# Apartment Complex Database Proposal

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# I. DATABASE REQUIREMENTS

## A. Overview

For our database design and implementation project, we have chosen to model a database for a property management company that leases apartments. From a high level overview, apartment complexes fit perfectly with the relational database model. For example, you have many entities, such as buildings, units, tenants, employees, etc. All of these entities interact with each other in a way that can be appropriately modeled by a relational database.

## B. Complex

Complexes are used to indicate a location. For example, if a single company handles complexes applewood and orangewood, each complex can have a single manager. Each complex can have any number of buildings, but will at least have one building. Complex names will be unique, as will be their location.

## C. Building

A complex usually has several buildings. A building can have any number of rooms. The building number is unique to the complex, but other complexes may have buildings with the same ID. The entry should indicate whether certain amenities are available in the building, such as laundry rooms, pools, lobbies, etc. Each building has a maintenance team assigned to it.

## D. Room

Rooms are located inside buildings, where there can be any number of rooms to a building. The room entry should indicate whether it is furnished or not and if any special amenities are present such as dryer, washing machine or dishwasher. Rooms have a single tenant for the lease, but there can be subleases to other tenants. Each room has a monthly rental amount associated with it based on its square footage and number of windows.

### E. Employee

Each employee uses their SSN as a unique ID. Salary of an employee is between $30,000 and $50,000. An employee can act as in a maintenance role or as a manager, but for either role they are always employed by a complex. Each complex has a single manager, but a complex can employ any number of employees.

### F. Tenant

A tenant occupies one room. The tenant has a lease on a room for a period of time. The tenant makes payments to the manager. Each tenant entry will save the next month a payment is expected and the payment amount.

## II. EER DIAGRAM

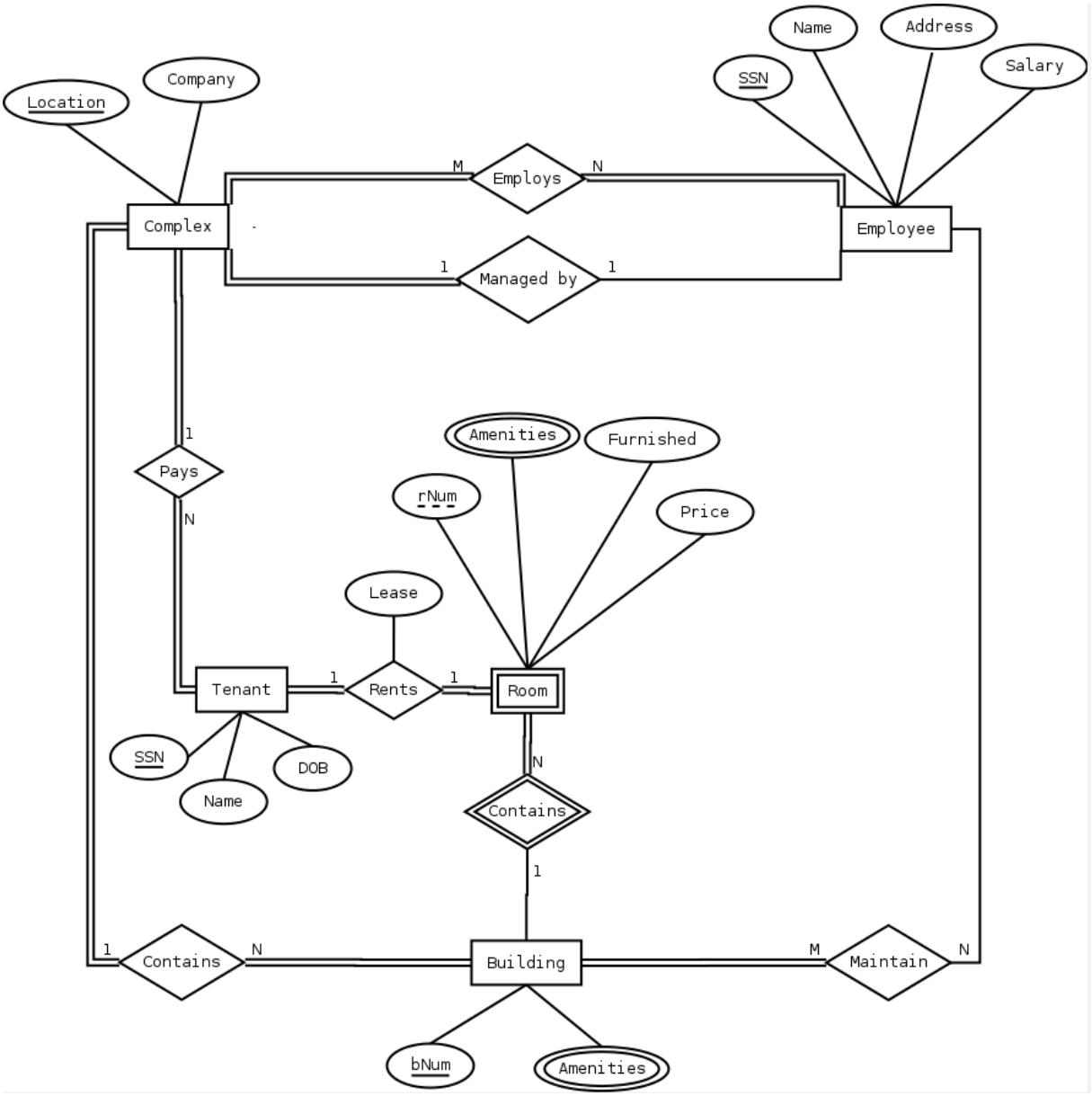


FIG. 1. ER Diagram for the Apartment Complex Database Model.

## III. RELATIONAL SCHEMA

The relational schema for the database is as follows:

Employee (SSN, Name, Address, Salary, location, Company)

Complex (Location, Company)

Tenant (SSN, Name, DOB, rNum, Lease, Location, Company)

Room (rNum, Furnished, Price, bNum)

Room Amenities (Amenities, rNum)

Building (bNum, Location, Company)

Maintain (bNum, SSN)

Building Amenities (Amenities, bNum)

Employs (SSN, Location, Company)

## IV. INTEGRITY CONSTRAINTS

| IC Name | IC Type | English Statement |
|---|---|---|
| Complex Name | Key | The complex name is unique for each complex. |
| Building Complex | Foreign Key | Complex name is referenced by building complex to act as a secondary key. |
| Manager Salary | 1 Attribute | Salary is greater than 30k and less than 50k. |
| Monthly Rent | 2 Attribute, 1 Row | Monthly rent must be over 1200 if square footage is over 1000. |