



# Real Estate Management Database Project

## 1. Scenario

You are hired by a **real estate firm** to build a database system that:

- Stores **offices, employees, properties, and owners**.
  - Tracks **who manages which office, which properties are listed in which office, and who owns each property (with percentage ownership)**.
  - Allows management to run reports about sales offices, employees, and properties.
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## 2. Tasks

### A. Schema Design

- Create tables with proper **keys, data types, and constraints**:
  - SalesOffice(*office\_id*, location, manager\_id ...)
  - Employee(*emp\_id*, emp\_name, office\_id ...)
  - Property(*prop\_id*, address, city, state, zip, office\_id ...)
  - Owner(*owner\_id*, owner\_name ...)
  - PropertyOwner(*prop\_id*, *owner\_id*, percent\_owned) (junction table)

### B. Data Insertion

- Insert at least:
  - 3 sales offices (different cities/states).
  - 5 employees (assigned to offices).
  - 5 properties spread across offices.
  - 4 owners, with at least one property having multiple owners.

### C. Queries to Practice

1. **Basic SELECTs**
  - List all employees working in “New York” office.
  - Show all properties with city = “Chicago”.
2. **JOINS**
  - Show properties and their managing office location.
  - List owners with the properties they own.
3. **Aggregations**
  - Count how many employees are in each office.

- Find average number of properties per office.
  - 4. **Constraints/NULL handling**
    - Make sure every property is linked to exactly one office.
    - Show employees not assigned as managers.
  - 5. **Subqueries**
    - Find offices that have more properties than the average office.
    - Find owners who own more than one property.
  - 6. **Views**
    - Create a view `office_summary` showing `office_id`, `city`, `num_employees`, `num_properties`.
  - 7. **Indexes**
    - Add an index on `Property(city)` for faster searching.
  - 8. **Transaction**
    - Simulate selling a property:  
`START TRANSACTION` → delete ownership rows for a property → insert new owner → `COMMIT`.
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### 3. Deliverables

- An `.sql` file that:
  1. Creates all tables with constraints.
  2. Inserts your test data.
  3. Contains the queries above as runnable examples.
- A short write-up (markdown or Word) showing screenshots of query outputs.