CS669 – Project Iteration 3

Submitted by Ratna Meena Shivakumar

Current Iteration

Iteration 3

Specialization-Generalization Relationships – You add one or more specialization- generalization relationships, which allows one entity to specialize an abstract entity, to your structural database rules and ERD.

Initial DBMS Physical ERD – You create an initial DBMS physical ERD, which is tied to a specific relational database vendor and version, with SQL-based constraints and datatypes.

This database aims to develop a hotel management system for **ABC Hotels** to manage the work efficiently. This project's primary focus is to enable online booking for customers and allows the managers to track the booking details and employee records. This database will contain all the records of the employees, customers, rooms, and other services offered. The customer can create an account, login and book the desired rooms and other facilities involved or make modifications if applicable to the booking made. The manager can easily track what kind of room the customer has booked, enabling fast and easy retrieval of guest records and data for fast reference activities.

The Scenarios in which this database will be used are as follows
(i) A Customer wants to book a hotel room; he can create an account to avail offers and book the room.
(ii) A Customer can check for different type of hotel rooms and the type of services offered by the hotel
(iii) Employee working at the hotel can login and update his personal records.
(iv) Employee can check for the shift timings and the record the timing he worked for by logging in.
(v) Employee can check for the assigned service as requested by the customer
(vi) Employee with the role as manager can assign work to other employee.

Adding Specialization – Generalization to ABC hotels

1) Use case: Customer signs up for a new account

Business rules

- Customer needs to create an account

Structural rules

- Customer can. Create a basic account (Mandatory Participation)
- Customer can Create a Premium account (Optional Participation)
- Customer may be looking for a room. (Optional Participation)
- Customer might want to book a room. (Optional Participation)

2)Use Case: Customer wants to book the room and select the services.

Business rules

- Customer can book any number of rooms.
- There are different types of hotel rooms.
- There are many services offered in the hotel.
- Customer can book it online or in person or via call.

Structural rules

- Customer should have logged into the account (Mandatory Participation)
- Customer can select one room. (Singular)
- Customer can book many rooms. (Plural)
- Customer can select any number of services offered. (Optional Participation and plural)
- One customer can have none or one loyalty card. (Optional Participation)
- Customer should call the number and verify the identity and book for the hotel
- Customer can come in person, verify the identity and book the hotel.

3) Use Case: Employee login

Business rules

- Employee should have credentials.
- Employee work will be assigned, he/she can look up the schedule
- Employee can record the clock in, clock out and break timings.

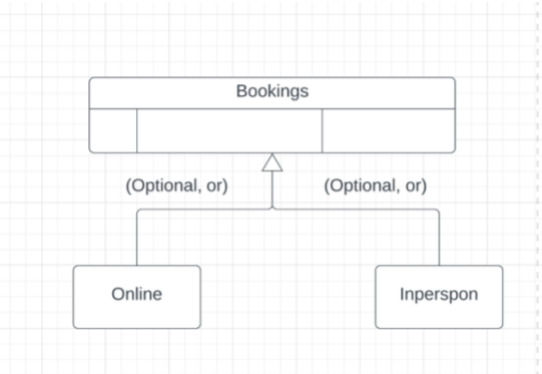
Structural rules

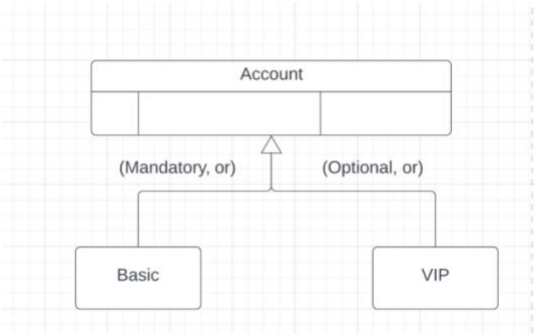
- Employee should log into the account. (Mandatory Participation)
- Employee should check for the schedule. (Mandatory Participation)
- One Employee can have only one work per day. (Singular)
- One Employee can have two or more work per day. (Plural)
- One Employee belongs to one department. (SInglar)

Entities:

1) Hotel
2) Hotel room type
3) Customer
4) Employee
5) Services
6) Department
7) Bookings
8) Hotel rooms
9) Rooms booked
10) Services used by customer
11)Address
12)Bookings
13)CustomerAccount

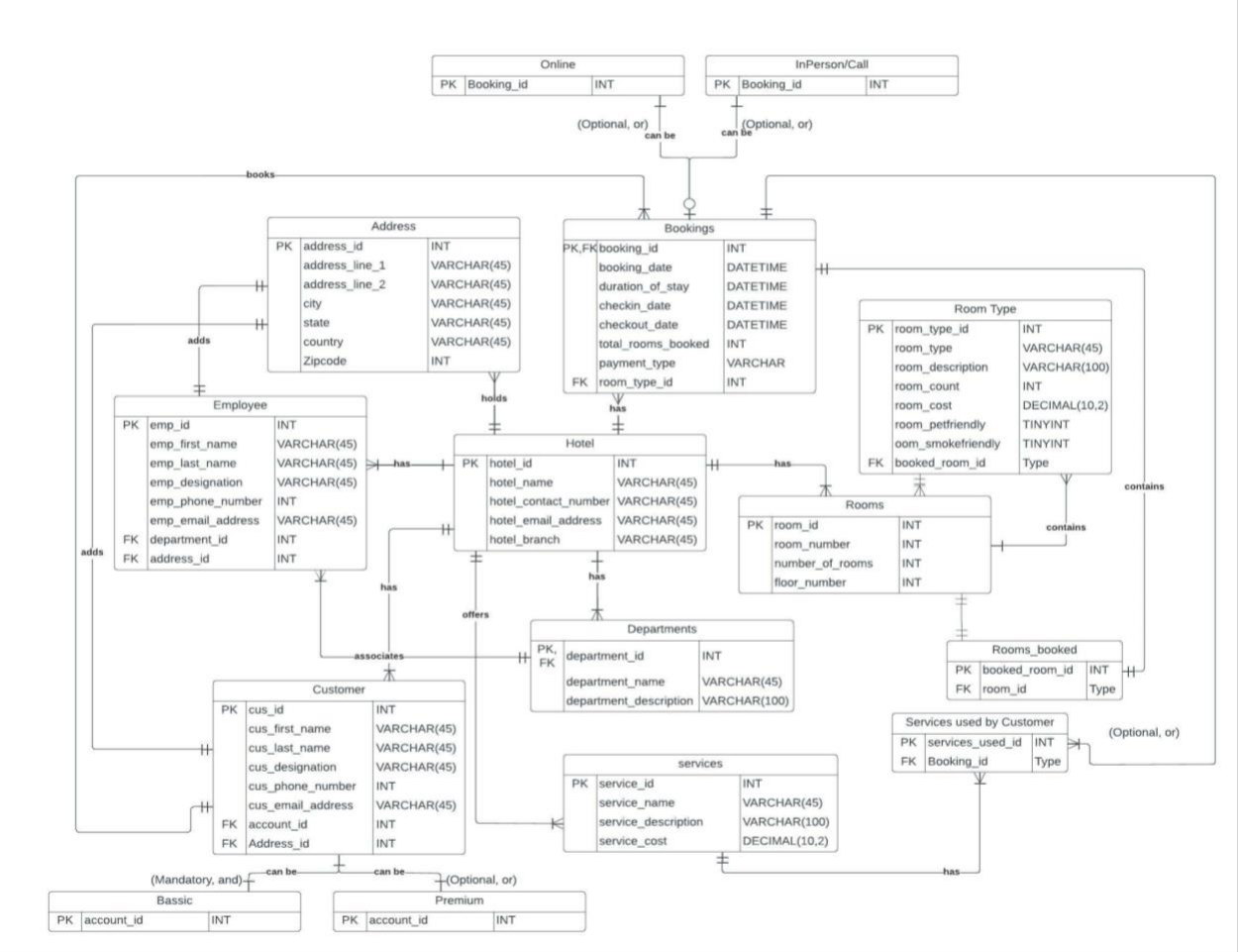
ABC Specialization – Generalization Mapping





The additional entities that I have added are the bookings and the Account. This database consists of three specialization – generalization relationships in conceptual ERD, i.e., Bookings (Online, Inperson), CustomerAccount (basic, VIP(Premium)

Initial Physical DBMS ERD



Bookings and type of account has been added to the entity relationship diagram

Summary and Reflection:

The major users of this application would be the customers and the employees. The customer can login or browse as a guest to check for different type of hotel rooms and different type of services offered. The employees can login and check for the shift timings and the assigned jobs. The employee with manager role can track the employee records and assign the service to be done.

I have added additional structural rules that defines the generalization and specialization rules.

Work done in this iteration: Defined the additional structural database rules for the use cases and developed initial physical ERD with SQL constraints and datatypes.

Please fill me in with suggestions and changes or addons that would be required to improve the working of the database.