



# Object-Oriented Analysis and Design

SW 301- Fall 24

Dr. Doaa Shawky

Project Proposal & SRS  
Restaurant Reservation System  
*by*

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# 1. Project Proposal

## 1.1 Problem description:

Restaurants often face challenges in efficiently managing reservations and walk-in customers, especially during peak hours.

Customers, on the other hand, frequently experience long wait times or difficulties in securing a table, particularly for special occasions or large groups.

Existing reservation systems often lack user-friendly interfaces, real-time updates, or integration with restaurant operations, such as managing table availability and customer preferences.

## 1.2 Functional requirements:

- User Registration:
  - Customers can create an account, log in and log out.
  - Restaurant staff can create accounts as well.
- Table Reservation:
  - Customers can view available time slots and make reservations.
  - Customers can modify or cancel their reservations.
  - Restaurants can set and update table availability.
  - Customers can add special requests (high chairs, wheelchair access, or dietary preferences).
- Authentication:
  - Unique reservation IDs are generated for tracking and reference.

## 1.3 Non-functional requirements:

- The system should support at least 50 concurrent users.
- Reservations and other transactions should be processed within 3 seconds.
- The system must handle persistent data storage, ensuring that all critical information is retained between sessions.

## 2. Deliverables for Phase 1 :

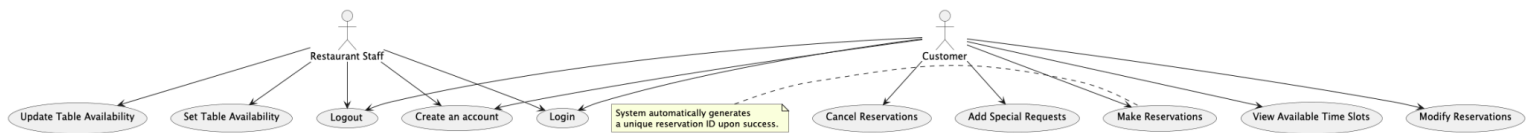
### 2.1 Use Case Model

The Use Case Model illustrates the interaction between the system actors (customers and restaurant staff) and the functionalities provided by the system.

#### Use Case Diagram

The use case diagram highlights the primary use cases of the system, including:

- Customer operations like creating an account, making reservations, canceling reservations, and viewing available time slots.
- Staff operations like updating table availability and managing reservations.



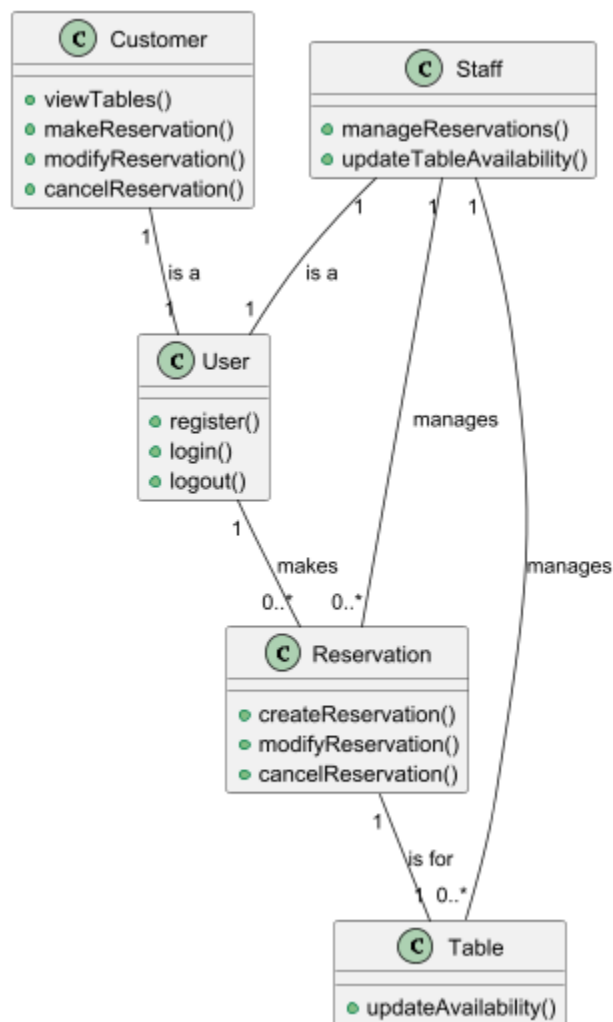
## 2.2 Domain Model

### UML Domain Diagram

The domain model outlines the core classes and their relationships in the system. Key entities include User, Customer, Staff, Reservation, and Table.

#### Association:

- User class has a **one-to-many** relationship with Reservation, as each user can make multiple reservations.
- Reservation has a **one-to-one** relationship with Table, ensuring each reservation is linked to a specific table.
- Staff has a **one-to-many** relationship with both Table and Reservation, as staff members manage multiple tables and reservations.

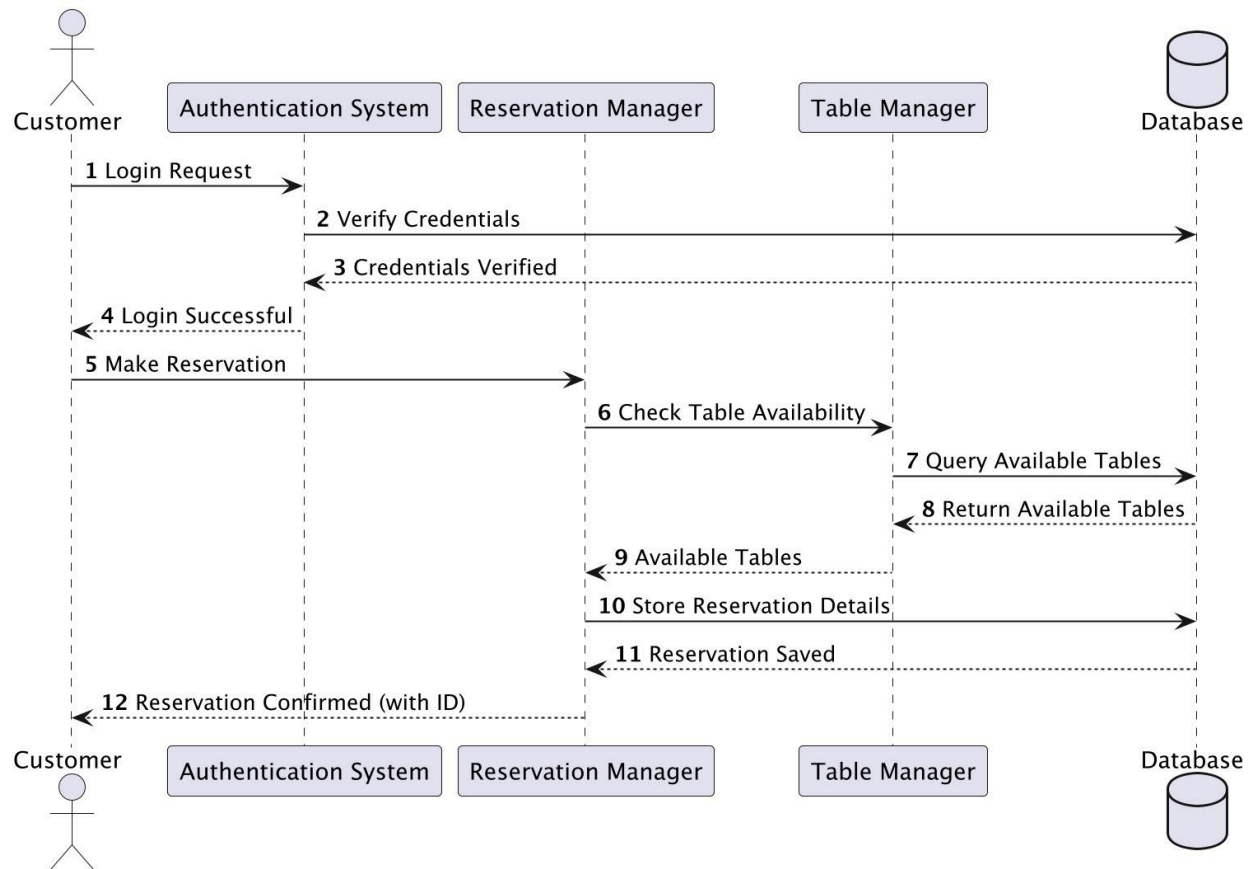


## 2.3 System Sequence Diagrams

The sequence diagrams depict the dynamic behavior of the system for critical use cases.

### Sequence Diagram: Make a Reservation

This diagram shows how a customer interacts with the system to log in, view available tables, and complete a reservation. It also includes the system's role in verifying table availability and storing reservation details in the database.



## Sequence Diagram: Update Table Availability

This diagram illustrates the process staff follow to log in, adjust table availability, and ensure changes are recorded in the database. It highlights real-time updates to prevent conflicts in table assignments.

