Pool:** ₹3,000 per day.
- **Gym:** ₹2,500 per day.

For example, if you book a room for 3 nights with the conference hall, the total cost would be:

₹20,000 * 3 nights + ₹5,000 (conference hall) = ₹65,000

Add New Facility

Name:

Conference Hall

Description:

A hall that seats 200 people with air conditioning

Room Number:

231

Cost (₹):

5000

The cost will be calculated based on the room and facilities selected.

ADD FACILITY

3. Add Bookings:

Add New Booking

User ID

2

Room Number

254

Start Date

05/07/2025



End Date

05/10/2025



Status

Booked

Add Booking

4. Bookings List

Booking List						
Add New Booking						
Booking ID	User ID	Room Number	Start Date	End Date	Status	Actions
1	101	303	2025-04-21	2025-04-25	Confirmed	<button>Edit</button> <button>Delete</button>

5. Payment form:

Payment Form

Cost Breakdown:

- **Room Cost:** ₹20,000 per night (₹18,000 for discounted rate).
- **Conference Hall:** ₹5,000 per day (₹4,500 discounted).
- **Swimming Pool:** ₹3,000 per day (₹2,700 discounted).
- **Gym:** ₹1,800 per day (₹1,620 discounted).
- **Food Cost:** You can enter the total cost of the food you ordered during your stay.

Standard Rate Example: 3 nights, 1 conference day, ₹1,500 food = ₹66,500

Discounted Rate Example: Same booking = ₹59,820 (10% discount)

Payment Type:

Standard Rate

Room Number:

231

Number of Days for Room Booking:

3

Conference Hall (Days):

1

Swimming Pool (Days):

1

Gym (Days):

1

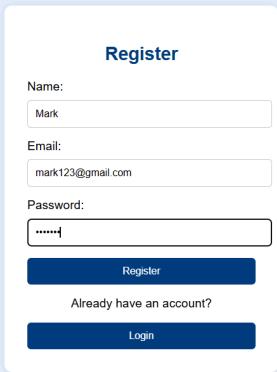
Food Cost (₹):

200

Calculate Total Cost

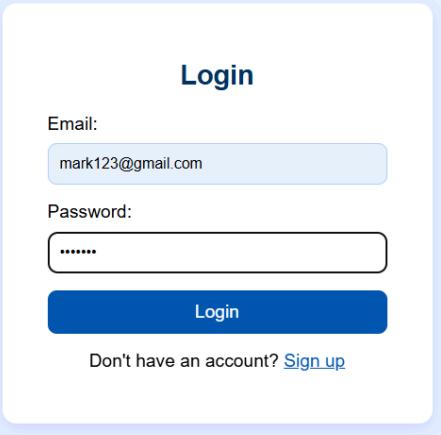
Customer:

1. Register



A registration form titled "Register". It contains three input fields: "Name" with "Mark" entered, "Email" with "mark123@gmail.com" entered, and "Password" with "....." entered. Below the password field is a "Register" button. To the right of the button is a link "Already have an account?". At the bottom is a "Login" button.

2. Login



A login form titled "Login". It contains two input fields: "Email" with "mark123@gmail.com" entered and "Password" with "....." entered. Below the password field is a "Login" button. To the right of the button is a link "Don't have an account? [Sign up](#)".

3. Dashboard

Hello, Mark!

Dashboard

View Bookings

Book a Resort

Order Food

Help

Logout

Welcome, Mark!

Plan your next perfect getaway with us!



Current Offers & Deals



20% Off on Beach Villas
Book a 3-night stay and get 20% off + complimentary spa.



Luxury Dining Experience
Reserve a candlelight dinner and get a free bottle of wine.



All Access Pass
Enjoy unlimited pool & gym access with every booking.

4. Book a resort

[← Back to Dashboard](#)

Available Resorts



Palm Grove Resort
Goa
A beachside resort with spa and pool facilities.
[View Details](#)



Mountain Retreat
Manali
A serene mountain resort with skiing and trekking options.
[View Details](#)



Desert Oasis
Jaisalmer
Luxurious desert-themed resort with camel rides and cultural shows.
[View Details](#)



Royal Palace Resort
Jaipur
A royal retreat with traditional Rajasthani architecture and royal hospitality.
[View Details](#)



Seaside Haven
Kochi
A relaxing beach resort with water sports and seafood dining.
[View Details](#)



Hilltop Retreat
Mysore
A peaceful hilltop resort offering nature walks and eco-friendly accommodations.
[View Details](#)

Book Your Resort

Your Name
Mark

Your Email
mark123@gmail.com

Select Room Type
Deluxe Room - ₹4,500

Number of Guests
3

Number of Rooms
1

Arrival Date
14-05-2025

Departure Date
22-05-2025

Number of Days
8

Total Price
36000

Special Requests
Please provide transport for local travel.

Book Now

5. View bookings

[← Back to Dashboard](#)

Your Bookings

RESORT	ROOM TYPE	GUESTS	ROOMS	ARRIVAL	DEPARTURE	TOTAL PRICE	SPECIAL REQUESTS
Palm Grove Resort	Deluxe Room	3	1	2025-05-14	2025-05-22	₹ 36000.0	Please provide transport for local travel.
Mountain Retreat	Deluxe Room	1	1	2025-05-24	2025-05-30	₹ 27000.0	None

6.

6. Order food

[← Back](#)

Available Food Items

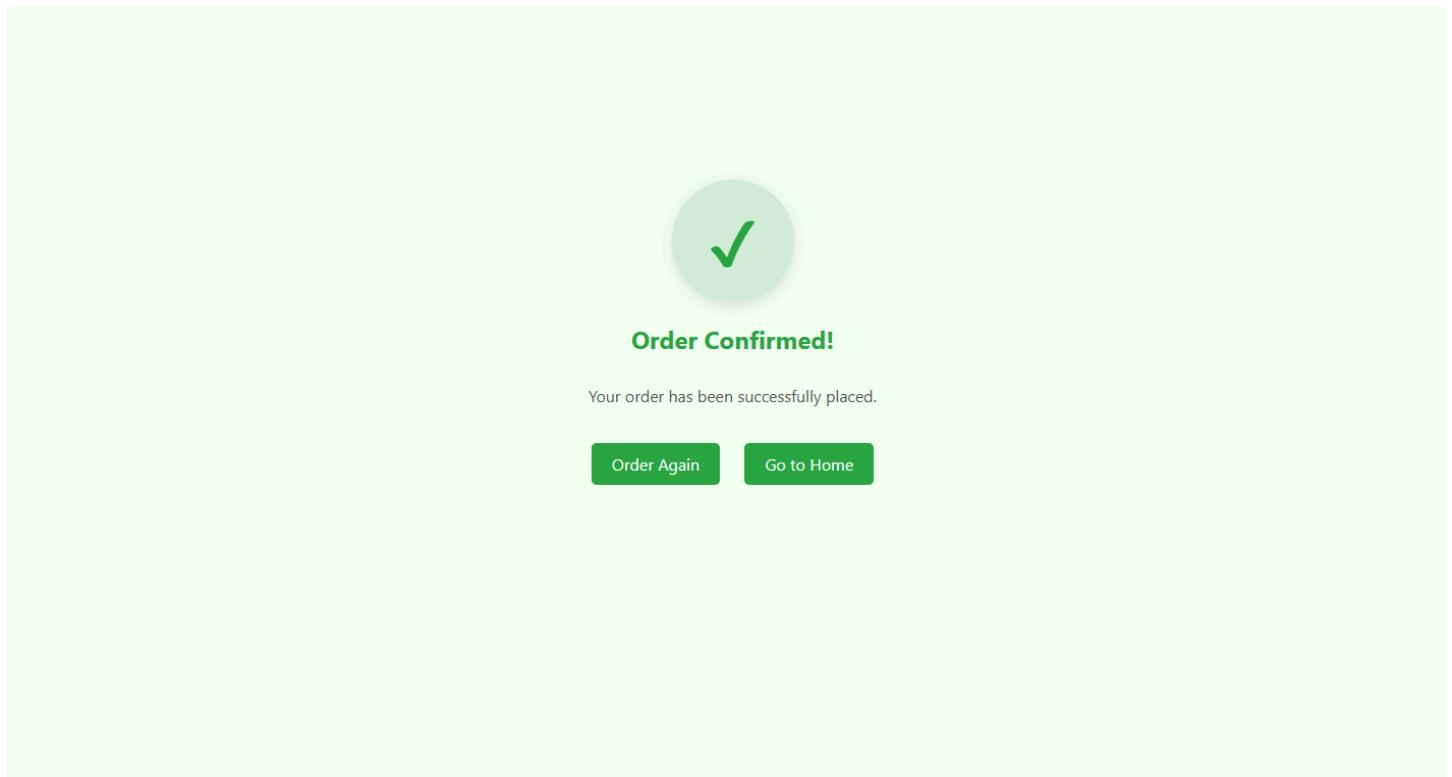
Food	Price (₹)	Quantity
Veg Biryani	120.0	<button>-</button> 0 <button>+</button>
Chicken Biryani	180.0	<button>-</button> 0 <button>+</button>
Paneer Butter Masala	150.0	<button>-</button> 0 <button>+</button>
Butter Naan	40.0	<button>-</button> 0 <button>+</button>
Masala Dosa	60.0	<button>-</button> 0 <button>+</button>
Gobi Manchurian	100.0	<button>-</button> 1 <button>+</button>
Chicken 65	130.0	<button>-</button> 0 <button>+</button>
Veg Fried Rice	90.0	<button>-</button> 1 <button>+</button>
Egg Curry	110.0	<button>-</button> 0 <button>+</button>
Lemon Soda	30.0	<button>-</button> 0 <button>+</button>

[Checkout](#)

Your Order Summary

Item	Quantity	Total Price (₹)
Masala Dosa	1	60.0
Gobi Manchurian	1	100.0
Veg Fried Rice	1	90.0
Final Amount		250.0

[Go to Dashboard](#)



Admin

1. Login

A screenshot of a login form titled "Login". The form has a light blue header bar. Below it, there are two input fields: one for "Email" containing "admin@example.com" and another for "Password" showing five dots. At the bottom is a large blue "Login" button. Below the button, a link says "Don't have an account? [Sign up](#)".

2. View all resorts

Welcome, Admin

[Logout](#)

[Add Resort](#)

Resort ID	Name	Location	Short Description	Long Description	Actions
101	Palm Grove Resort	Goa	A beachside resort with spa and pool facilities.	Palm Grove Resort offers a tranquil beach experience with luxurious amenities including a spa, pool, and beachfront access. The resort is perfect for couples, families, and solo travelers looking to unwind and enjoy the beautiful coastal surroundings. Guests can indulge in local delicacies, take part in yoga sessions, and explore the nearby attractions such as the vibrant markets and historic forts.	Modify Delete
102	Mountain Retreat	Manali	A serene mountain resort with skiing and trekking options.	Mountain Retreat is nestled in the serene hills of Manali, offering a perfect escape for adventure seekers and nature lovers. The resort provides skiing and trekking expeditions, along with cozy accommodations and stunning mountain views. The warm atmosphere, coupled with activities like bonfires and local cultural experiences, makes it an ideal getaway for those looking for a refreshing holiday.	Modify Delete
103	Desert Oasis	Jaisalmer	Luxurious desert-themed resort with camel rides and cultural shows.	Desert Oasis brings the magic of the Thar Desert to life with its unique camel rides and mesmerizing cultural shows. The resort is designed with traditional Rajasthani architecture, offering guests a luxurious stay amidst the desert dunes. Guests can enjoy camel safaris, live folk performances, and authentic Rajasthani cuisine while experiencing the rich cultural heritage of Jaisalmer.	Modify Delete
104	Royal Palace Resort	Jaipur	A royal retreat with traditional Rajasthani architecture and royal hospitality.	Experience the grandeur of Rajasthan at the Royal Palace Resort, where you are treated like royalty. Located in Jaipur, this resort offers opulent suites, traditional Rajasthani architecture, and a wide range of royal experiences. Guests can indulge in royal dinners, visit historical landmarks, and enjoy the unique blend of luxury and culture. The resort is ideal for those looking for a lavish and regal stay.	Modify Delete
105	Seaside	Kochi	A relaxing beach resort with water sports and	Seaside Haven in Kochi is a perfect destination for beach lovers and water sports enthusiasts. With its scenic views of the Arabian Sea, guests can enjoy activities like snorkeling, kayaking, and windsurfing.	Modify

3. Add a resort

Add Resort

Resort ID
108

Name
Celestial heights

Location
Australia

Short Description
A luxurious resort offering a serene getaway with top-tier amenities, comfortable rooms, and exciting activities for a memorable vacation experience.

Long Description
Nestled in a picturesque location, this resort provides an escape from the hustle and bustle of daily life. With elegantly designed rooms and a variety of leisure facilities, guests can indulge in relaxation and adventure. The resort offers fine dining options, thrilling outdoor activities, and spa treatments, ensuring a perfect blend of comfort and excitement. Whether you're looking for a peaceful retreat or an exhilarating adventure, this resort has something for everyone.

Add Resort

4. Modify a resort

Edit Resort

Resort Name

Location

Short Description

A luxurious resort offering a serene getaway with top-tier amenities, comfortable rooms, and exciting activities for a memorable vacation experience.

Long Description

Nestled in a picturesque location, this resort provides an escape from the hustle and bustle of daily life. With elegantly designed rooms and a variety of leisure facilities, guests can indulge in relaxation and adventure. The resort offers fine dining options, thrilling outdoor activities, and spa treatments, ensuring a perfect blend of comfort and excitement. Whether you're looking to unwind or explore, this resort caters to all your vacation needs.

Update Resort

Resort details updated

				enjoy gourmet seafood, and explore the rich marine life, making this an ideal destination for nature lovers and adventure seekers alike.	
108	Celestial heights	Japan	A luxurious resort offering a serene getaway with top-tier amenities, comfortable rooms, and exciting activities for a memorable vacation experience.	Nestled in a picturesque location, this resort provides an escape from the hustle and bustle of daily life. With elegantly designed rooms and a variety of leisure facilities, guests can indulge in relaxation and adventure. The resort offers fine dining options, thrilling outdoor activities, and spa treatments, ensuring a perfect blend of comfort and excitement. Whether you're looking to unwind or explore, this resort caters to all your vacation needs with exceptional service and breathtaking views.	Modify Delete

Individual contributions of the team members:

Name	Module worked on
Namitha Rayasam	Manager Module
Niharika Nandakumar	Admin Module
Nishita Gopi	User Module - Food order, authentication
Nitika Melayil	User Module - Book a resort, view bookings