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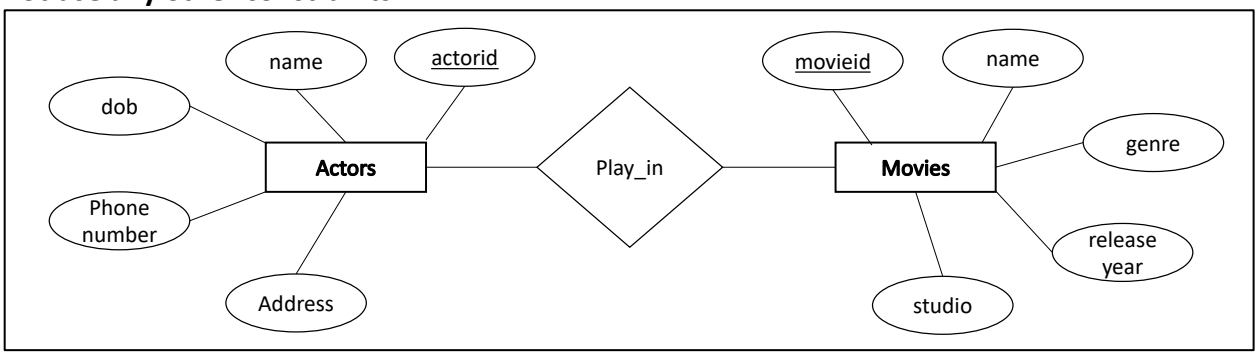
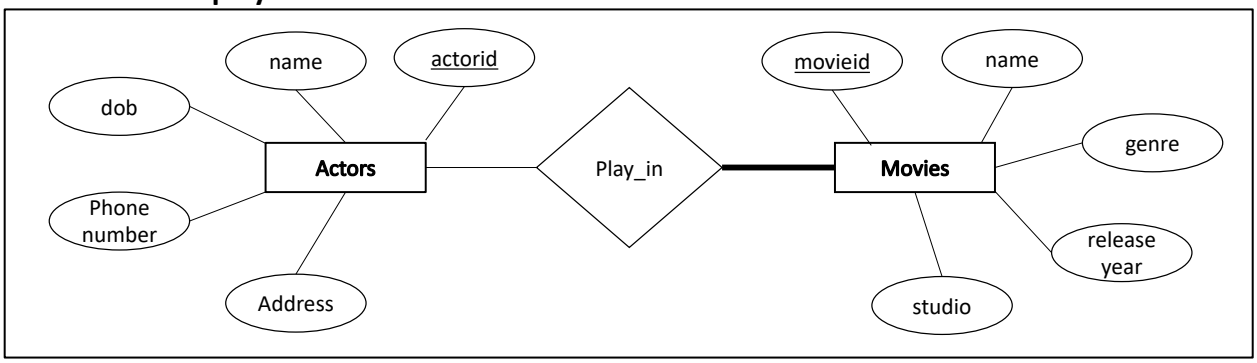
Question 1 (36 points)

A movie platform database contains information about actors (identified by actorid) and information about movies (identified by movieid). Actors also have a name, a date of birth (dob), a phone and an address. Each movie also has a name, a genre, a release year and a studio. Actors play in movies.

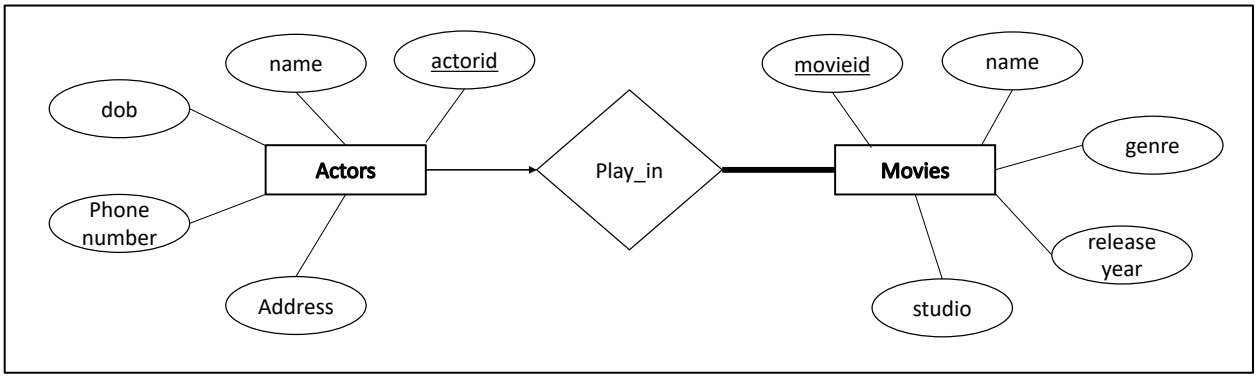
a) **Draw the ER diagram of this database (as described in the Question 1 statement). Do not use any other constraints.**



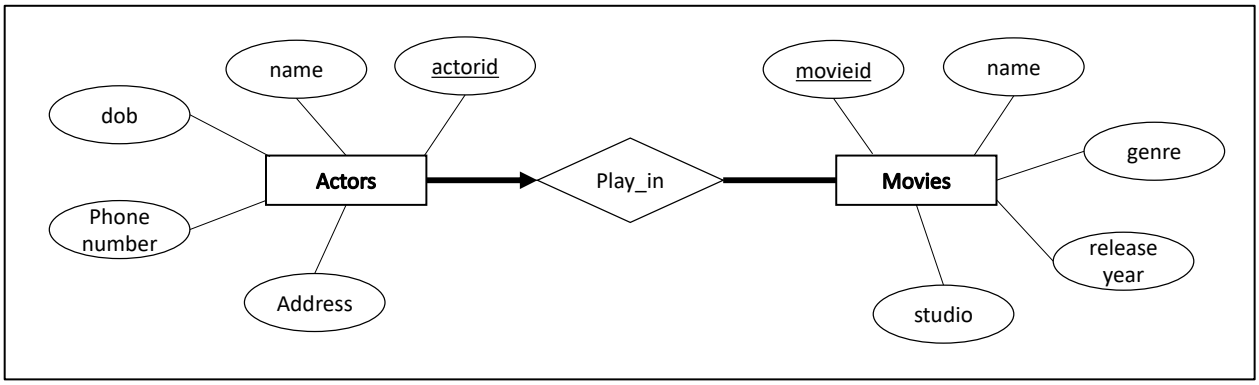
b) **Modify the diagram from a) further to add the constrain that in each movie at least one actor must play.**



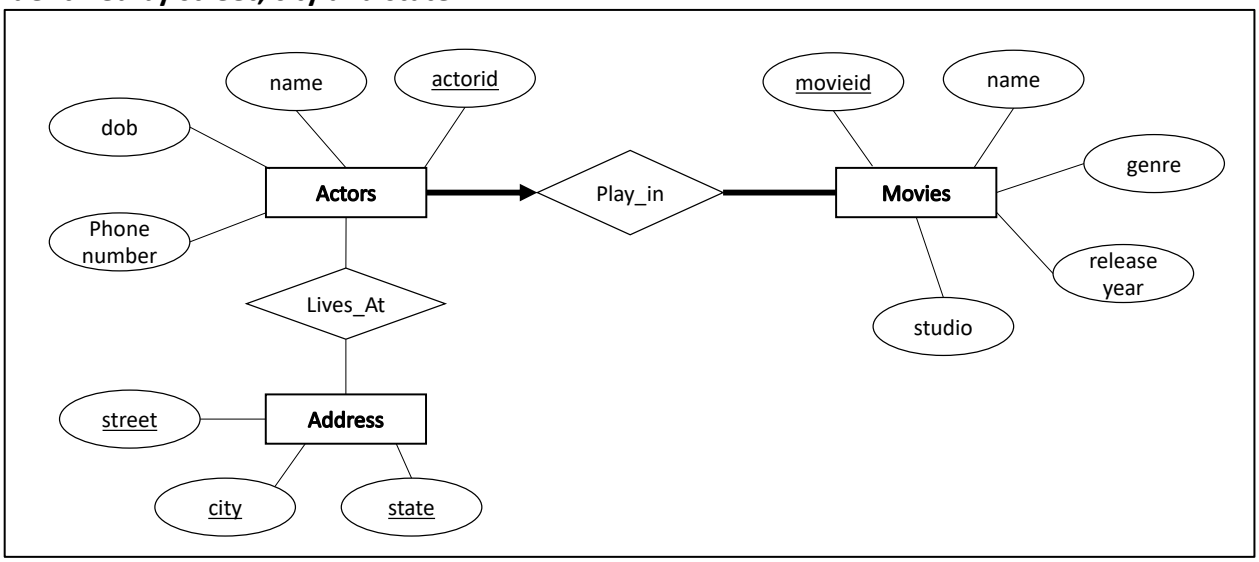
c) **Modify the diagram from b) further to add the constraint that each actor must play in at most one movie.**



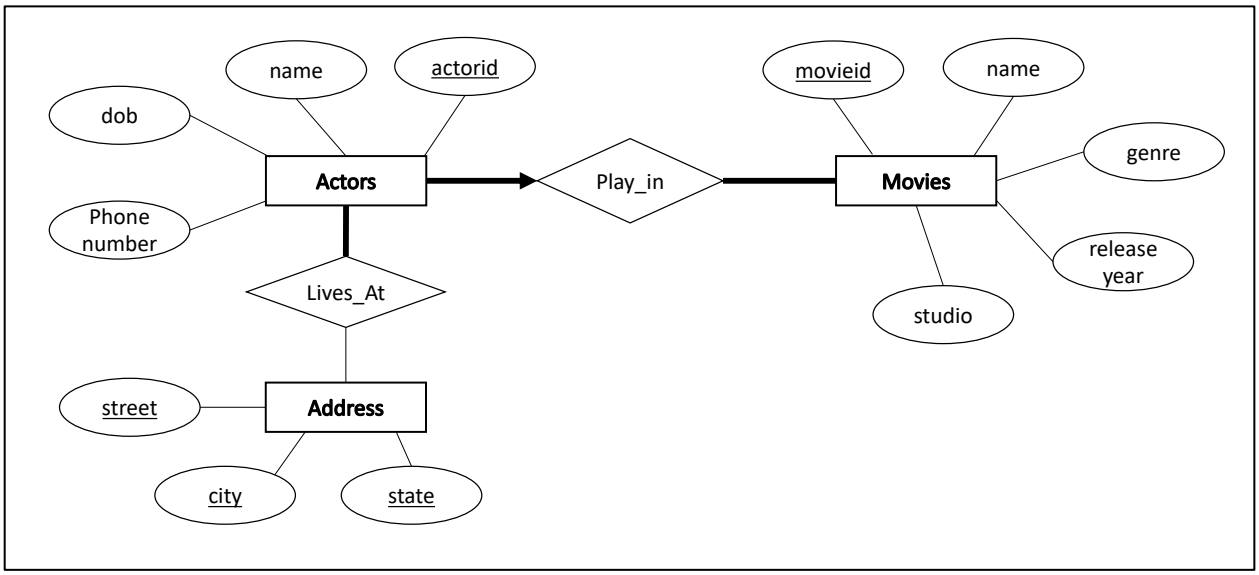
d) Modify the diagram from c) further such that each actor must play in exactly one movie.



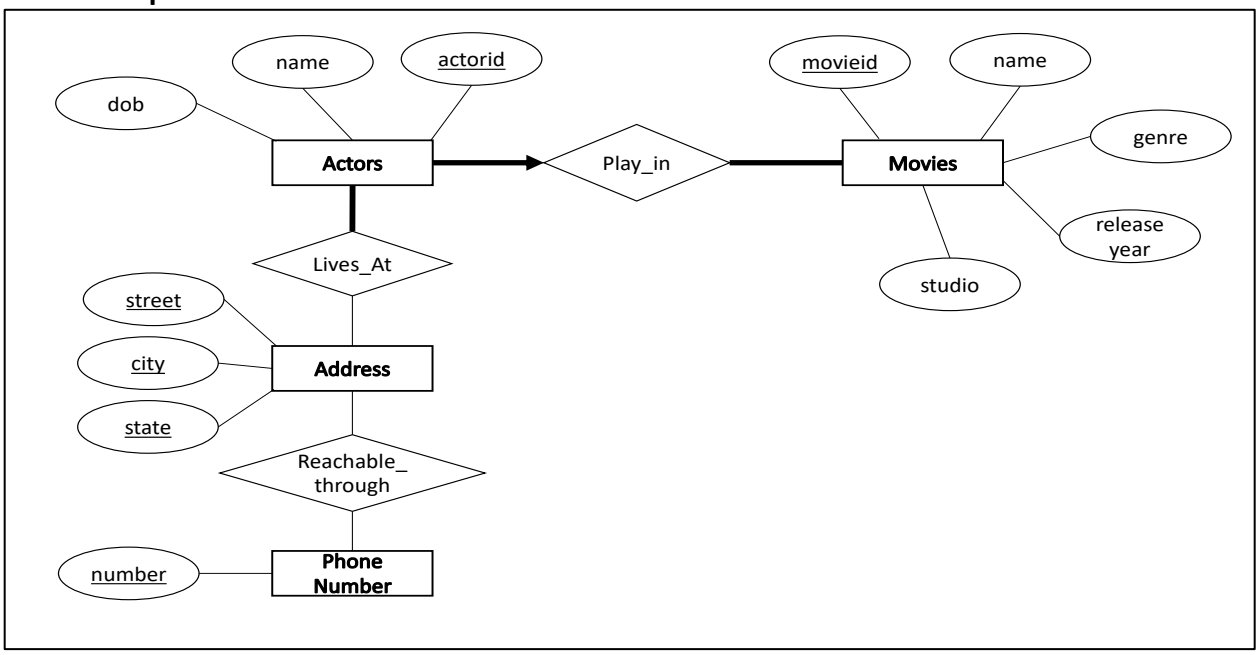
e) Modify the diagram from d) further such that each actor can have multiple addresses identified by street, city and state.



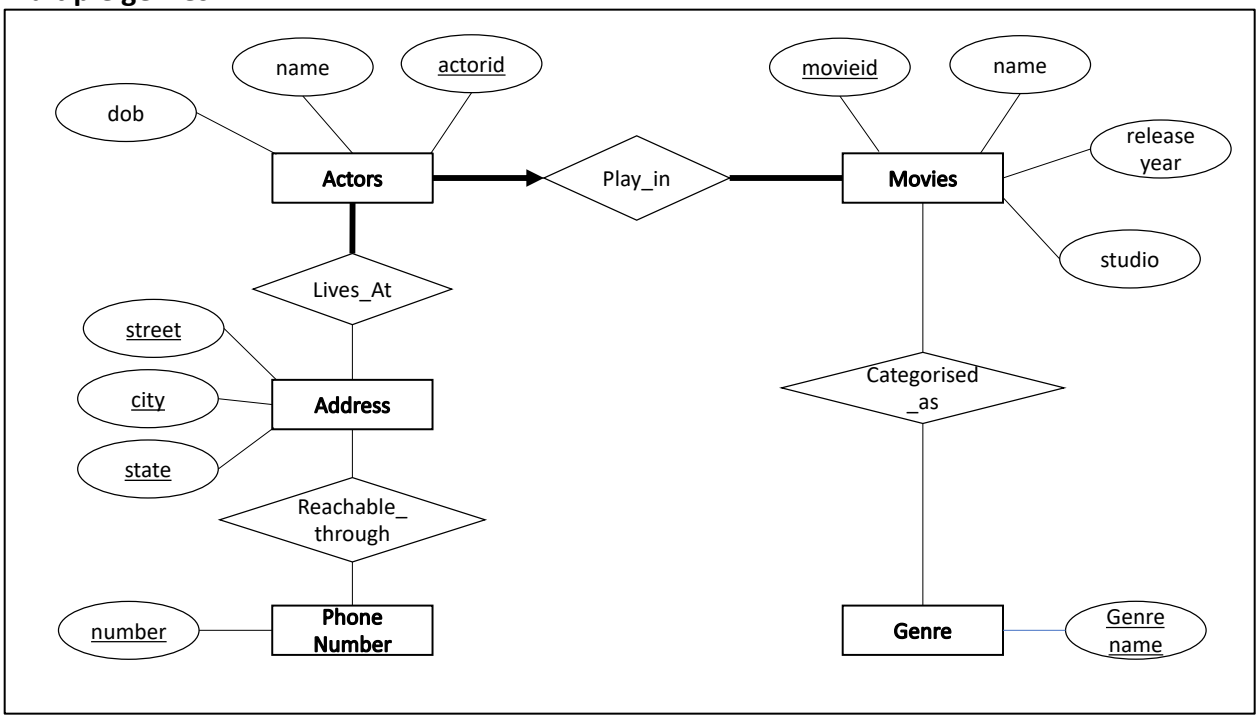
f) Modify the diagram from e) further such that each actor must have at least one address. iii



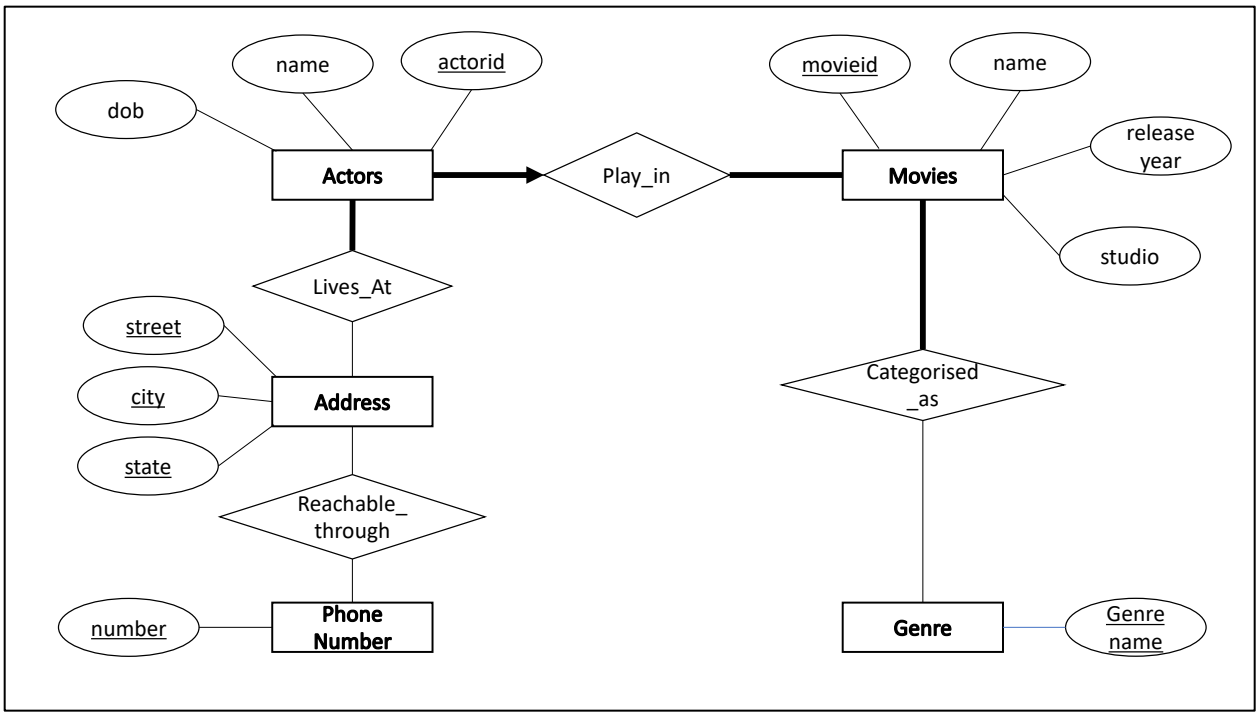
g) [CS630 only] modify the diagram from f) further such that at each address there could be a set of phones.



h) [CS630 only] Modify the diagram from g) further such that each movie can have multiple genres.



i) [CS630 only] Modify the diagram from h) further such that each movie must have at least one genre.

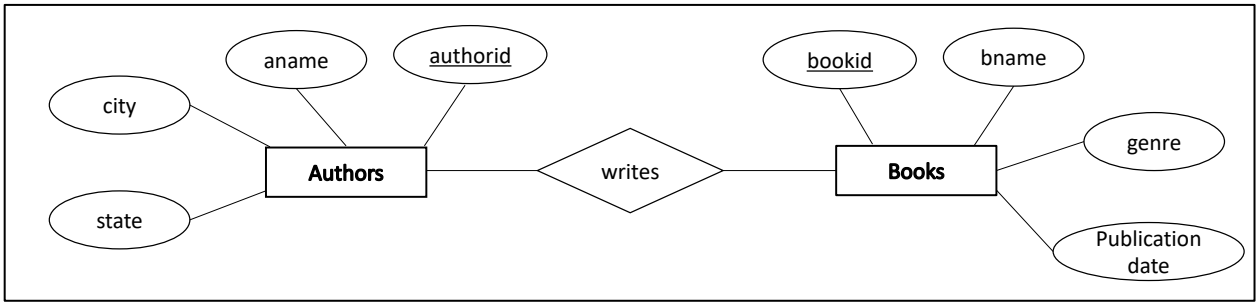


Question 2) (24 points)

Given a database that stores information about Books (identified by bookid) and authors (identified by authorid). A book also has a name, a genre and a publication date. An author also has a name, a city and a state. Authors write Books.

NOTES: the ER diagram should strictly follow the notations used in class. No other notations will receive any points.

a) **(8 points) Draw the ER diagram that describes this database. Do not add any additional constraints.4**



b) **(8 points) Write the database schema for this ER diagram.**
   - Authors (authorid: int, aname: string, city: string, state: string)
   - Books (bookid: int, bname: string, genre: string, publicationdate: date)
   - Writes (authorid: int, bookid: int)

c) **(8 points) Write the CREATE TABLE statements for all tables identified for this database. The create statements have to work when ran against the Oracle database. The create statements have to be written in an order such that if executed in that order will not cause any error.**

```
create table Authors (authorid number (9) primary key,
                      aname varchar (20),
                      city varchar (20),
                      state varchar (20));
create table Books (bookid number (9) primary key,
                    bname varchar (20),
                    genre varchar (20),
                    publicationdate date);
create table Writes (authorid number (9),
                     bookid number (9),
                     primary key (authorid, bookid),
                     foreign key (authorid) references Authors,
                     foreign key (bookid) references Books);
```