

Project Design Report

Project Summary:

The proposed project is for the students whose objective is to choose the most suitable house amongst the various houses available for leasing. The students now have to pick a house by referring to all the leasing agency websites and considering all the factors for each house before deciding to pick one. The proposed consolidated database would help students take better informed decisions with ease without having to go through a tedious process.

In order to tackle this problem, this project proposes to build a house rental database. This database is an integration of the rental properties listed on various websites. Two primary users can access this system. These two primary users are students attending the university (potential tenants) and the rental agency leasing the houses. The students can query the database and find out details about the properties which will give them a good idea about the house that would be suitable for their needs. It would become easier for them to see all the details of the properties from various websites instead of scouring through different websites for collecting information about the same house.

This database would consist of tables allocated to the properties, students, rental agency, lease agreement and the landlord.

Entities and their Attributes:

Objects	Description
1. Rental_Agency	A table to store information of all the rental agencies responsible for renting out the houses
a. Agency_ID	Primary Key/Unique identifier
b. Agency_Name	Name of the Agency
c. Email_ID	Email ID of the agency
d. Website_URL	URL/Link to the agency website
e. Phone_No	Contact number of the agency

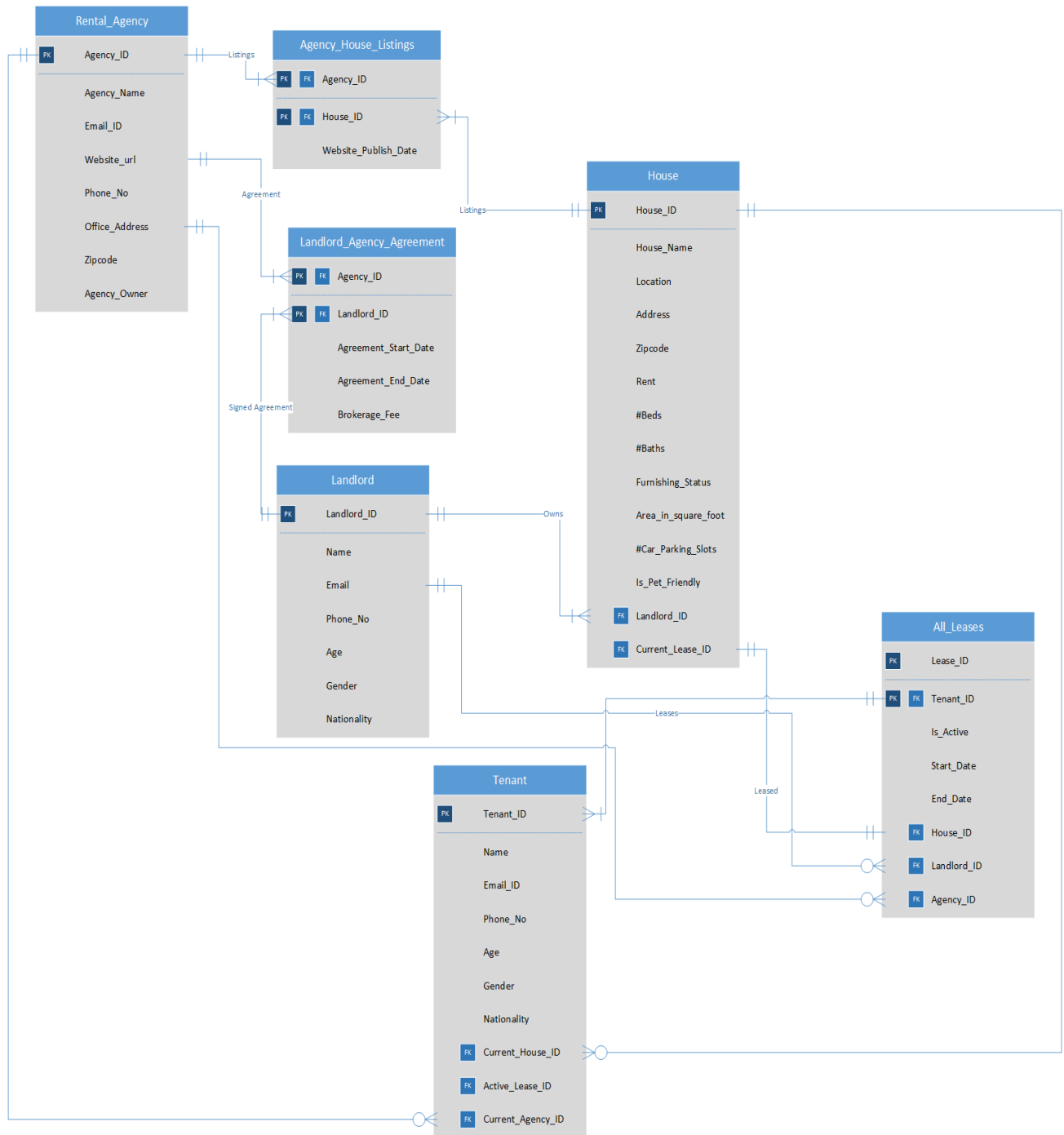
f. Office_Address	Address of the rental agency
g. Zipcode	Zipcode of the rental agency office
h. Agency_Owner	Name of the Agency Owner
2. House	A table to store information of all the houses
a. House_ID	Primary Key/Unique identifier
b. House_Name	Name for the house
c. Location	Location of the house
d. Address	Address of the house
e. Zipcode	Zipcode of the house
f. Rent	Rent for the house
g. #Beds	Number of Bedrooms in the house
h. #Baths	Number of Bathrooms in the house
i. Furnishing_Status	Fully Furnished/Semi Furnished/Unfurnished
j. Area_in_square_foot	Area of the house in square feet
k. #Car_Parking_Slots	Number of car parking slots
l. Is_Pet_Friendly	Flag to denote whether pets are allowed or not
m. Landlord_ID	Foreign Key: Primary Key of landlord table
n. Current_Lease_ID	Foreign Key: Primary Key of Lease table
3. Agency_House_Listings	An associate table storing information of all the House listings for each agency
a. Agency_ID	Foreign Key: Primary Key of Agency table

b. House_ID	Foreign Key: Primary Key of House table
c. Website_Publish_Date	Date on which the house-agency listing was published on the website
4. Landlord	A table storing information of all the landlords of the houses available for rent
a. Landlord_ID	Primary Key/Unique ID
b. Name	Name of the Landlord
c. Email	Email ID of the Landlord
d. Phone_No	Contact number of the landlord
e. Age	Age of the landlord
f. Gender	Gender of the landlord
g. Nationality	Nationality of the landlord
5. Landlord_Agency_Agreement	An associate table storing information of all the agreements between various landlords and the rental agencies
a. Agency_ID	Foreign Key: Primary Key of Agency table
b. Landlord_ID	Foreign Key: Primary Key of Landlord table
c. Agreement_Start_Date	Agreement Starting Date
d. Agreement_End_Date	Agreement Ending Date
e. Brokerage_Fee	% of commission charged by the agency
6. Tenant	A table storing information of all the tenants currently occupying the houses or the

	tenants who are going to occupy a house and for whom the lease has been signed
a. Tenant_ID	Primary Key/Unique ID
b. Name	Name of the tenant
c. Email_ID	Email ID of the tenant
d. Phone_No	Contact number of the tenant
e. Age	Age of the tenant
f. Gender	Gender of the tenant
g. Nationality	Nationality of the tenant
f. Current_House_ID	Foreign Key: Primary Key of house table to denote the house in which the tenant is staying or has signed a lease to stay in
g. Active_Lease_ID	Foreign Key: Primary Key of Lease table to denote the active lease that the tenant has signed
h. Current_Agency_ID	Foreign Key: Primary Key of Agency table to denote the agency through which the tenant got his/her lease signed
7. All_Leases	A table containing information of all the leases that have been signed between the tenants, landlords and agencies. This table contains both active and expired lease records
a. Lease_ID	First attribute that is part of the Primary Key/Composite Key of the table
b. Tenant_ID	Second attribute that is part of the Primary Key/Composite Key of the table.

c. Is_Active	Flag to denote if the lease is active or has expired
d. Start_Date	Lease start date
e. End_Date	Lease end date
f. House_ID	Foreign Key: Primary Key of house table to denote the house for which the lease has been signed
g. Landlord_ID	Foreign Key: Primary Key of landlord table to denote the landlord who has signed the lease
h. Agency_ID	Foreign Key: Primary Key of agency table to denote the agency that has signed the lease

ER Diagram:



Business Rules:

1. Every Rental Agency can have one or more houses which they are responsible for leasing out
2. Every House can be listed by multiple rental agencies
3. Every landlord can own multiple houses, but every house can only be owned by a single landlord
4. Every landlord and every tenant can have only one active lease for a house and every lease can have multiple tenants, one house, one landlord and one rental agency
5. Every Agency will be working for leasing out at least one or more house and hence will have at least one or more listing
6. Every Agency will be working with at least one or more landlord and will have at least one or more agreement
7. Every lease will have at least one or more tenant

Major Data Questions:

- How many rental agencies are catering to the housing needs of a given location?
- How many houses are being rented out in a given location?
- Of the total number of houses being rented out, how many are currently occupied?
- How many tenants are currently occupying the houses?
- What is the rent range of the houses that have not been leased out and have remained vacant for a long time?
- What is the rent range of houses that never remain available, i.e. are the first ones to get booked?
- Which is the best performing rental agency?
- How many landlords own more than one house?
- Which is the worst performing rental agency?
- How many tenants have renewed their lease and continued to stay in the same house in the last 2 years?
- In the last 2 years, how many tenants have started a new lease and moved out to a new house after their lease expiration?
