Alfredo Perez
September 4, 2020
DataBase Systems

Homework 2

COSC 30603

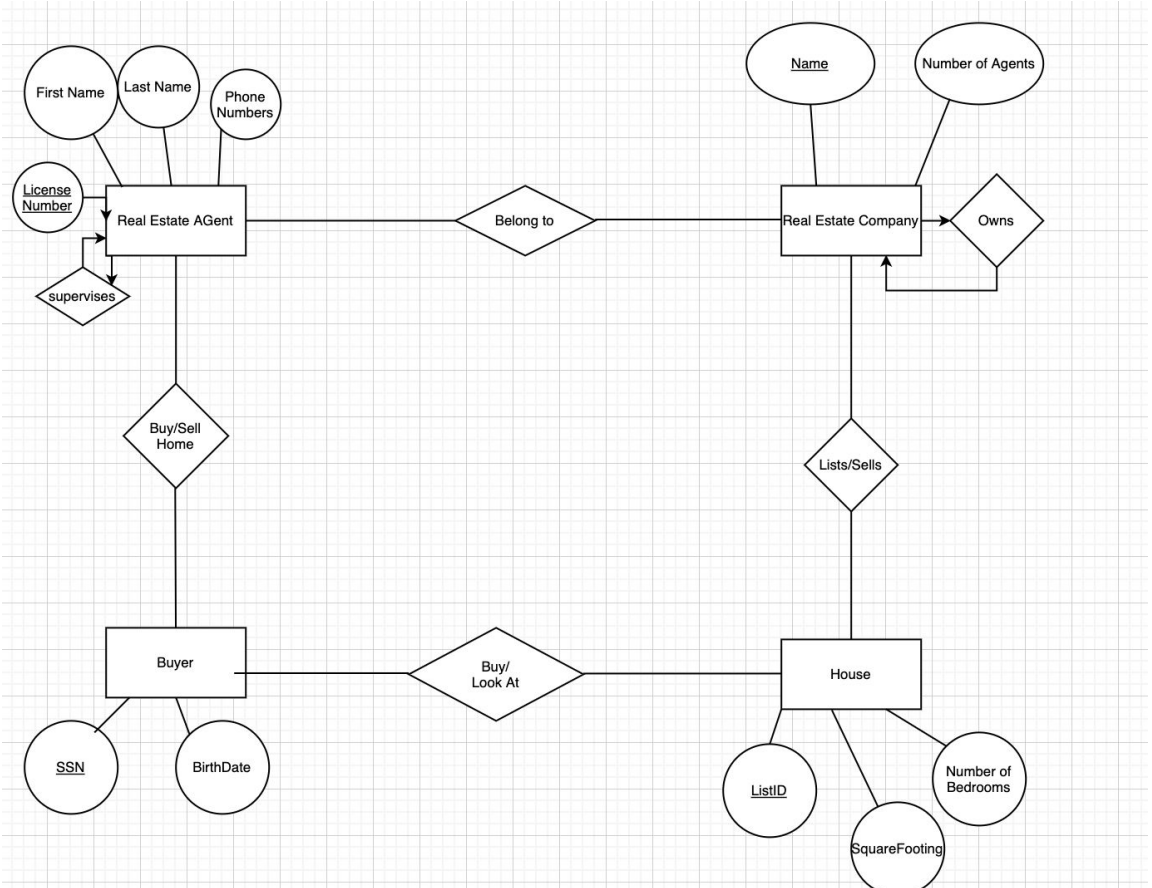
Homework 2

Due: Sep 4.

Requirement: Your answers must be printed or typed. You may attach hand-drawn figures if needed (The pic of the drawing MUST BE legible!!!). ER diagrams must be following the notations from the book.

1. Consider the following data requirements. (50 pts)
   - A real estate agent has a license number, a name (first name and last name) and several phone numbers. Every agent must belong to a real estate company. A real estate agent can be a supervisor of several other agents, while an agent can only have one supervisor.
   - A real estate company has a company name and the number of real estate agents who work for the company.
   - A real estate company may have a number of real estate agents, while a real estate agent can only work for one real estate company.
   - A real estate company can have at most one parent real estate company. A real estate company can be the parent of several other real estate companies.
   - A house can be listed by only one real estate company. A house has a list id assigned by the real estate company. The list id is unique only within the same real estate company. A house also has the number of bed rooms and the square footage. A real estate company may list many houses at the same time.
   - A house buyer has an SSN and a birth date. The buyer may look at several houses, while a house may be seen by many buyers.
   - A buyer buys a house from a real estate agent on a closing date.

   Draw an ER diagram based on the requirements.



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2. Consider the following ER diagram. Map it into a relational database schema. Hint: Do not forget to add UNIQUE and NOT NULL in the schema where they needed. (50 pts)
   Note: For simplicity, the domain for each attribute can be omitted in the schema. The database schema should use the following format for each table:
   Relation_name (attribute name list), PK: ..., FK (if any): ... references ..., UNIQUE, NOT NULL
   For example:
   Project (ProjectNo, ProjectName), PK: ProjectNo.
   Employee (EmployeeNo, Name, WorksOn), PK: ProjectNo, FK: WorksOn references Project, Workson: UNIQUE, NOT NULL.
   * Assume that *workson* is a 1:1 total relationship for Employee between Employee and Project.

Database Schema:

PK: (SSN,PName,Id)

Book(ISBN, Title, Previous edition, Pname), PK: ISBN, FK: PName references

Publisher, write:NOT NULL

Author(SSN, First ,Last),PK: SSN

Lawyer(Lic#, Years), PK: Lic#

Publisher(Pname, Number of published books), PK: PName

Location(Pname, Location), PK: (PName, Location), FK: PName references Publisher

Contract(SSN, Id, Start date, End date), PK: (SSN,Id), FK: SSN references Author

Write(SSN, ISBN), PK: (SSN, ISBN), FK: SSN references Author, ISBN references books

Review(Id, Lic, Fee), Pk:(Id, Lic), FK: Id references Contract, Lic# references Lawyer

Sign(SSN, PName, Id, Sign date), PK: (SSN, PNaem, Id), FK: SSN references author, Id references Contract, Pname references Publisher, sign:not null