**Business Description**

**Business Background**

A Real Estate Agency manages the operations of selling, renting, and buying properties. This includes clients (buyers, sellers, tenants, landlords), real estate agents, property listings, transactions, and associated commissions. Traditionally, this data is spread across emails, spreadsheets, and paper documents.

**Problems - Current Situation**

* **Data Fragmentation**: No centralized storage for properties, agents, and client information.
* **Manual Tracking**: Property availability and sales updates managed manually.
* **Delayed Transactions**: Inefficiencies in matching clients with properties.
* **Limited Reporting**: Difficult to analyze sales performance, property demand trends, and agent efficiency.

**Benefits of Implementing a Database - Project Vision**

Implementing a relational database will:

* **Centralize Operations**: One source of truth for property, client, and agent information.
* **Enhance Efficiency**: Faster property matching, listing, and transaction recording.
* **Automate Analytics**: Better reporting on transactions and commissions.
* **Secure Data Access**: Role-based access for managers and staff.

**Model Description**

**Definitions & Acronyms**

| **Term** | **Description** |
| --- | --- |
| Property | Real estate item available for sale/rent |
| Agent | Employee representing properties to clients |
| Client | Buyers, sellers, landlords, or tenants |
| Listing | Association between a property and an agent |
| Transaction | Record of a sale or rental deal |
| Commission | Payment to agent based on transaction |
| Feature | Property attribute like Pool, Garage |

**Logical Scheme (short description)**

* **Agent** lists multiple **Properties** via **Listings**.
* **Client** purchases/rents a **Property** via **Transaction**.
* **Property** has multiple **Features** through **Property\_Feature** (many-to-many).
* **Commission** is earned per **Transaction**.

**Objects**

**Table Descriptions**

**1. Property**

| **Field Name** | **Field Description** | **Data Type** |
| --- | --- | --- |
| property\_id | Unique Property ID (PK) | SERIAL |
| address | Property address | TEXT |
| city | City location | TEXT |
| state | State location | TEXT |
| price | Sale or rent price | NUMERIC(12,2) |
| status | Property status ('available', 'sold', 'rented') | VARCHAR(20) |
| created\_at | Record creation time | TIMESTAMP |

**2. Agent**

| **Field Name** | **Field Description** | **Data Type** |
| --- | --- | --- |
| agent\_id | Unique Agent ID (PK) | SERIAL |
| first\_name | Agent's first name | VARCHAR(50) |
| last\_name | Agent's last name | VARCHAR(50) |
| email | Unique email address | VARCHAR(100) |
| phone\_number | Contact number | VARCHAR(20) |
| hire\_date | Date of hire | DATE |

**3. Client**

| **Field Name** | **Field Description** | **Data Type** |
| --- | --- | --- |
| client\_id | Unique Client ID (PK) | SERIAL |
| first\_name | Client's first name | VARCHAR(50) |
| last\_name | Client's last name | VARCHAR(50) |
| email | Unique email address | VARCHAR(100) |
| phone\_number | Contact number | VARCHAR(20) |
| client\_type | 'buyer', 'seller', 'landlord', or 'tenant' | VARCHAR(10) |

**4. Listing**

| **Field Name** | **Field Description** | **Data Type** |
| --- | --- | --- |
| listing\_id | Unique Listing ID (PK) | SERIAL |
| property\_id | FK to Property | INT |
| agent\_id | FK to Agent | INT |
| listing\_date | Date property listed | DATE |
| listing\_price | Listed price | NUMERIC(12,2) |

**5. Transaction**

| **Field Name** | **Field Description** | **Data Type** |
| --- | --- | --- |
| transaction\_id | Unique Transaction ID (PK) | SERIAL |
| property\_id | FK to Property | INT |
| client\_id | FK to Client | INT |
| transaction\_date | Date of transaction | DATE |
| transaction\_amount | Deal amount | NUMERIC(12,2) |
| transaction\_type | 'sale' or 'rent' | VARCHAR(10) |

**6. Commission**

| **Field Name** | **Field Description** | **Data Type** |
| --- | --- | --- |
| commission\_id | Unique Commission ID (PK) | SERIAL |
| agent\_id | FK to Agent | INT |
| transaction\_id | FK to Transaction | INT |
| commission\_amount | Amount earned | NUMERIC(12,2) |
| commission\_date | Date paid | DATE |

**7. Feature**

| **Field Name** | **Field Description** | **Data Type** |
| --- | --- | --- |
| feature\_id | Unique Feature ID (PK) | SERIAL |
| feature\_name | Feature name | VARCHAR(50) |

**8. Property\_Feature**

| **Field Name** | **Field Description** | **Data Type** |
| --- | --- | --- |
| property\_id | FK to Property | INT |
| feature\_id | FK to Feature | INT |

**Table Relationships Summary**

| **Entity 1** | **Entity 2** | **Relationship** |
| --- | --- | --- |
| Agent | Listing | One-to-Many |
| Property | Listing | One-to-Many |
| Property | Transaction | One-to-Many |
| Client | Transaction | One-to-Many |
| Transaction | Commission | One-to-One |
| Property | Property\_Feature | One-to-Many |
| Feature | Property\_Feature | One-to-Many |

**Example Data Snapshot**

| **Property** | **Address** | **Price** | **Status** |
| --- | --- | --- | --- |
| 1 | 123 Maple St, Springfield, IL | 250000 | available |

| **Transaction** | **Client** | **Transaction Date** | **Amount** |
| --- | --- | --- | --- |
| 1 | George Miller | 2025-03-01 | 250000 |

| **Commission** | **Agent** | **Commission Amount** |
| --- | --- | --- |
| 1 | Alice Johnson | 7500 |

I am sorry for formatting of this document I was working with phone I will change it as soon as possible.