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HOTEL MANAGEMENT SYSTEM DATABASE

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Milestone/Version	Date
M1V1	6/14/20
M1V2	6/23/20
M1V3	6/28/20

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Section I: Project Description

The project I'm working is to create a robust database management system to manage chains of hotel which include three categories: motels, hotels, and resorts. Motels is the cheapest which only focuses on lodging. While hotels have more rooms and has higher quality of service. And lastly, resorts are the premium service that has a lot of extra facilities accustom for esteemed guests. The hotels will be based on specific locales that offers a lot of varieties vendors to satisfy their stay. The key motivation for this project is to get an expectation of what it's like to create and see the inner workings of a database management system. My goal for this project is to implement a simple system that is effective for the end user (AKA clients). The process will begin when a guest or a customer decides to book a reservation in our website. If at any time the guest would like to change their reservation, they would simply have to call the hotel (if they don't have an account) or log in to our website to edit the reservation. Before checking in as a customer, the front desk employee in response will already have logged in to their personal employee account. They will then access the database to confirm the reservation for the guest. Once the guests have confirmed their rooms. Our hotels will offer varieties of service and amenities until they check out!

Section II: Use Cases

Use Case Title:	Booking a room
Actors:	Customer
Description:	The use case begins when the customer visits our website front page and click on a button to book a room. Then there's options to choose to fit what the customer wants such as check in date and check out date, room size. (required info: full name, email, phone, address, city, state, post code, country, payment information)

Use Case Title:	Authenticate account
Actors:	Employee, Customer
Description:	Whenever a person needs to log in to the hotel website, an authentication process is activated. If logged in as a guest (customer), multiple attempts are allowed (max 5 times) then a verification is needed by their email. If logged in as an employee. The employee must sign in with their user ID and password to access the local system that's storing the data library of our reservations and of our existing guests. There are

	only three attempts until it's locked out then a supervisor is needed in order to unlock it.

Use Case Title:	Check in as a guest
Actors:	Employee, Customer
Description:	This use case assumed that customer has already booked a room. The employee logins to the system and checks the reservation tables to confirm the guest is the correct customer who arrive at the correct date. If it's correct they're allowed to stay in the hotel. Otherwise if it's late or wrong, they need to make a reservation or to see if any other acceptable rooms are available.

Use Case Title:	Check out as a guest
Actors:	Employee, Customer
Description:	The employee logins to the system and checks the existing guests in the hotel to see if they're valid. The customer either wants to check out early, exact time, or delayed. Early: confirmation they want to check out early. Exact time: say goodbye to them. Delayed: extra fees required.

Use Case Title:	Edit a guest's booking
Actors:	Employee, customer
Description:	Verify the correct customer who called in to change their booking or login to their account to change in the website. This can be to cancel reservation, more/less rooms, to change check in or check out dates.

Section III: Database Requirements (Business Rules)

1. Employee
    a. An employee can only create one account, and an account belongs to at least one employee.
    b. Only one employee can manage a department.
    c. Many employees can work in a hotel.
    d. An employee shall have only and only one unique SSN
    e. An employee is an hourly or contract employee
    f. An employee shall have a supervisor which is also an employee.
    g. Many employees account can access a hotel's database.
    h. An employee shall have a first and last name.
    i. An employee shall have only and only one unique email.
2. Guest
    a. A guest can reserve multiple rooms.
    b. A guest can check in and out many rooms.
    c. A guest may give many feedbacks.
    d. A guest can check their billing info.
    e. A guest shall have a first and last name.
    f. A guest shall have only and only one unique phone number.
    g. A guest shall have only and only one unique email.
3. Departments
    a. A department must have one or many employees.
4. Hotels
    a. A hotel has one or many facilities.

b. A hotel is near a locale.

c. Many Hotels shall have many employees.

d. A hotel shall have many employees.

5. Locale

a. A locale may have many tourists.

b. A Locale have many food vendors.

c. A Locale have many service and retail vendors.

Section IV: Detailed List of Main Entities, Attributes and Keys

1. Employee (Strong)
    a. Employee_id: key, numeric
    b. SSN: key, numeric
    c. Email: key, alphanumeric
    d. Name: composite, multivalue, alphanumeric
2. Guest (Strong)
    a. Guest_id: key, numeric
    b. Name: composite, multivalue, alphanumeric
    c. Address: alphanumeric
    d. Post code: numeric
    e. Email: key, alphanumeric
    f. Phone: key, numeric
    g. City: alphanumeric
    h. State: alphanumeric
    i. Country: alphanumeric
3. Owner (Strong)
    a. Owner_id: key, numeric
    b. Name: composite, multivalue, alphanumeric
    c. Email: key, alphanumeric
4. Department (Strong)
    a. D_id: key, numeric
    b. Name: multivalue, alphanumeric
    c. Budget: numeric

5. Payment Type (Strong)
    a. type_id: key, numeric
    b. address: alphanumeric
    c. zip code: numeric
    d. country: alphanumeric
    e. state: alphanumeric
    f. city: alphanumeric
6. Invoice (Strong)
    a. Invoice_id: key, numeric
    b. Status: alphanumeric
    c. Invoice description: alphanumeric
7. Room (Strong)
    a. Room_id: key, numeric
    b. From_date: composite, date
    c. To_date: composite, date
8. Room category (Strong)
    a. roomcategory_id: key, numeric
    b. Name: composite, multivalue, alphanumeric
    c. guest_id: key, numeric
9. Price category (Strong)
    a. Price_id: key, numeric
    b. Date: date
    c. Available rooms: numeric
    d. Price: numeric

    e. Hotel_id: key, numeric

10. Hourly wages (Strong)
    a. hourlywages_id: key, numeric
    b. Employee_id: key, numeric
    c. Money: numeric
11. Hours worked (Strong)
    a. hoursworked_id: key, numeric
    b. Employee_id: key, numeric
    c. Money: numeric
12. Account Type (Strong)
    a. Account_id: key, numeric
    b. Customer or employee: alphanumeric
13. Features (Strong)
    a. Features_id: key, numeric
    b. Number_options: numeric
14. Feedback (Strong)
    a. Feedback_id: key, numeric
    b. Rating: numeric
    c. Description: alphanumeric
15. Delivery service (Strong)
    a. Deleivery_id: key, numeric
    b. description: alphanumeric
16. Food order (Strong)
    a. Foodorder_id: key, numeric

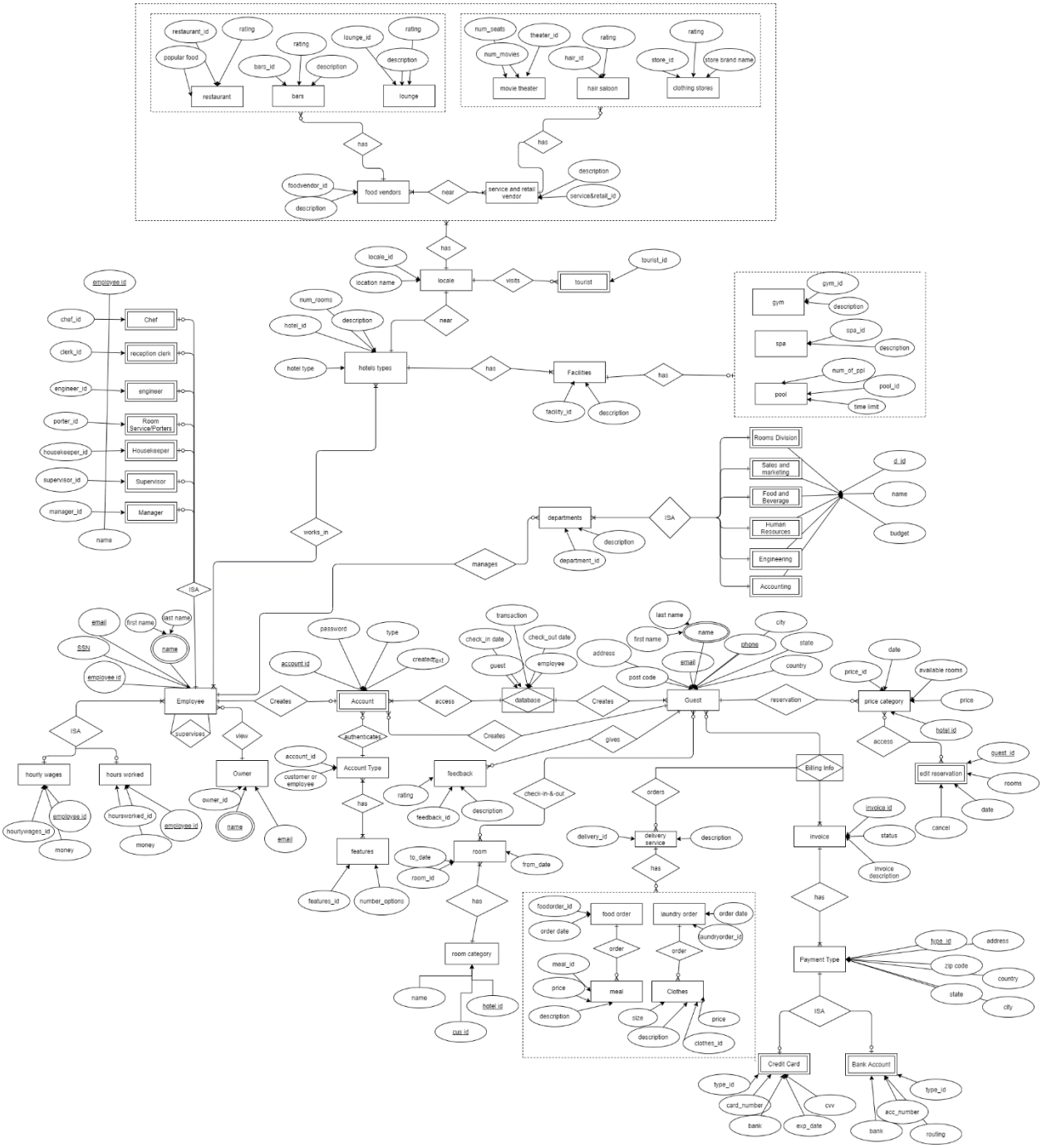
   b. Order date: date

17. Laundry order (Strong)
   a. Laundryorder_id: key, numeric
   b. Order_date: date
18. Meal (Strong)
   a. Meal_id: key, numeric
   b. Price: numeric
   c. Description: alphanumeric
19. clothes (Strong)
   a. clothes_id: key, numeric
   b. price: numeric
   c. size: numeric
   d. description: alphanumeric
20. hotel types (Strong)
   a. hotel_id: key, numeric
   b. hotel type: alphanumeric
   c. num_rooms: numeric
   d. description: alphanumeric
21. facilities (Strong)
   a. facility_id: key, numeric
   b. name: alphanumeric
22. locale (Strong)
   a. locale_id: key, numeric
   b. location name: alphanumeric

23. food vendors (Strong)
    a. foodvendor_id: key, numeric
    b. description: alphanumeric
24. service and retail vendor (Strong)
    a. service&retail_id: key, numeric
    b. description: alphanumeric
25. Restaurant (Strong)
    a. restaurant_id: key, numeric
    b. popular: alphanumeric
    c. rating: numeric
26. Bars (Strong)
    a. bars_id: key, numeric
    b. rating: numeric
    c. Description: alphanumeric
27. Lounge (Strong)
    a. lounge_id: key, numeric
    b. rating: numeric
    c. Description: alphanumeric
28. Hair saloon (Strong)
    a. hair_id: key, numeric
    b. rating: numeric
29. Spa (Strong)
    a. spa_id: key, numeric
    b. Description: alphanumeric

30. Clothing Stores (Strong)
    a. shops_id: key, numeric
    b. rating: numeric
    c. store brand name: alphanumeric
31. Movie theater (Strong)
    a. theater_id: key, numeric
    b. Description: alphanumeric
32. gym (Strong)
    a. gym_id: key, numeric
    b. Description: alphanumeric
33. Pool (Strong)
    a. Pool_id: key, numeric
    b. Num_of_ppl: numeric
    c. Time limit: numeric

Section V: Entity Relationship Diagram (ERD)



Section VI: Testing Table

Rule	Entity A	Relation	Entity B	Cardinality (entity A to Entity B)	Pass/Fail	Error Description
1	Employee	Creates	Account	1 1 or many	Fail	an employee can create 0 or many accounts
2	Employee	ISA	Hourly wages	1 or many 0 or 1	pass	none
3	Employee	ISA	Hours worked	1 or many 0 or 1	pass	none
4	Employee	supervise	employee	recursive	pass	none
5	Employee	manages	department	1 0 to many	pass	none
6	Employee	Works_in	Hotel type	1 or many 1 or many	Pass	none
7	owner	view	employee	1 0 or many	Pass	none
8	Account	autheticate	Account type	0 or 1 1	fail	Account can be more than 0 or 1

9	Account type	Has	features	1 1 or many	fail	Account type should be 1 or many
10	Account	Access	database	1 1	fail	Many accounts should have access to a database
11	Database	Creates	guest	1 1	fail	A database should have many guests
12	Guest	Reservation	Price category	1 1 or many	fail	Guest can reserve 0 or many
13	guest	create	account	1 0 or many	Pass	none
14	guest	gives	feedback	1 0 to many	pass	none
15	Price category	access	Edit reservation	1 or many 0 or many	fail	Price category can be 0 or many

16	Guest	Check-in and check out	Room	0 or many 0 or many	pass	none
17	Room	Has	Room category	1 or many 1	Pass	none
18	Guest	Billing info	invoice	0 or many 1 or many	Pass	none
19	Invoice	Has	Payment type	1 1 or many	pass	none
20	Payment type	ISA	Credit card	1 0 or 1	pass	none
21	Payment type	ISA	Bank account	1 0 or 1	pass	none
22	Billion info	orders	Delivery service	0 to many 0 to many	Pass	none
23	Delivery service	Has	Food order	1 0 to many	Pass	none
24	Delivery service	Has	Laundry order	1 0 to many	Pass	none
25	Food order	Order	Meal	1 0 to many	Pass	None
26	Laundry order	Order	clothes	1 0 to many	Pass	none

27	Chef	ISA	employee	1 or many 1 or many	Fail	An employee can be 0 or 1 chef
28	Reception clerk	ISA	employee	1 or many 1 or many	Fail	An employee can be 0 or 1 clerk
29	engineer	ISA	employee	1 or many 1 or many	Fail	An employee can be 0 or 1 engineer
30	Roomer service/porters	ISA	employee	1 or many 1 or many	Fail	An employee can be 0 or 1 porter
31	housekeeper	ISA	employee	1 or many 1 or many	Fail	An employee can be 0 or 1 housekeeper
32	supervisor	ISA	employee	1 or many 1 or many	Fail	An employee can be 0 or 1 supervisor
33	manager	ISA	employee	1 or many 1 or many	Fail	An employee can be 0 or 1 manager
34	employee	manages	departments	1 or many 1 or many	fail	Only 1 employee

						can manage 0 or many departments
35	departments	Has	Room division	1 or many 1	Pass	none
36	departments	has	Sales and marketing	1 or many 1	pass	none
37	departments	has	Food and beverage	1 or many 1	pass	none
38	departments	has	Human resources	1 or many 1	pass	none
39	departments	has	engineering	1 or many 1	pass	none
40	departments	has	accounting	1 or many 1	pass	none
41	Hotels types	Has	facilities	1 1 or many	Pass	none
42	Facilities	Has	gym	1 or many 0 or many	fail	1 facility should have 0 or 1 gym
43	Facilities	Has	spa	1 or many 0 or many	fail	1 facility should have 0 or 1 spa

44	Facilities	has	pool	1 or many 0 or many	fail	1 facility should have 0 or 1 pool
45	Hotel types	near	locale	1 or many 0 or many	fail	1 hotel should have one ore more facilities
46	tourist	visits	locale	1 or many 0 or many	fail	0 or many tourists should visit one locale
47	Food vendor	Near	Service and retail vendors	1 or many 0 or many	fail	1 or many food vendors should have 1 or many service and retail vendors.
48	Food vendors	has	restaurant	1 0 or many	pass	none
49	Food vendors	has	bars	1	pass	none

				0 or many		
50	Food vendors	has	lounge	1 0 or many	pass	none
51	Service and retail vendor	has	Movie theater	1 0 or many	pass	none
52	Service and retail vendor	has	Hair saloon	1 0 or many	pass	none
53	Service and retail vendor	has	Clothing stores	1 0 or many	pass	none