CS 353

Database Management Systems

Group 41, Hotel Database Management System

Project Proposal Report

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1. Introduction

This proposal explains basic functionalities and other details about our project, a database system for hotel management. In this report, the aim of the project, limitations and restrictions, basic functions, the entity-relationship design will be discussed.

in the second part, the project description, scope of the hotel management database system is explained. It focuses on the question of why we need a database and how it can be used as part of our project.

The report continues with the requirements part in which functional requirements and non-functional requirements are explained in detail. We used functional requirements to build the functionalities, scope, and requirements of our project. The user ends, permissions, and capabilities are used to explain functional requirements. For explaining nonfunctional requirements we addressed authentication & security, reliability, the performance of the system. Last but not least, in the limitations part, we provided constraints and boundaries of our system.

At the end of this report, we provided an E/R diagram to demonstrate the basis of our design. While designing this E/R diagram our target was satisfying all functionalities and requirements of our system.

2. Project Description

As it can be understood from its name, the hotel management database system is an application for managing hotels more easily compared to traditional methods. The users of this service will be guests and employees. Housekeepers, managers, and security staff are considered employees. Guests can reserve rooms from a desired location and building. They can also comment on their reservations. During their accommodation, guests can order food from the system by choosing their favorite restaurant and picking their food choices. to deliver orders, housekeepers need to be assigned by a manager. Clients can also buy tickets for activities and tours with help of the database application. managers can create new events by choosing a location for them. An event can be a group tour, guest activity, and training program. Training programs are specially created for the educational purposes of housekeepers and security staff. Housekeepers and security members can apply to a training program and fill out a leave request form to have permission for a short time to leave their job. After they apply for one of these two options, a manager can reject or accept their application.

2.1 Why Do We Need Database for a Hotel Management System

In the last decades, the hotel business has grown tremendously. As competition increased and visitors' expectations grew, the hospitality industry became more complex than ever before. A hotel can have thousands of workers and guests which means managing them, in other words managing a hotel is more difficult compared to the past. In today's world, computer technology is involved in almost all business areas. To keep track of modern technologies and ease employees' work, a hotel should have a well-designed hotel management database system. Another reason to choose this system is reliability concern. Old methods (keeping records in files and papers) are less reliable than our database system. One other advantage of this technology is its speed. Getting the desired information in milliseconds is a great advantage over other methods.

2.2 How Do We Use Databases as a Part of the Project?

The database is a tool to manage all hotel management data. This can include guests, employees, events, orders, applications etc. Our system also keeps records of old data to make sure any important information is not missing. Users will be able to create and delete entities. Our database system can also function as a communication application between users (applications between employees and food orders from clients).

3. Requirements

3.1 Functional Requirements

- Guests will be able to:
    - Book a reservation for a room
    - Comment on their reservations
    - Order a specific food choice from a restaurant
    - Buy tickets for activities such or group tours
- Housekeeper will be able to:
    - Deliver food orders to guests
    - Apply to training programs
- Manager will be able to:
    - Assign food orders deliveries to housekeepers
    - Assign building security walks to security staff

    - Create events in a location
    - Accept or reject training program applications
    - Leave request forms
- Security Staff will be able to:
    - Apply to training programs
    - Fill a leave request form
    - Check their annual leave

3.2 Non-functional Requirements

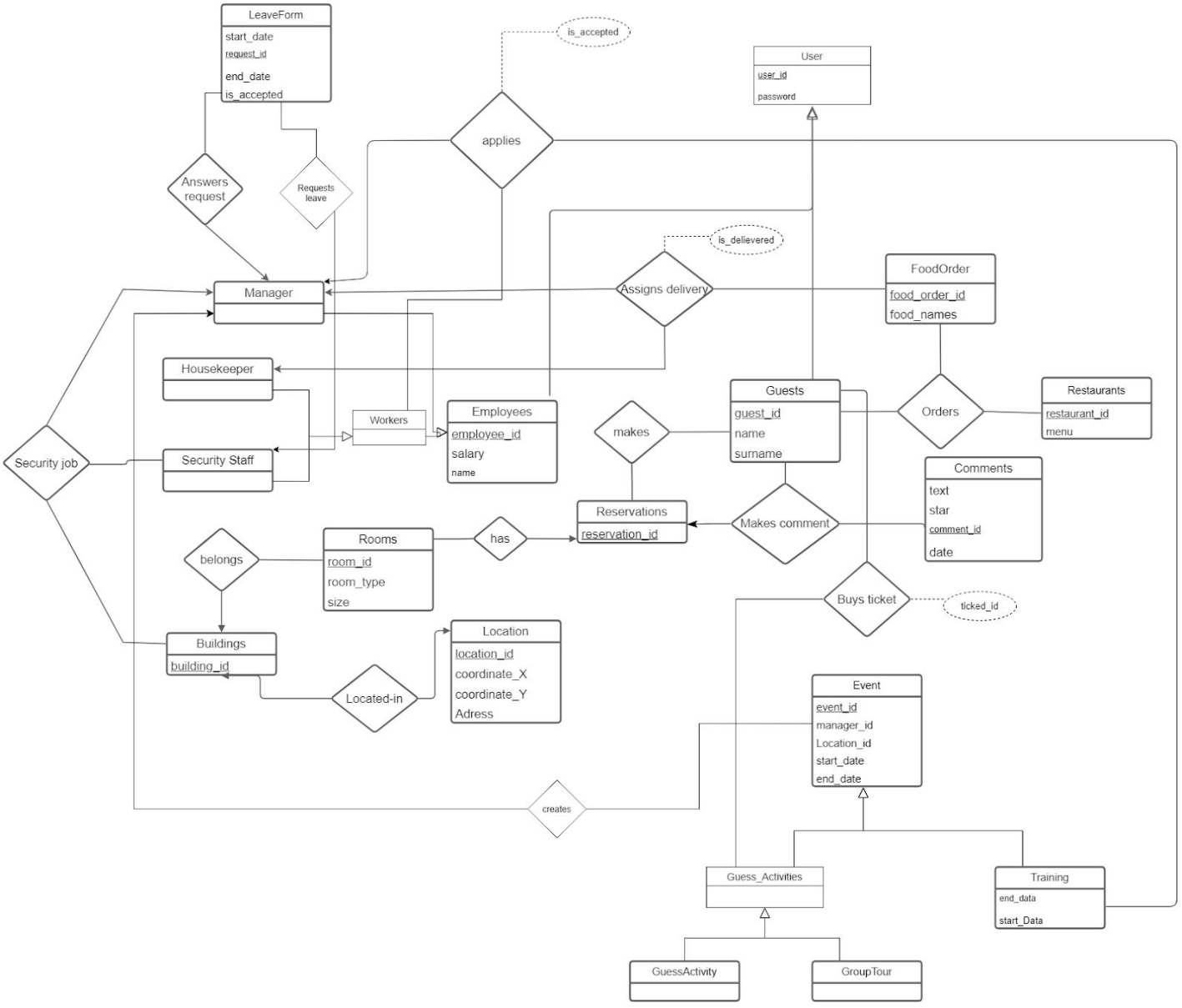
- Performance
    - Users should not wait more than 1 second while browsing and loading data from the application. Data retrieval should be as fast as possible in order to provide the best experience.
- Simple Interface
    - The interface should be as simple as possible, it should be easy for the user to read things when they are trying to retrieve a specific info without being disturbed by unnecessary data such as the history of the hotel etc.
    - A language option for people with different languages should be available. Their preferred language should be stored in the database.
- Security and Access Control
    - Users should not be allowed to do the things that are out of their authority. This should be handled through a solid verification mechanism where each user proves their authority through a unique ID and a password.
    - Passwords should be secure and pass some security standards such as having a minimum length criteria, being enforced to include different types of characters, etc.
    - Permissions of the users should only be changeable by the admins of the system.
- Reliability
    - Even if there are hardware failures or any other unexpected crashes, there shouldn’t be any data loss.
- Storage Efficiency

    - The relationship model and its implementation should be done in a way that minimizes the required storage capacity while implementing all of the functional and non functional requirements

4. Limitations

- One room can be reserved by at most one party.
- Employees can fill a leave request form for at most 14 days.
- Guests can order only the foods listed in the menu of the restaurant.
- Guests can comment on their reservation only after they have finished their residing.
- Guests can only access their own reservations, orders or tickets.
- Security staff and housekeepers can only access the jobs assigned to themselves.
- Managers can access other users’ data but cannot manipulate them.

5. E/R Diagram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request_id
end_date
is_accepted
is_accepted
User
user_id
password
applies
Answers request
Requests leave
is_delievered
Assigns delivery
FoodOrder
food_order_id
food_names
Manager
Housekeeper
Workers
Employees
employee_id
salary
name
Guests
guest_id
name
surname
Orders
Restaurants
restaurant_id
menu
Security job
Security Staff
makes
Comments
text
star
comment_id
date
Reservations
reservation_id
Makes comment
Rooms
room_id
room_type
size
has
belongs
Buys ticket
ticked_id
Buildings
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Located-in
Location
location_id
coordinate_X
coordinate_Y
Adress
Event
event_id
manager_id
Location_id
start_date
end_date
creates
Guess_Activities
Training
end_data
start_Data
GuessActivity
GroupTour

6. Conclusion

We have designed a hotel database management system which we aimed to be user friendly, functional and fast. It will accurately show available rooms, tickets etc and allow users to take actions. To store the needed system objects, a database system will be used. We tried to design this system in a refined way and avoided unnecessary entities or relations.

In this report we first introduced the purpose and usage of the project. Then explained why a database is needed and how it will be utilized. We provided the functional and non-functional requirements followed by the limitations of the system to set the expectations for the user. Finally an E/R diagram is provided for the reader to understand the design better.

7. Website

Reports can be found at: **https://github.com/aoezis/HotelBase**