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Last Resort Hotel Database Analysis

Based on the business description, we designed our database to reflect the hotel room locations, facilities, customer reservation, staff assignment, billing information, and access control.

For room locations, to accommodate the hotel expansion in room numbers and buildings, we designed four tables (hotel, building, wing, room) to indicate the room locations. The hotel table has columns hotel id (hotelId), hotel name (hotelName), and address. The building table is linked to the hotel table through the unique hotel id to include the building designation, for that a hotel may have more than one building. Building name (buildingName) is contained in the building table to allow free-naming. Buildings can have multiple expansion wings, each wing is connected back to its building through the unique building id (buildingId). Similar to the buildings, each wing has a name and a unique identification code (wingId). Proximity pool and parking garage information (wingProximity) and the handicap access (handicapAccess) are also included to serve the guest needs. Each room location is shown through the wing id within the room table. Within the room table, a room type (roomType) column added so that a room can be assigned as either a sleeping room or a meeting room. For that, each room number consists of two parts, the first part designating the floor or level and the second part designating the room number on the floor, repetition in room number is allowed. To avoid repetition, each room has a unique id number (roomId) in addition to the room number which appears on the door (roomNumber). Extra description on each room is added, including the room base rate (baseRate), the capacity for extra space (capacity), the bed number (bedNumber) for sleeping room, the smoking constraint (canSmoke) and the current status to indicate whether the room is ready for guest check-in. The actual charges on the room may be fluctuating depending on the usage type and time. The rating is dependent on the room type, that a sleeping room is rated on the sleeping guests' capacity and a meeting room is rated on its seating capacity.

For room facilities, we have three tables (bed, room_facilities_status, room_adjacency). The bed table is linked to the room table through the room id number, to indicate the bed type (bedType) within the sleeping room. Each bed has its unique identification number to track its current location, in case a rollerway bed can be placed in different rooms. The room facilities status table ensures that all facilities inside the room are functioning before guest check-in, in case a maintenance request is needed. Generally, a room can have a toilet, a bath, a telephone, a television, a closet, drawers, and a movable wall divider, specific facilities included in the room depending on the room type: a meeting room may have no toilet and any room can miss the movable wall divider. The room adjacency table lists out all the adjacent rooms of the interest room. A graphic view may be designed to provide visualization of this table.

For customer reservation, we have six tables (guest, reservation_guest, reservation, event, event_room_usage, room_assignment) to record the guest activities. The guest table documents

the guest's name and contact information, including telephone number and email address. Each guest is given a unique id number (guestId) to track his or her activities. The reservation table includes all the information for guest reservation with a unique id (reservationId), reservation period (plannedCheckIn, plannedCheckOut), event participation (eventId), and referencing to a specific billing information (billingId). Each reservation can only be made two years in advance. Guest preference on smoking (smokingPreference), bed (bedPreference), and personal location confidential (locationConfidential) is recorded. Each guest may be demanded by a staff member (serviceStaff) taking the reservation to make an advance deposit based on their prior visits. The reservation and guest information is joint through the reservation-guest bridging table to allow multiple-guest reservation. To provide a better event hosting experience, we have an event table to track the event name (eventName), event period (startDateTime, endDateTime), and estimated attendance (estimatedAttendance). The event room allocation is made through the event room usage table, with information on rental charges based on specific usage (rateCharged). When approaching the guest reservation start date, a room assignment will be made and recorded in the room assignment table. This table also keeps track of the guest usage period (checkIn, checkOut) and the actual rental rate (assignedRate), together with any guest-specific requests (specialRequest) and extra charges (lateCheckoutFee). The room assignment is based on the sequential room number assigned on each wing and filled with the lowest numbered wing and available room number that meets the guest preference.

For staff assignments, we have four tables (staff, maintenance_request, service, message_record) to record task assignments and staff responsibilities. Each staff member has a unique staff number (staffId), with his or her name (firstName, lastName), position (role), contact information (phoneNumber, email), and hiring date (hireDate) recorded in the staff table. The maintenance request table records the facility repair status. Each request has a unique code (requestId), the requested room (roomId), the requesting date (dateRequested), the repair completion date (dateCompleted), the repairing status (status), and the assigned staff (staffId). Similarly in the service table, each service has a unique code (serviceId), service date (serviceDate), service name (serviceName), guest who ordered the service (guestId) and staff who provided the service (staffId). Each service charge is recorded with a uniquely assigned charge id (chargeId) that is later been billed from the charge table, an expected charge (expectedCharge) and an authorized charge (authorizedCharge) to accommodate any rate change. The message record table to help deliver messages to any guest. Each received message has a unique identifier (messageId) to track its status, the target guest (guestId), the message contents (messageText), the message received datetime (dateTime) and whether it is been delivered to the guest or not (deliverStatus). We also have a confidential request column (confidentialRequest) if our guest wanted the message to be confidential from the hotel service quality assurance.

For billing information, we have four tables (billing, billing_third_party, billing_split, charge) to accommodate different payment methods. Each bill has its unique identifier (billingId) for

tracking and the customer chose payment type (paymentType). This identifier is paired with the reservation (reservationId), the guest (guestId) to record hotel provided services, and the billing status for invoice (status). We also allow special requests for third party billing (thirdPartyBillingId) or billing split (billingSplitId), each with a unique identifier for tracking in separate tables; if no specific request, the corresponding guest will be the payer to the bill. The billing third party table tracks the contact information (firstName, lastName, contactInfo) and affiliated organization (representedOrganizationName) if the guest chooses to bill a third party. The billing split table contains the splitting rate (splitRate) and payer information for each portion (firstName, lastName, contactInfo).

Lastly for access control, we kept track of all our access key cards to best ensure the safety of customers in two tables (card, card_assignment). Each card has a unique identifier (cardId). The card PIN (pin) and expiry date (expiryDate) are recorded in the card table to allow pin switch or temporary access. The card assignment table connects each card to its user, which can be either the guest or the staff.

The designer group for the above database has four people: Patrick Sun, Saqline Diganta, Zhiyuan Yuan, Bruce Wang. We lost contact with Bruce and he never replied to us. The rest of us each prepared our database design. Patrick and Zhiyuan combined those tables into a list of potential tables to include. For our final outputs, Patrick prepared the entity relationship diagram for visualization and Zhiyuan prepared the written analysis on the database.