Design a Restaurant Management System

Let's design a Restaurant Management System

We'll cover the following:

- System Requirements
- Use Case Diagram
- Class Diagram
- Activity Diagrams

A Restaurant Management System is a software built to handle all restaurant activities in an easy and safe manner. This system allows the management to keep track of available tables, reservations, and bill generation from a single portal.

1 System Requirements

We will focus on the following set of requirements while designing the Restaurant Management System:

1. The restaurant will have different branches.
2. Each branch will have its own menu.
3. The menu will have different sections containing various menu items.
4. Waiters should be able to create an order for a table and add meals for each seat.
5. Each meal can contain multiple meal items, each corresponding to a menu item.
6. The system should retrieve information about available tables for walk-in customers.
7. The system should support table reservations.
8. Receptionists should be able to search for available tables by date/time and reserve them.
9. Customers should be able to cancel their reservations.
10. The system should send notifications when the reservation time approaches.
11. Customers should be able to pay their bills through credit card, check, or cash.
12. Each branch can have multiple seating arrangements for tables.

2 Use Case Diagram

Here are the main actors in the system:

- **Receptionist:** Manages tables and their layout, and creates or cancels reservations.
- **Waiter:** Takes or modifies orders.
- **Manager:** Adds new workers and modifies the menu.
- **Chef:** Views and works on orders.
- **Cashier:** Generates checks and processes payments.
- **System:** Sends notifications regarding table reservations, cancellations, etc.

Top use cases:

- **Add/Modify tables:** Adds, removes, or modifies a table.
- **Search tables:** Searches for available tables for reservation.
- **Place order:** Adds a new order for a table.
- **Update order:** Modifies an existing order by adding or modifying meals.
- **Create a reservation:** Reserves a table for a specific date/time.
- **Cancel reservation:** Cancels an existing reservation.
- **Check-in:** Marks the guest as checked in for their reservation.
- **Make payment:** Pays for the order.

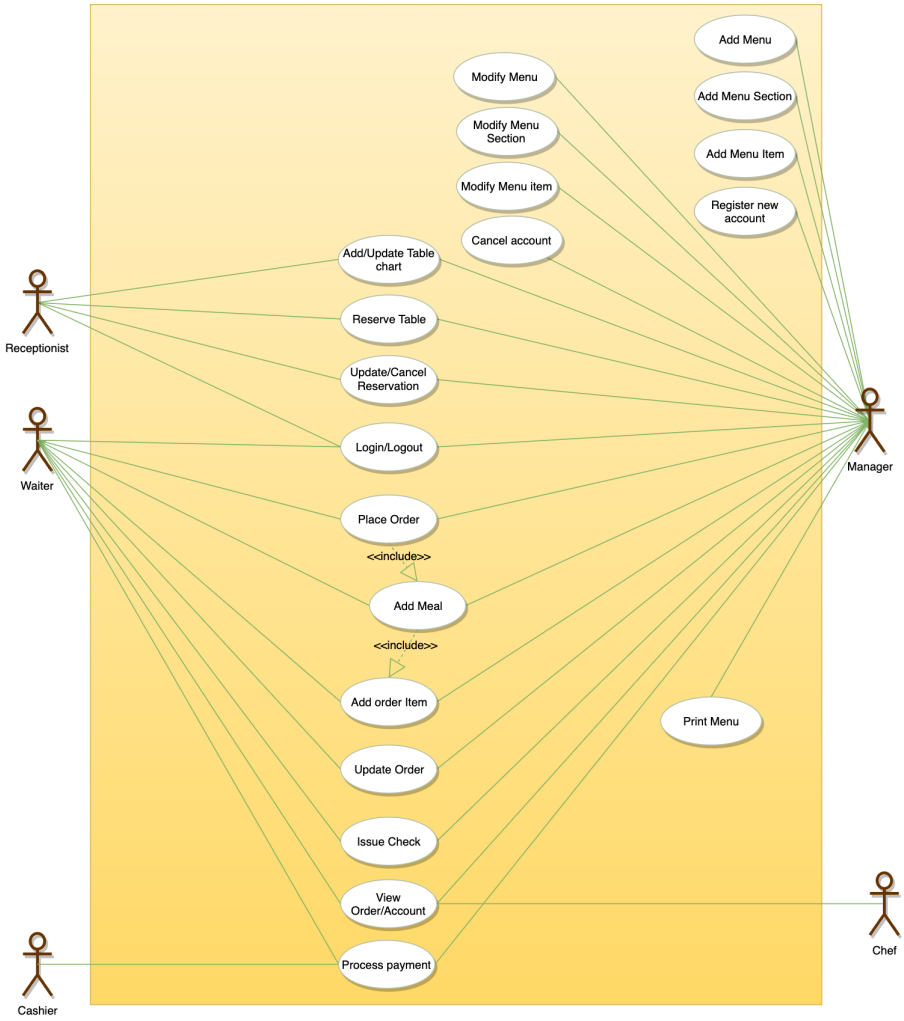

Figure 1: Use Case Diagram for Restaurant Management System

3 Class Diagram

Here is the description of the different classes of the Restaurant Management System:

- **Restaurant:** Represents a restaurant. Each restaurant has registered employees. When a restaurant becomes inactive, its employees are deactivated.
- **Branch:** A restaurant can have multiple branches, each with its own employees and menu.
- **Menu:** Each branch has its own menu.
- **MenuSection and MenuItem:** A menu has multiple sections, each with various menu items.
- **Table and TableSeat:** Each table has a unique ID and a maximum seating capacity. Tables have multiple seats.
- **Order:** Encapsulates customer orders.
- **Meal:** Each order consists of meals for each table seat.
- **Meal Item:** Meals consist of one or more meal items corresponding to menu items.
- **Account:** Two main types of accounts: Receptionist (for table search and reservation) and Waiter (for placing orders).
- **Notification:** Manages notifications sent to customers.
- **Bill:** Contains bill items for every meal.

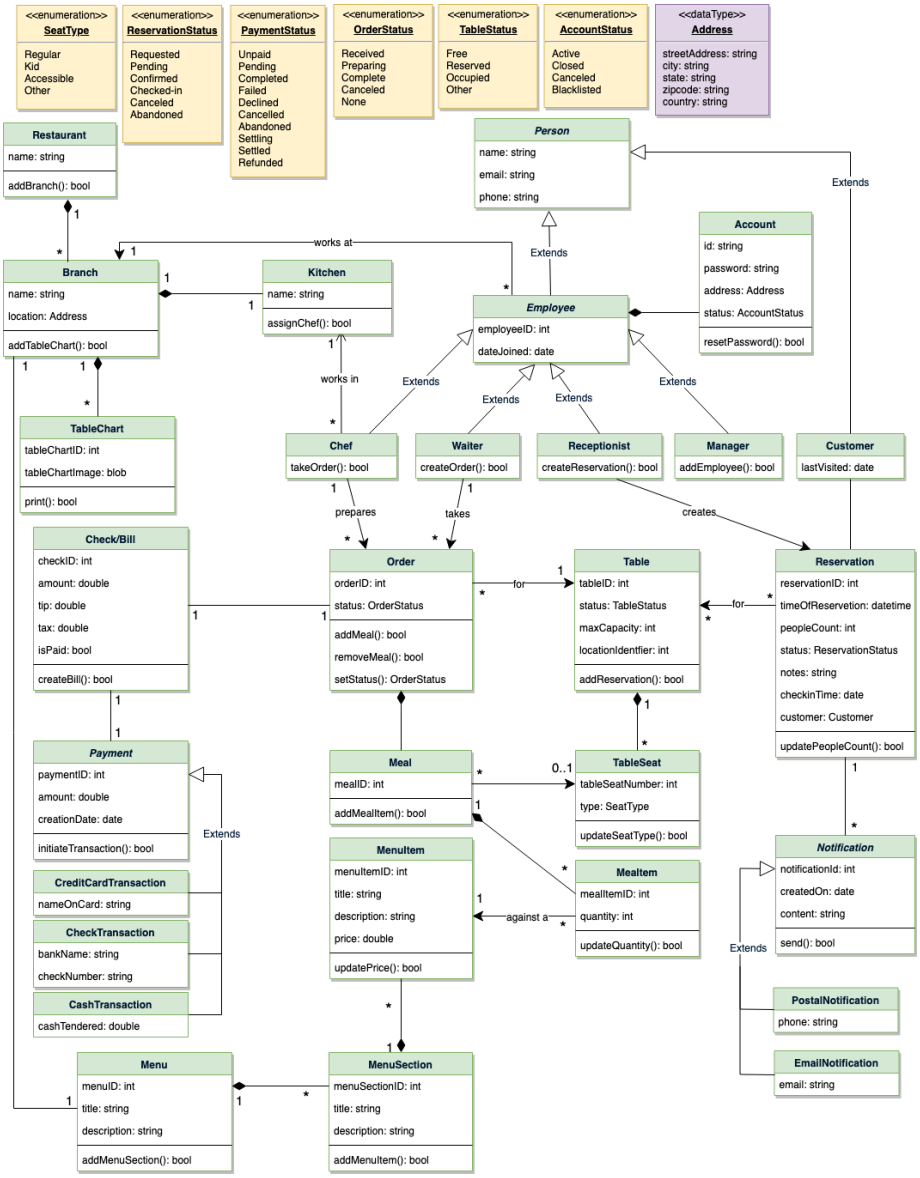

Figure 2: Class Diagram for Restaurant Management System

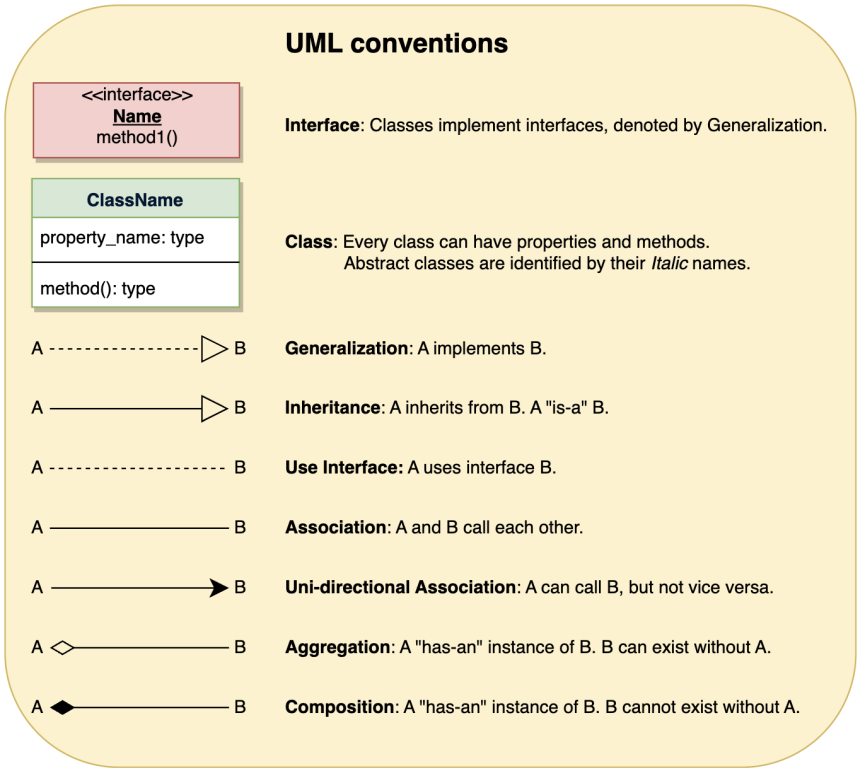

Figure 3: UML Diagram for Restaurant Management System

4 Activity Diagrams

Place order: Any waiter can perform this activity. Steps to place an order:

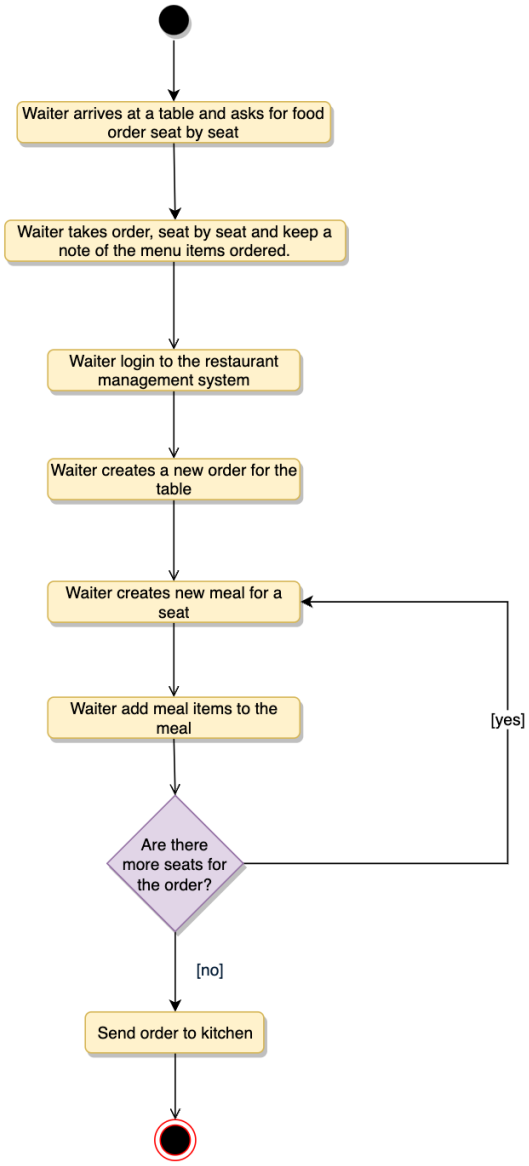

Figure 4: Activity Diagram for Restaurant Management System - Place Order

Make a reservation: Steps for a receptionist to make a reservation:

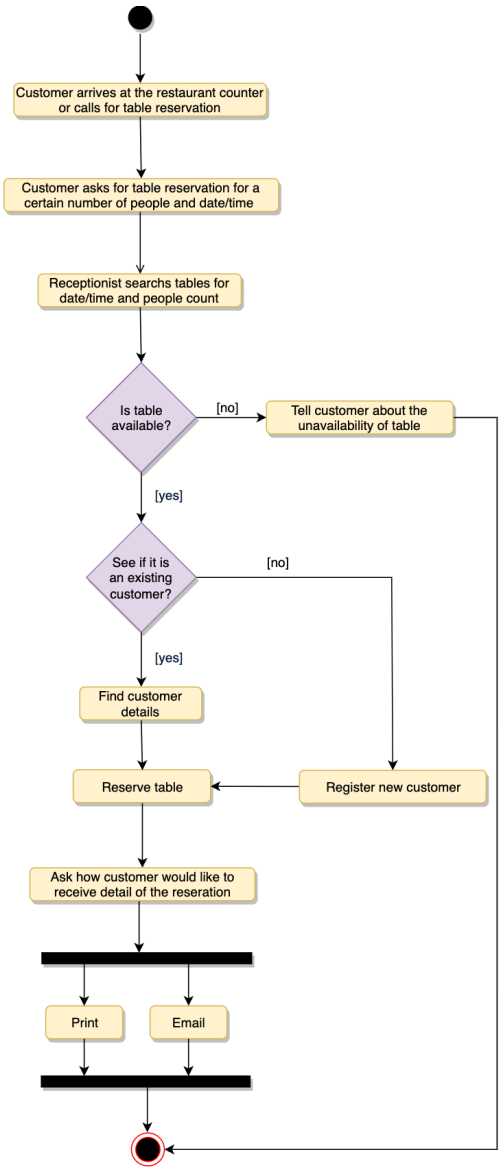

Figure 5: Activity Diagram for Restaurant Management System - Make Reservation

Cancel a reservation: Steps to cancel a reservation:

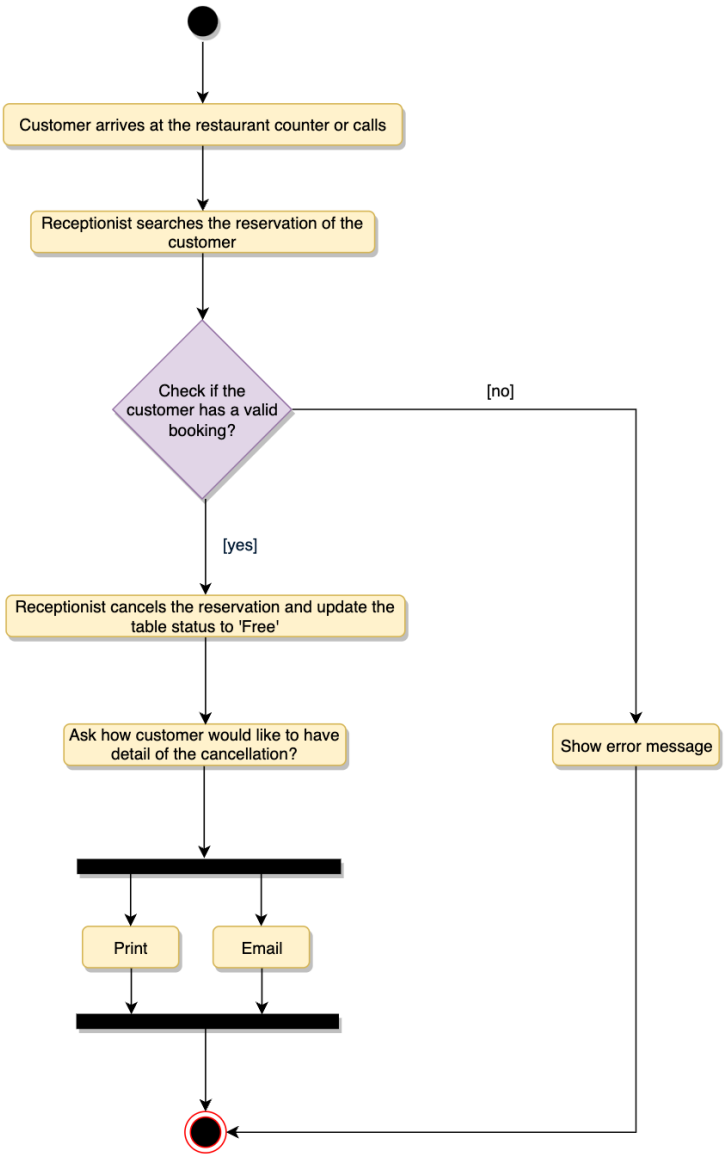

Figure 6: Activity Diagram for Restaurant Management System - Cancel Reservation