Universidade do Porto - Faculdade de Engenharia
Mestrado Integrado em Engenharia Electrotécnica e de Computadores
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Hotel Management Project

Description of the work

As the final project of SIBD we decided to do a database that manages the room booking of a hotel, both for guest, or third-party agents, the payment system, and the managing of the cleaning crew.
This project should implement a simplified version of the daily needs of a small hotel.

Applications

- The reservations of the rooms can be made by the client himself or by an agency. For each client booking we need to store, his first and last name, the address, phone number, SS number, whether it has disability, and a unique id.
- If the reservation is made by an agent, we should store the agent first and last name, the address, phone number, SS number of the agency, the agency name, a unique id and a reference to the client.
- It's important to say that each entry on the booking table must always have a client associated, even if the reservation is made by an agent. The only job of the agent is to book and pay in the name of the client.
- Each booking must have an id and keep track of the id of the agent, the payment id, the guest id, and the room id that is referencing. The number of occupants, the room number, the reservation date, the total price, and the period of time the room is occupied should be stored.

- It is only possible to book one room on each booking.
- Each room should have a unique id, a number, occupation state variable, and a reference to: the floor; the rating of the room; and the room type.
- The cleaning of each floor is made by at least one specialized team.
- The cleaning service is not available in all rooms
- Each team is made up of cleaning staff, that can integrate multiple teams, and each team is only responsible for cleaning one floor, and each floor can be cleaned by many teams.
- Each staff member should have an id, a staff number, the shift that they are working on, the salary, and basic info such as name, address, email, phone number and sex.
- The date and the time spent on each cleaning service should be stored in memory.

- Each floor should keep track of the number of rooms it has, a unique id, a floor number, if it is ready to receive disabled people, and a reference to the team that is cleaning it, and each room.
- The hotel divides the rooms into room types, that have a unique id, a type name, a small description and a price per occupant associated.
- The system provides a rating system, that allows each user to rate each room, with a given number of stars, a small description of the experience (optional), and a rating date.

- For each booking the hotel system provides a payment service, that has a specific id, the id of the agent or the id of the guest it payed it, the type of payment (MB, Money …), the value, and the date of payment.

- Each booking can have multiples payments, but each payment can only be relative to one booking.

- The cleaners and the agents can also be costumers of the hotel

Class and Tables

This part of the report will include the tables and classes we will include in our database.

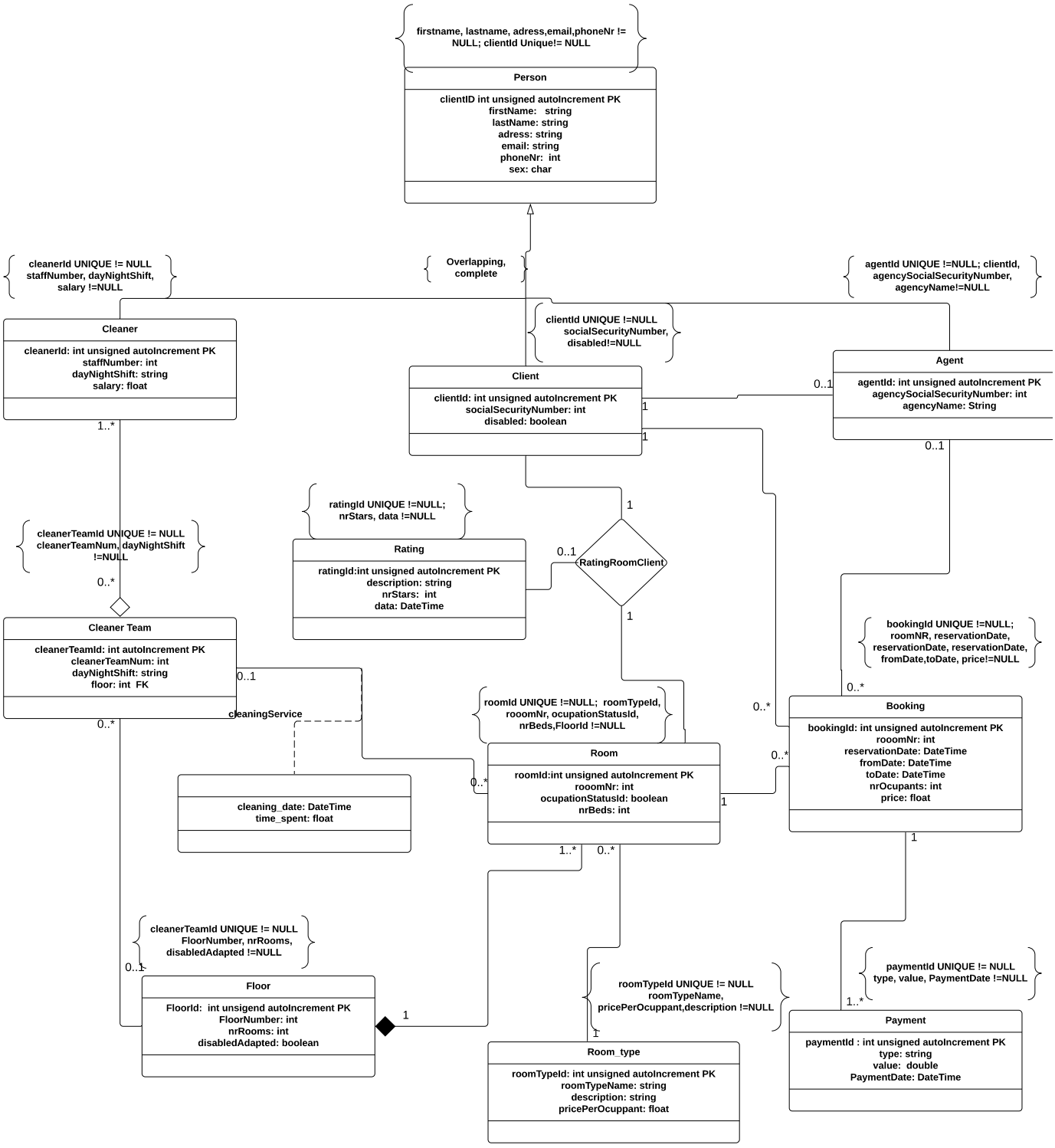
Classes:

- Client
- Agent
- Cleaner
- Cleaner_team
- Room
- Room_type
- Booking
- Floor
- Payment
- Rating

Tables:

- Client
- Agent
- Cleaner
- Cleaner_team
- Room
- Room_type
- Booking
- Floor
- Payment
- Rating
- Cleaning_status

UML Diagram


firstname, lastname, adress,email,phoneNr != NULL; clientId Unique!= NULL
Person
clientID int unsigned autoIncrement PK
firstName: string
lastName: string
adress: string
email: string
phoneNr: int
sex: char
cleanerId UNIQUE != NULL staffNumber, dayNightShift, salary !=NULL
Overlapping, complete
agentId UNIQUE !=NULL; clientId, agencySocialSecurityNumber, agencyName!=NULL
Cleaner
cleanerId: int unsigned autoIncrement PK
staffNumber: int
dayNightShift: string
salary: float
clientId UNIQUE !=NULL socialSecurityNumber, disabled!=NULL
Client
clientId: int unsigned autoIncrement PK
socialSecurityNumber: int
disabled: boolean
Agent
agentId: int unsigned autoIncrement PK
agencySocialSecurityNumber: int
agencyName: String
1..*
0..1
1
0..1
ratingId UNIQUE !=NULL; nrStars, data !=NULL
Rating
ratingId:int unsigned autoIncrement PK
description: string
nrStars: int
data: DateTime
RatingRoomClient
cleanerTeamId UNIQUE != NULL cleanerTeamNum, dayNightShift !=NULL
0..*
Cleaner Team
cleanerTeamId: int autoIncrement PK
cleanerTeamNum: int
dayNightShift: string
floor: int FK
cleaningService
cleaning_date: DateTime
time_spent: float
roomId UNIQUE !=NULL; roomTypeId, rooomNr, ocupationStatusId, nrBeds,FloorId !=NULL
Room
roomId:int unsigned autoIncrement PK
rooomNr: int
ocupationStatusId: boolean
nrBeds: int
bookingId UNIQUE !=NULL; roomNR, reservationDate, reservationDate, reservationDate, fromDate,toDate, price!=NULL
Booking
bookingId: int unsigned autoIncrement PK
rooomNr: int
reservationDate: DateTime
fromDate: DateTime
toDate: DateTime
nrOcupants: int
price: float
cleanerTeamId UNIQUE != NULL FloorNumber, nrRooms, disabledAdapted !=NULL
Floor
FloorId: int unsigend autoIncrement PK
FloorNumber: int
nrRooms: int
disabledAdapted: boolean
roomTypeId UNIQUE != NULL roomTypeName, pricePerOcuppant,description !=NULL
Room_type
roomTypeId: int unsigned autoIncrement PK
roomTypeName: string
description: string
pricePerOcuppant: float
paymentId UNIQUE != NULL type, value, PaymentDate !=NULL
Payment
paymentId : int unsigned autoIncrement PK
type: string
value: double
PaymentDate: DateTime

Relation Model

Person (id, firstName, lastName, adress , email, phoneNr, sex)
NOT NULL (id, firstName, lastName, adress , email, phoneNr, sex)

Cleaner (cleanerID, staffNumber, dayNightShift, salary)
NOT NULL (cleanerID, staffNumber, dayNightShift, salary)

Cleaner Team (cleanerTeamID, cleanerTeamNum, dayNightShift, floor->floor)
NOT NULL (cleaner_team_id, cleaner_team_num,day_night_shift,floor)

Agent (agentID, clientID->Client, agentSsn, agencyName)
NOT NULL (agentID, clientID, agentSsn, agencyName)

Client (clientID, ssn, disabled)
NOT NULL (clientID, ssn, disabled)

Rating (ratingID, description, nrStar, date)
NOT NULL (nrStars, date)

Room (roomID, roomTypeID->RoomType, roomNR, ocupationStatusID, nrBeds, floorID->Floor)
NOT NULL (roomID, roomType, roomNR, ocupationStatusID, nrBeds, floor)

RatingRoomClient(roomID->Room, ratingID->Rating, clientID->Client)

Booking (bookingID, agentID->Agent, guestID, roomID->Room, payment_id->payment, reservationDate, fromDate, toDate, nrOcupants, price)
NOT NULL (bookingID, agentID, guestID, roomID, payment_id, reservationDate, fromDate, toDate, nrOcupants, price)

Payment (paymentID, agentID->agent, guestID, type, value, paymentDate)
NOT NULL (paymentID, agentID, guestID, type, value, paymentDate)

RoomType (roomTypeID, roomTypeName, description, pricePerOcupant)
NOT NULL roomTypeID, roomTypeName, description, pricePerOcupant)

Floor (floorID, floorID->floor, nrRooms, disabledAdapted)
NOT NULL (floorID, floorNumber, nrRooms, disabledAdapted)