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Milestone One Analysis Report

Our process for designing our ERD began with an in-depth analysis of the business description in order to get a handle on what the important entities would be and what assumptions we would operate under. Together, we arrived at the following assumptions:

* We agreed that our hotel structure would follow a clear hierarchical model - starting with the building, then the wing, followed by the floor and then finally the room. A single hotel may comprise a whole building complex rather than a single building, and this hierarchical structure takes this fact into account.
* We assumed that extra beds could be stored in a storage room, which would be assigned its own roomId (other furniture items were not tracked in the same way as beds because they are not essential for the rooms’ functions).
* We assumed that outdoor meeting spaces would also have room numbers.
* Where the business description mentioned ‘adjacent’ rooms, we opted to use the term ‘linked’ to represent rooms connected by a door.
* We treated suites as a kind of sleeping room for the purposes of reservations and check-in/out, even though they also have meeting space.
* We decided to list proximity to certain amenities (like a gym or a parking garage) as a binary: either a room is close or it’s not. What constitutes closeness may be a decision made by the hotel staff.
* We assumed that the transaction table would list transactions like minibar orders or restaurant/room service bills as a single quantity rather than an itemized list of every item ordered.
* We interpreted the customer evaluation system as being an evaluation of the party placing a reservation, not necessarily every guest using a room. We envision an Uber-style rating system in which hotel staff evaluate and the customer table has a quantity that is the average evaluation.
* We assume that every room has a PIN card reader and a roomId, separate from its room number, that uniquely identifies it across every hotel the company operates.
* To further clarify the room types, we standardized that in the reservation\_preferences table and room table, if maxSleepingCapacity is 0, the room is designated as a meeting room, and if maxMeetingCapacity is 0, it is a non-suite sleeping room; similarly, if numSleepingGuests is 0, it indicates a meeting room, and if numMeetingGuests is 0, it indicates a non-suite sleeping room.

As we compiled our list of assumptions, we individually started thinking about what entities would be listed. Initially, Anushay and George typed out their versions, which served as our foundational draft. Over the course of several group meetings over Zoom, we arrived at the final design by making group decisions after each explaining our individual rationale. Most of the important design decisions were made in these meetings, where we bounced ideas off of one another and worked our thoughts out on paper. During these meetings we also made some changes to our list of assumptions, the final form of which is presented above. We made sure to prioritize normalization and computer readability in our design.

Our ERD is color-coded for interpretability: hotel complexes, rooms, customers, reservations, transactions, events, messages, and the PIN card system are all colored separately. We tried to be as thorough as possible and not defer any details for later. We plan on later implementing queries in our database to calculate certain values, like the total price of a reservation and the evaluation score of a customer. To that end, our current database does not address extensions or fines for late check-out.

In the final stages, George, Isabella, and Tianshu put the final touches on the database design and Tianshu and Isabella produced the final graphical representation on LucidChart (with input from George). Anushay and George compiled this document to record our thought process, decisions, and the final structure of our ERD. This was a very cooperative effort and no decision was made without consulting other group members.