House Rental Database System

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Business problems :

This project is dedicated to designing and implementing a comprehensive database system tailored for a house rental property business. It aims to cater to the needs of both the business and their customers by incorporating various critical attributes. The project's scope encompasses a wide range of entities, including users and properties, along with the interrelations between them. Emphasis will be placed on best practices in database system design and creation to ensure the system's suitability for this specific business model.

This initiative aims to develop a detailed and well-structured database system that encapsulates the myriad factors necessary for making well-informed decisions. Using an Enhanced Entity-Relationship (EER) diagram, the project will facilitate a comprehensive visualization of the entire process, thereby enhancing data sharing and promotion capabilities. The project is geared towards establishing a functional, efficient, and robust data storage and retrieval system that aligns with the business's and its customers' strategic needs.

Database Design:

This database is engineered to streamline the management and discovery of rental properties for a diverse range of users. After registration, each user is assigned a unique User ID and can identify themselves as either a landlord, Customer/Renter or as part of a Management Company.

Landlords are given the ability to list their properties within the system, entering pertinent details such as name, property address, and price. Each landlord is assigned a unique Landlord ID. They are categorized based on their property management preferences: either Individually Managed or Management Driven, with the former category for those who handle their own properties and the latter for those who entrust management companies with their properties.

Management Companies are detailed in the system with a unique Management ID, and they must provide their name and contact information. They are responsible for the upkeep of the properties they manage, which includes addressing tenant complaints, conducting repairs, and ensuring

property cleanliness. These companies are linked to properties through the Management Driven relationship.

Customers or Renters are able to search for properties and initiate contact with Landlords or Management Companies through the system. Each customer is given a unique Customer ID and their contact information is stored.

The database also includes a Lease entity that documents the rental agreements between Landlords and Customers, encapsulating details such as Lease ID, Property ID, Customer ID, Start Date, and End Date. Payments related to these leases are tracked in a separate Payment entity, which includes the Payment ID, Lease ID, the transaction amount, and the payment date.

Property Details are centrally stored and include the Property ID, Address, and Price, which provide comprehensive information about each rental property.

Broker Firms, which assist in the rental process, are identified by an Agency ID and include information such as the Firm Name and Address. They can have one or more Brokers associated with them, each Broker having a unique Broker ID and Name.

The database is designed to manage the nuanced relationships and processes within a house rental ecosystem. It consists of several interlinked entities:

1. **User**: This entity captures the basic information of all users, including a unique User ID and Username. It distinguishes between different user types.
2. **Landlord**: Each landlord is associated with a Property ID and has personal details such as Landlord Name and Contact stored in the database. Landlords are categorized as either Individually Managed or Management Driven, determined by their preference for property management.
3. **Management Company**: Identified by a Property ID and License ID, management companies have their own records including Company Name and Contact. They are responsible for property management and maintenance.
4. **IndividuallyManaged_Landlords**: This entity stores data for landlords who opt to manage their rental properties on their own. Each entry is marked with a unique IML_ID and includes the landlord's Name and Address. This category signifies landlords who do not employ external management services.
5. **ManagementDriven_Landlords**: Here, information about landlords who have elected to have their properties managed by a professional management company is stored. These records are identified by a unique MDL_ID and also contain the landlord's Name and Address. This classification indicates a reliance on third-party companies to handle the day-to-day management tasks of their rental properties.

6. **Customer/Renter**: Potential renters have profiles with a Customer Name and Contact. They interact with landlords or management companies to find rental properties.
7. **Lease**: A contractual entity, Lease holds records of agreements between landlords and customers, defined by a unique Lease ID and containing details like Property ID, Customer ID, Start Date, and End Date.
8. **Payment**: This entity tracks financial transactions associated with leases. Each payment is identified by a Payment ID and is linked to a Lease ID, including the transaction Amount and Payment Date.
9. **Property Details**: Detailed information about rental properties is stored here, including Property ID, Address, and Price.
10. **Broker Firm**: Brokerage firms, with a unique Agency ID, are recorded along with Firm Name, Address, and Firm Name. They serve as intermediaries in the rental process.
11. **Broker**: Working under broker firms, brokers have their own Broker ID and Name, facilitating property transactions and customer interactions.
12. **Approaches**: This table represents the many-to-many relationship between Customers/Renters and Broker Firms. It logs which Customer has approached which Broker Firm in their search for rental properties. The Agency ID is a foreign key referencing the Broker Firm table, and the Customer ID is a foreign key referencing the Customer table.
13. **Reaches Out**: In this table, the interactions between Customers/Renters and Management Companies are recorded. Each record specifies when and which Customer has reached out to a Management Company, potentially to inquire about properties or to seek management services. The Customer_ID is a foreign key that references the Customer table, indicating the initiating customer, and the Company_ID is a foreign key that references the Management Company table, identifying the contacted company.

Initial ERD

User

PK	User ID
	Username

User Type:

d

L

C

M

Landlord

FK	Property ID
	Landlord Name
	Landlord Contact

Customer/Renter

	Customer Name
	Customer Contact

approaches

approaches

Approaches

Management Company

FK	Property ID
	License ID
	Company Name
	Company Contact

o

signs

Lease

PK	Lease ID
FK1	Property ID
FK2	Customer ID
	Start Date
	End Date

has

Payment

PK	Payment ID
FK	Lease ID
	Amount
	Payment Date

reach out

have

Property Details

+Property ID
+Property Address
+Price

Management Driven

FK	Management ID

Individually managed

approaches

reaches out

Broker Firm

PK	Agency ID
PK	Agency ID
	Firm Name
	Firm Address
	Firm Name

reaches out

Broker

PK	Broker ID
	Broker Name