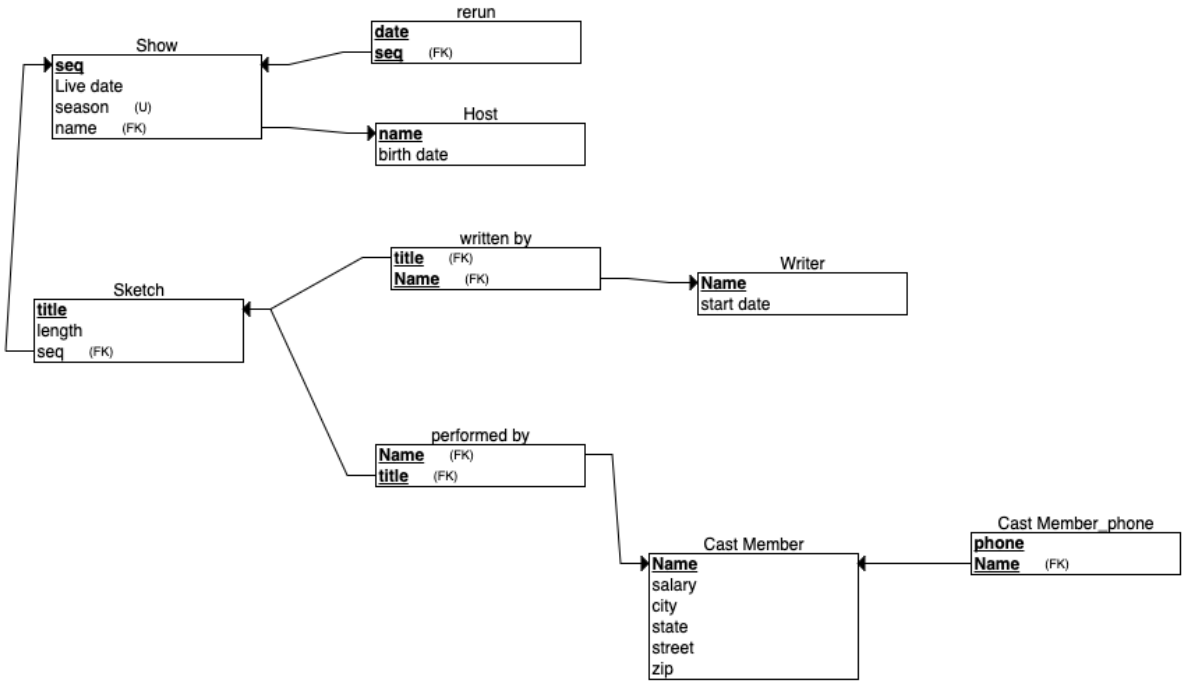
Michael Smith

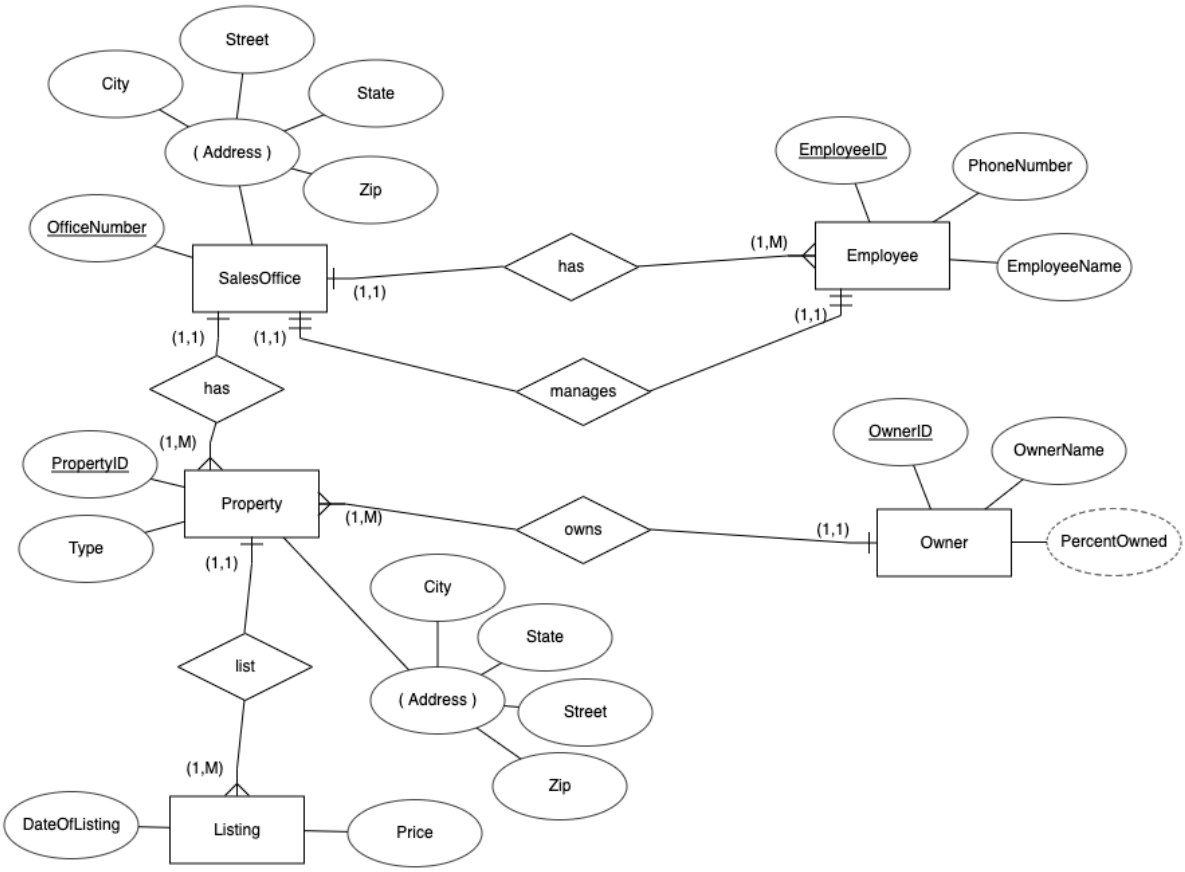
Problem #1:

Relational Schema:

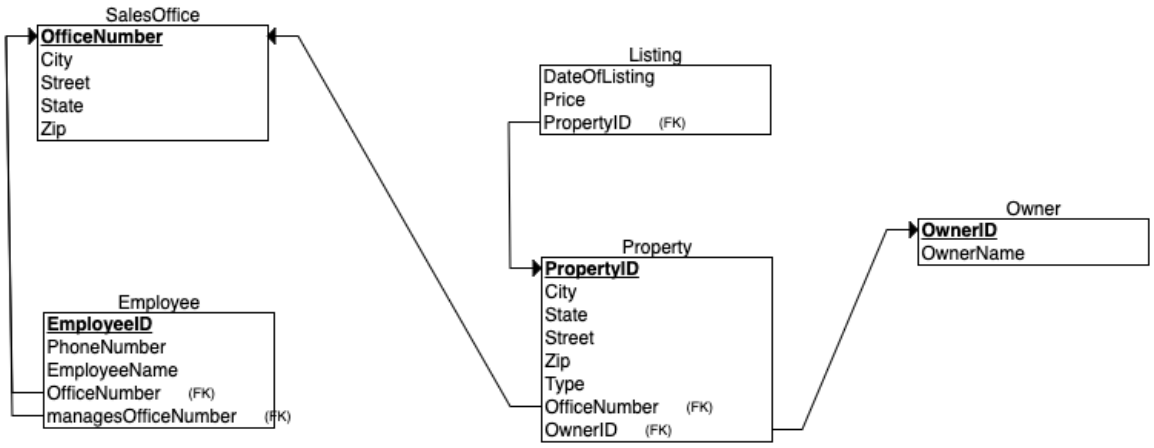


Problem #2:

ER Diagram:



Relational Schema:



Problem #3:

Primary Keys -

- ➔ Student: Student_number
- ➔ Course: Course_number
- ➔ Section: Section_identifier

Foreign Keys -

- ➔ Section: Course_number(joins Course and Section tables)
- ➔ Grade_Report: Student_number(joins student and Grade_Reports tables), Section_identifier(joins Section and Grade_Report tables)
- ➔ Prerequisite: Course_number, Prerequisite_number(joins Course and Prerequisite tables)

A)

- ➔ The *Insert <150, 'CS162','Fall',2020,'Smith'> into SECTION* statement would result in a referential constraint error. This is because Course_number 'CS162' is not in the Course table which would return a referential integrity constraint error. Course_number is set as a foreign key in order to join the Section and Course tables.

B)

- ➔ The *Delete <17,112,'B'> from GRADE_REPORT* statement wouldn't result in any referential integrity constraint error. The statement removes the data *17,112,'B'* which is part of the Grade_Report table.

C)

- ➔ The *Insert <'CS3380','CS3320'> into PREREQUISITE* statement would not return any integrity errors. This is because both Course_numbers and Prerequisite_number are referencing the Course_number in the Course table. This means that the data would be inserted correctly into the table.

D)

- ➔ The *Modify the Course_number of the section tuple with Section_identifier 85 to 'MATH2444'* statement would result in a referential constraint error. This is because the Course_number 'MATH2444' is not mentioned in the Course table. A referential integrity constraint error would occur because Course_number is set as a foreign key that joins the Section and Course tables.