

DMDD Group 3

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Business Problems being addressed-

1. Transactional Inefficiencies:

Conventional property transactions often entail cumbersome manual processes, paperwork, and prolonged negotiations, resulting in time-consuming and inefficient procedures. The Apartment Listings System aims to mitigate these inefficiencies by digitizing property listing, search, and transactional workflows, thereby expediting processes and minimizing effort for all stakeholders.

2. Transparency Deficits:

Many real estate transactions suffer from a lack of transparency, characterized by limited access to comprehensive property data and obscured pricing mechanisms. To combat this issue, our system empowers users with detailed property listings, transparent pricing structures, and insights from past buyers or renters, fostering a culture of trust and confidence in the platform's transactions.

3. Decision-Making Challenges:

Prospective buyers and renters often encounter difficulties in making well-informed decisions due to the dearth of relevant information and property insights. Our solution addresses this challenge by enabling users to refine search results according to their preferences and by providing valuable reviews, facilitating informed decision-making aligned with individual needs and preferences.

4. User Experience Enhancements:

Navigating the complexities of property listings and transactions can be arduous, resulting in suboptimal user experiences. To enhance user satisfaction, our system prioritizes user experience by offering personalized profiles, intuitive search functionalities, and user-friendly interfaces tailored to the unique requirements of buyers, sellers, brokers, and administrators, ensuring a seamless and gratifying real estate journey for all.

Key Design Decisions- Entities (why and how they are related to each other?)

1. User (Supertype):

a) Attributes:

- UserID (Primary Key)
- FirstName
- LastName
- PhoneNumber
- Email
- DateOfBirth
- ProfilePicture

b) Relationships:

- User can have multiple Listings as a Lister.
- User can interact with properties through Transactions, either as a Buyer or a Seller.
- User can leave Reviews for properties or brokers.

c) Additional Information:

- Each user must have a unique UserID.
- Email serves as an alternative unique identifier for login purposes.
- DateOfBirth is optional.
- ProfilePicture can be in various formats (e.g., JPG, PNG) and is stored as a binary large object (BLOB) in the database.

d) Significance:

- Represents individuals interacting with the system, facilitating property transactions, and leaving feedback.

2. Lister (Subtype):

a) Attributes:

- ListerType (e.g., Owner, Broker)
- No. of properties (Listing History)

b) Relationships:

- Lister is a subtype of User, inheriting UserID and other attributes.
- Lister can have multiple listings of properties.

c) Additional Information:

- No. of properties indicates the number of properties listed by the Lister.
- ListerType helps in distinguishing between different types of listers (e.g., property owners or real estate agents).

d) Significance:

- Represents users who list properties for sale or rent, tracking their listing history.

3. Customer (Subtype):

a) Attributes:

- CustomerType (is looking for Renting or Buying Property)
- Favorite listings (Wishlist – future scope)
- Budget Range
- Preferred Location

b) Relationships:

- Customer is a subtype of User, inheriting UserID and other attributes.
- Customer interacts with properties through Transactions, either as a Buyer or a Renter.

c) Additional Information:

- CustomerType determines if the user is primarily interested in Renting or Buying properties.
- Budget Range helps in filtering properties based on the customer's financial constraints.
- Preferred Location specifies the geographical areas preferred by the customer for property search.

d) Significance:

- Represents users seeking properties for rent or purchase, providing insights into their preferences and budget.

4. Property:

a) Attributes:

- PropertyID (Primary Key)
- AddressLine1
- AddressLine2
- Street
- City
- State
- Country

b) Relationships:

- Property can have multiple Listings.
- Property can be involved in Transactions as a listed property.

c) Additional Information:

- Each property must have a unique PropertyID.
- AddressLine1, City, State, and Country are mandatory attributes, whereas AddressLine2 is optional.

d) Significance:

- Represents individual properties available for sale or rent, storing essential location details.

5. **PropertyDetails:**

a) *Attributes:*

- PropertyID (Primary Key)
- Bedrooms
- Bathrooms
- AreaSize
- Description

b) *Relationships:*

- PropertyDetails represents detailed information about a property.

c) *Additional Information:*

- Each PropertyDetails record is associated with a unique PropertyID.
- Bedrooms, Bathrooms, AreaSize, and Description provide additional details about the property.

d) *Significance:*

- Stores detailed information about each property, including its size, layout, and description.

6. **Transaction:**

a) *Attributes:*

- TransactionID (Primary Key)
- PropertyID (Foreign Key)
- BuyerID (Foreign Key)
- SellerID (Foreign Key)
- BrokerID (Foreign Key)
- TransactionType
- TransactionDate
- TransactionStatus

b) *Relationships:*

- Transaction involves multiple users (Buyer, Seller, Broker) and a Property.
- Transaction can have multiple associated Payments.

c) *Additional Information:*

- Each transaction must have a unique TransactionID.
- TransactionType specifies the nature of the transaction (e.g., Sale, Rent, Sublease).
- TransactionStatus indicates the current status of the transaction.

d) *Significance:*

- Records details of property transactions, facilitating smooth transaction processing and tracking.

7. **Review:**

a) *Attributes:*

- ReviewID (Primary Key)
- UserID (Foreign Key)
- PropertyID (Foreign Key)
- Rating
- Comment
- ReviewDate
- ReviewType

b) *Relationships:*

- Review is written by a User for a specific Property.
- Review is written by a User for a specific Broker.

c) *Additional Information:*

- Each review must have a unique ReviewID.
- Rating represents the numeric score given by the user.
- ReviewType distinguishes between reviews written for properties and those written for brokers.

d) *Significance:*

- Provides feedback from users about properties or brokers, aiding other users in making informed decisions.

8. **Message:**

a) *Attributes:*

- MessageID (Primary Key)
- SenderID (Foreign Key)
- ReceiverID (Foreign Key)
- MessageType
- MessageContent
- Timestamp

b) *Relationships:*

- Message involves two users (Sender and Receiver) and captures their communication.

c) *Additional Information:*

- Each message must have a unique MessageID.
- MessageType categorizes messages for better organization.

d) *Significance:*

- Facilitates communication between users regarding property inquiries, negotiations, and confirmations.

9. Listing (Supertype):

a) Attributes:

- ListingID (Primary Key)
- PropertyID (Foreign Key)
- ListerID (Foreign Key)
- ListerType
- ListingDate
- ListingStatus

b) Relationships:

- Listing represents the act of listing a property by a User.

c) Additional Information:

- Each listing must have a unique ListingID.
- ListingStatus indicates whether the listing is active or inactive.

d) Significance:

- Represents individual property listings created by users, capturing essential listing details.

10. Rent (Subtype):

a) Attributes:

- RentID (Primary Key)
- MoveInCost
- SecurityDeposit
- LeaseStartDate
- LeaseEndDate

b) Relationships:

- Rent is a subtype of Listing, representing a specific listing for renting a property.

c) Additional Information:

- Each rental listing must have a unique RentID.

d) Significance:

- Represents specific listings for renting properties, storing rental terms and conditions.

11. Sell (Subtype):

a) Attributes:

- SellID (Primary Key)
- BuyingPrice
- MortgageAllowed

b) Relationships:

- Sell is a subtype of Listing, representing a specific listing for selling a property

c) Additional Information:

- Each selling listing must have a unique SellID.

d) Significance:

- Represents specific listings for selling properties, storing sale price and mortgage options.

12. Amenities:

a) *Attributes:*

- AmenityID (Primary Key)
- Water
- Gas
- Laundry
- Trash
- Electricity
- Parking
- PetsAllowed

b) *Relationships:*

- Amenities represent the features available in a property.

c) *Additional Information:*

- Each amenity must have a unique AmenityID.
- Attributes represent boolean values indicating the availability of specific amenities in a property.

d) *Significance:*

- Records available amenities for each property, aiding users in property selection based on amenities.

13. Legal Documents:

a) *Attributes:*

- DocumentID (Primary Key)
- AgreementType
- AgreementDate
- TermsAndConditions
- OwnerID (Foreign Key, if applicable)
- BrokerID (Foreign Key, if applicable)
- BuyerID (Foreign Key, if applicable)
- SellerID (Foreign Key, if applicable)

b) *Relationships:*

- Legal Documents are associated with various agreements related to property transactions.

c) *Additional Information:*

- Each legal document must have a unique DocumentID.
- AgreementType specifies the type of agreement (e.g., property ownership, lease, sales).
- TermsAndConditions provide details of the agreement terms.

d) *Significance:*

- Stores legal agreements related to property transactions, ensuring transparency and compliance.