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Summary:

Hotels have a responsibility to their customers to ensure that their stay is as stress-free as possible and running a hotel requires having easy access to information about each client. For example, a hotel manager would need to know the name, contact information, and number of occupants per customer, as well as the type of room, janitorial or customer service staff assigned to the room, historical occupants, and any charges associated with each account. A comprehensive and lean database that could keep track of customers as well as their contact information and the rooms that each are assigned to would be a necessity for any hotel to run smoothly.

Mission Statement:

The hotel management database will provide information for hotel staff to keep track of current and past occupants, charges associated with each account, and a full record of each guest so that the hotel can run smoothly and keep customers happy.

General Objectives:

The hotel management database will be an online relational database utilizing SQL that can be read, written, updated, and deleted by administrative and managerial hotel staff and can be read, written, and updated by guests when they book rooms online.

Class Objectives:

- Guest
  - PK: GuestID
  - FirstName
  - LastName
  - PhoneNumber
  - EmailAddress
  - StreetAddress
  - City
  - State
  - PostalCode
  - Country
- Reservation
  - PK: ReservationID
  - FK: GuestID
  - FK: RoomNumber
  - ReservedDate
  - NightsReserved
  - CheckIn
  - CheckOut
  - NumOccupants
  - NumAdults
  - NumChildren
- Room
  - PK: RoomNumber
  - Vacant
  - RoomType
  - NumBeds
  - Price
  - StaffID
  - GuestID
  - ReservationID
- Bill
  - PK: InvoiceNumber
  - FK: GuestID
  - FK: ReservationID
  - NightsReserved
  - RoomNumber
  - Price
  - AmountDue
- Staff
  - PK: StaffID
  - FirstName
  - LastName
  - PhoneNumber
  - JobTitle
  - DBPermission
  - CurrentRoom

Relationship Objectives:

- Guest reserves Room (1 – 1..*)
  - Each guest can reserve multiple rooms.
  - Each room can only be reserved by one guest.

- Guest pays Bill (1 – 1)
  - Each guest must pay the bill for all of the reserved rooms.
  - Each bill can only be charged to one guest.
  - Each bill can contain multiple room charges.

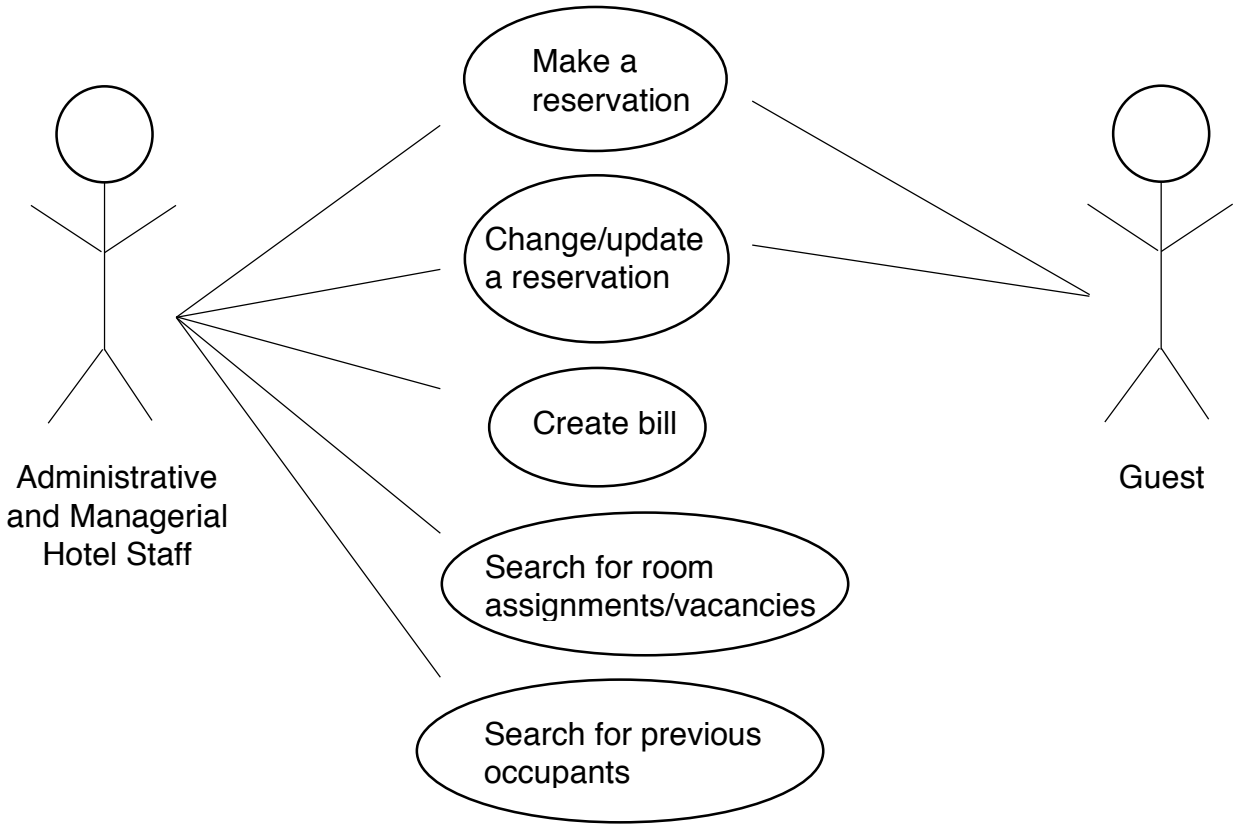
- Guest creates Reservation (1 – 1)
  - Each guest can create one reservation per room.
  - Each room can only be reserved by one guest.

- Reservation holds Room (1 – 1..*)
  - Each room is held by one reservation.
  - One reservation can hold multiple rooms.

- Staff are assigned to Room (0..* – 0..*)
  - Only custodial staff are assigned to rooms.
  - Some custodians may not have any assignments at present.
  - Each custodian may have multiple rooms.
  - Multiple custodians could be assigned to the same room.

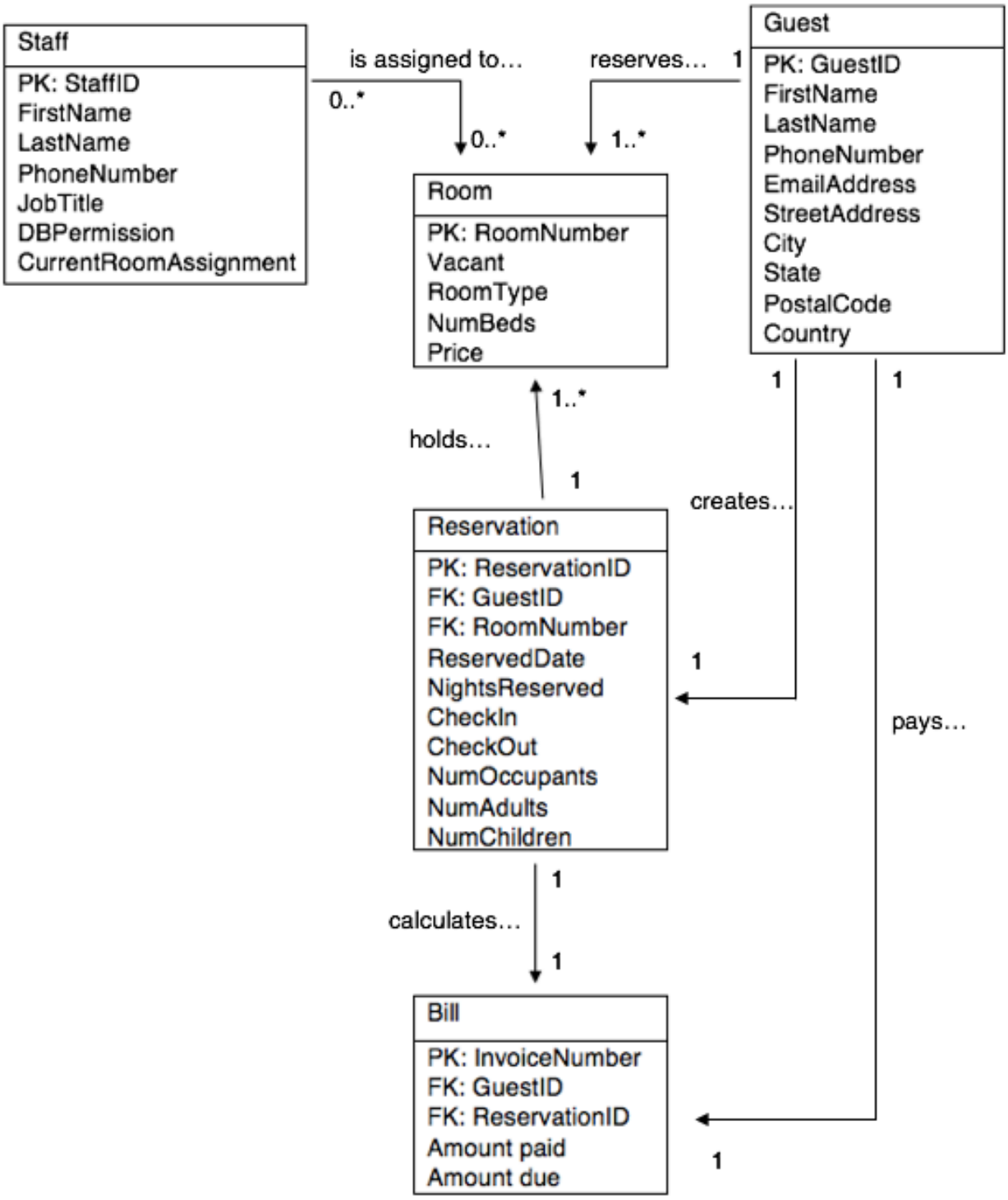
- Reservation calculates Bill (1 – 1)
  - Each reservation is used to calculate one bill.
  - One bill can only contain one reservation.
  - Each reservation can contain multiple rooms.

Use Case Diagram:



1. Make a reservation: both the administrative hotel staff and guests can use the database to make a reservation. They can input new guest information, choose vacant rooms, and pick dates for the stay.
2. Change/update a reservation: can be performed by both hotel staff and guests. Both parties can change the room assignment, the check in or check out dates, or delete the reservation.
3. Create bill: can only be seen by administrative hotel staff. The database will calculate total charges associated with an account by multiplying the length of the stay by the price of the room.
4. Search for room assignments/vacancies: can only be performed by hotel staff. The staff member can find which occupants are in each room, as well as which rooms are currently empty.
5. Search for previous occupants: only hotel staff can perform this task. Managerial and administrative staff will be able to determine historical occupants, the length and dates of their stay, and their contact information.

Data Model:


Staff
PK: StaffID
FirstName
LastName
PhoneNumber
JobTitle
DBPermission
CurrentRoomAssignment
is assigned to…
0..*
0..*
reserves…
1
1..*
Guest
PK: GuestID
FirstName
LastName
PhoneNumber
EmailAddress
StreetAddress
City
State
PostalCode
Country
Room
PK: RoomNumber
Vacant
RoomType
NumBeds
Price
1..*
holds…
1
1
1
creates…
1
pays…
Reservation
PK: ReservationID
FK: GuestID
FK: RoomNumber
ReservedDate
NightsReserved
CheckIn
CheckOut
NumOccupants
NumAdults
NumChildren
1
calculates…
1
Bill
PK: InvoiceNumber
FK: GuestID
FK: ReservationID
Amount paid
Amount due
1

Queries:

1. *What are the phone numbers of all the current guests?*
   SELECT FirstName, LastName, PhoneNumber FROM GuestTable;

FirstName	LastName	PhoneNumber
Sam	Kelsey	1234567890
Kelsey	Gartland	8368230589
Jessie	Vann	8354903585
James	Segert	3249607934
Priya	Chatterjee	2349502384

2. *What is the amount due for all current reservations?*
   SELECT ReservationID, AmountDue FROM BillTable;

ReservationID	AmountDue
0	1200.00
1	1200.00
2	320.00
3	360.00
4	240.00
5	240.00
6	360.00
7	360.00

3. *What are the names of the custodial staff?*
   SELECT FirstName, LastName, JobTitle FROM StaffTable WHERE JobTitle = "Custodian";

FirstName	LastName
Maybel	Clearwater
Blake	Kiefer

4. *Which guests have reserved rooms with children staying in them?*
   SELECT GuestID, RoomNumber, NumChildren FROM ReservationTable WHERE NumChildren > 0;

GuestID	RoomNumber	NumChildren
0	235	2
4	412	2
4	413	1

5. *What are the vacant rooms from least to most expensive per night?*
   SELECT RoomNumber, Price FROM RoomTable WHERE Vacant = 1 ORDER BY Price DESC;

RoomNumber	Price
423	200.00
414	200.00
122	120.00
415	80.00

6. *Which guests have reserved more than 3 nights?*
   SELECT GuestID, RoomNumber FROM RoomTable WHERE ReservationID = (SELECT ReservationID FROM ReservationTable WHERE NightsReserved > 3) ORDER BY NightsReserved ASC;

GuestID	NightsReserved
1	4
0	10
0	10

7. *How many children are staying in each room that are being helped by custodial staff?*
   SELECT RoomNumber, NumChildren FROM ReservationTable WHERE RoomNumber = (SELECT CurrentRoom FROM StaffTable) ORDER BY RoomNumber ASC;

RoomNumber	NumChildren
235	2
402	0

8. *Which guests are in double rooms?*
   SELECT GuestTable.FirstName, GuestTable.LastName, RoomTable.RoomNumber FROM GuestTable, RoomTable WHERE RoomNumber = (SELECT RoomNumber FROM RoomTable WHERE RoomType = “Double”) ORDER BY RoomNumber;

FirstName	LastName	RoomNumber
Sam	Kelsey	123
Sam	Kelsey	235
Jessie	Vann	402
Priya	Chatterjee	412
Priya	Chatterjee	413

9. *Show me the check-in and check-out dates for each invoice.*
   SELECT BillTable.InvoiceNumber, ReservationTable.CheckIn, ReservationTable.CheckOut FROM ReservationTable INNER JOIN BillTable ON ReservationTable.GuestID = BillTable.GuestID;

InvoiceNumber	CheckIn	CheckOut
0	11/13/18	11/23/18
1	11/13/18	11/23/18
2	11/06/18	11/10/18
3	11/19/18	11/21/18
4	11/21/18	11/24/18
5	11/20/18	11/23/18
6	11/20/18	11/23/18
7	11/20/18	11/23/18

10. *What data could tell me the average number of current occupants for each room type (single, double, suite)?*
    SELECT RoomTable.RoomType, RoomTable.NumBeds, ReservationTable.NumOccupants FROM RoomTable INNER JOIN ReservationTable ON RoomTable.RoomNumber = ReservationTable.RoomNumber ORDER BY NumBeds ASC;

NumOccupants	NumBeds	RoomType
2	1	Single
1	1	Single
1	1	Single
4	2	Double
2	2	Double
3	2	Double
4	2	Double
2	2	Double