

INTRODUCTION TO DATA MANAGEMENT

HOME WORK – I

Submitted by: Group 19

Name	EID
Soumi Basu	sb59982
Soumik Choudhuri	sc64856
Shubham Singh	ss96589
Surya Prasad Reddy Pamireddygar	sp49882
Saiteja Reddy Yerasi	sy22575
Karthick Ramasubramanian	kr33733

Executive Summary

This assignment aims to identify the **Entity Relationship** model for designing a database for the Hotel Reservation system for Sour Apple Hotel, as described.

From the data, we derived **8 entities** for the database, and these are as follows:

1. Credit_Cards –

To store the credit card details of the customers, linked to the customer from the Customers table using Customer_ID as a foreign key. The Credit Card table has its own Primary Key (different from Credit card number) for each card and it starts with 1 and goes till 'n' number of cards

2. Customers –

- Customer ID (mentioned as ID) is the Primary Key in this table.
- Contains the Middle_Name of the customers due to requirements of storage relevant to their credit cards.
- This entity contains the Credits_earned by the customer and the Credits_used by them to calculate how many credits the customer has left and how many credits the customer has earned in his/her lifetime. This is also an important parameter to access if the customer is a regular customer, i.e., his/her frequency of stay with the hotel across all its three locations.
- The rest of the attributes like birthdate, address, email, phone number are as per the requirement in the ERD.

3. Reservations –

This table contains the status of the reservation, any discount code used by the customer while making the reservation and other details along with Customer_rating provided by the customer post his/her stay. The Total_Reservation_Amount would have the total price paid by the customer for the reservation. The table also has Customer_Id present as Foreign Key for querying Customer details for each reservation. It has its own Primary Key as ID (aka Reservation_ID in the Booking table).

4. Rooms –

This table contains the Room_number mapped to the Location_ID which can be used to analyze ratings of the room. Further, the table contains the room rates for weekends and weekdays and other parameters related to the room like its

dimensions, maximum number of people which can be fitted and others. The Primary Key is ID which would be unique for a combination of Location_ID and Room_number.

5. Locations –

This table contains various details related to the hotel at a particular location, like the name of the hotel, the phone number at that location, address, URL, no. of rooms etc. There is a unique Primary Key named as ID for each location.

6. Features –

This table contains multiple feature types which are relevant to a particular location like *'Free Wifi'*, *'Free Breakfast'*, etc. and their corresponding IDs which is also the Primary Key for that table.

7. Location_Features –

This is a join table designed to map the many-to-many relationship of the Features and Locations entities because a feature may be present in multiple locations and a location can have multiple features.

8. Bookings –

This table contains entries relevant to every booking which maps the Booking ID with a reservation ID and one or multiple Room IDs based on how many rooms are booked as part of one booking and the anticipated number of guests for each room.

Assumption:

An important assumption which we have made is that customer rating is not specific to room but rather specific to the overall booking. Moreover, we have prioritized saving storage space as compared to saving querying time for extracting average customer rating. This is because the hotel owners would want to know the average ratings only a few times in a year and we believe we can afford the querying time during that period. For rest of the time, it made more sense to prioritize storage and store rating in the reservation table.

Also, we have kept the name of the Primary Key in each table as ID for consistency. While querying, we would use table_name.ID to refer to the Primary Key of a table.

Conclusion:

This Entity Relationship model helps us better understand the design of a database which Sour Apple Hotel can implement to centralize their data along with retaining individual characteristics of the hotels across the three locations.