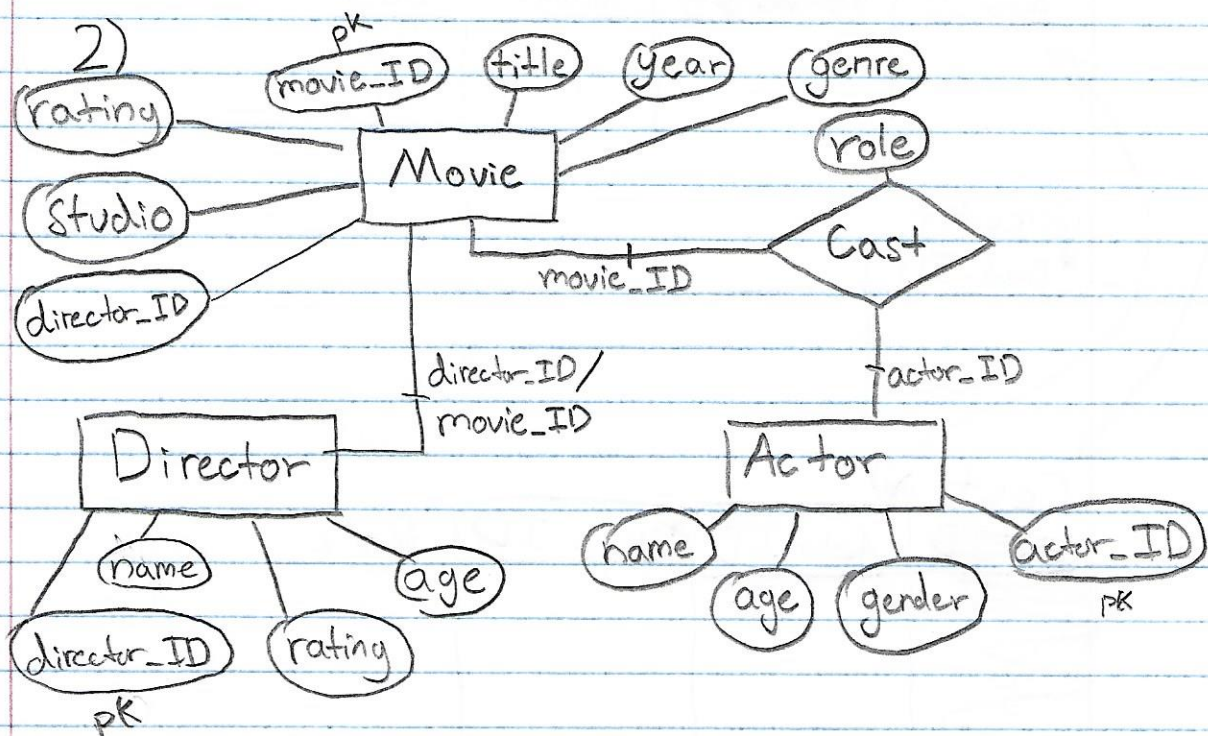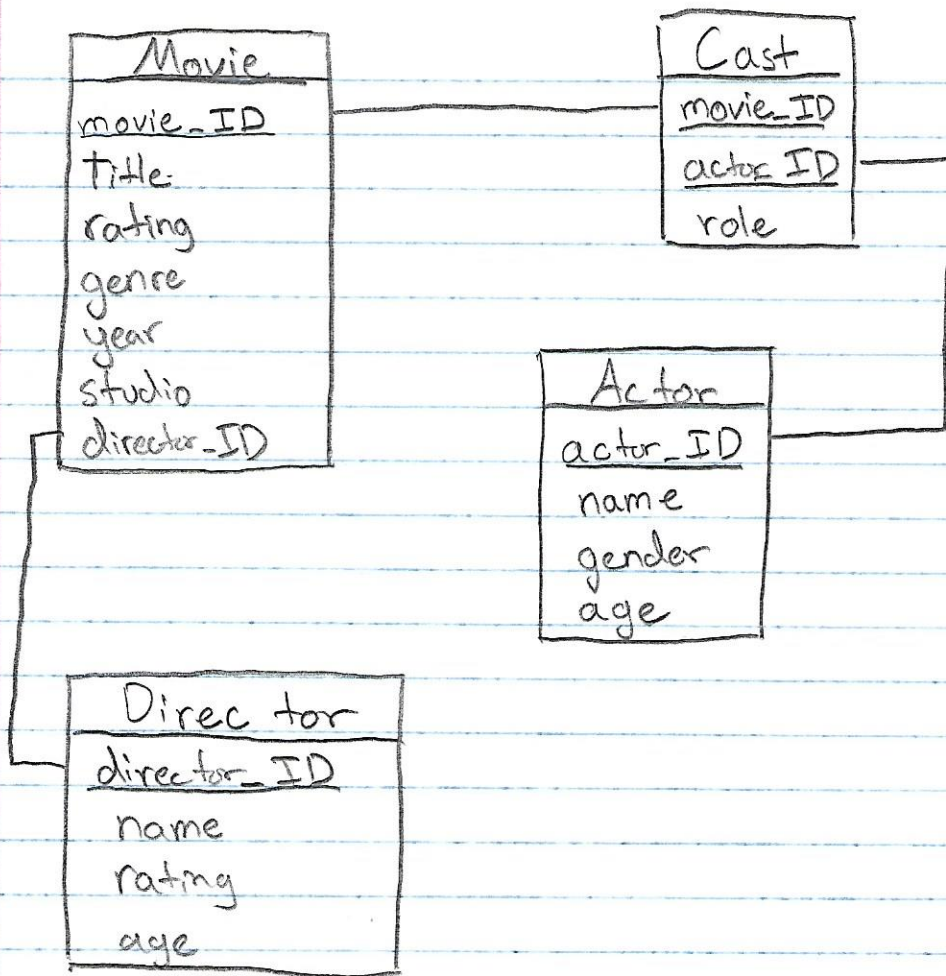Part A: Movies

1) Our application supports various kinds of queries (for example: search by titles, ratings, year, or you can search for actors or directors and they're respective movies). Every new movie added updates the movie attributes, director attributes, actor attributes and so on) more over the ratings for movies can be continuously updated.

2)

Movie to Actor: many to many
Movie to Director: one to many

Movie
- movie_ID
- title
- rating
- genre
- year
- studio
- director_ID

Cast
- movie_ID
- actor_ID
- role

Actor
- actor_ID
- name
- gender
- age

Director
- director_ID
- name
- rating
- age

Part B: Normalization

1.1) Minimal Cover

1. Store → Type, Size
2. Store, WeekDate → Temperature, FuelPrice, CPI, Unemployment Rate
3. WeekDate → IsHoliday
4. Store, Dept, WeekDate → Weekly Sales

1.2) BCNF Decomposition

Sales = R(Store, Dept, WeekDate, Weekly Sales, IsHoliday, Type, Size, Temperature, Fuel Price, CPI, Unemployment Rate).

BCNF Sales = R_1(Store, Dept, WeekDate, Weekly Sales), R_2(Store, Type, Size), R_3(Store, WeekDate, Temperature, FuelPrice, CPI, Unemployment Rate), R_4(WeekDate, IsHoliday).

Where: Store, Dept, + WeekDate are primary/foreign keys.