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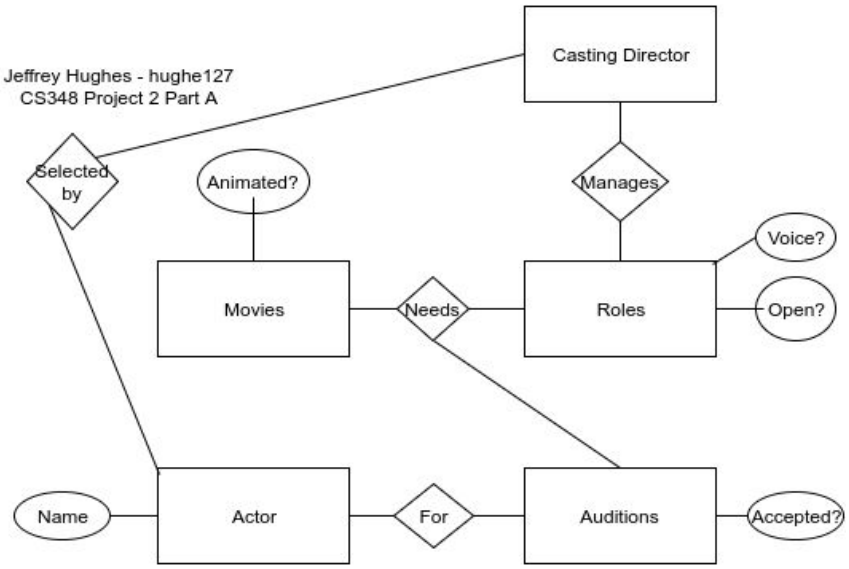
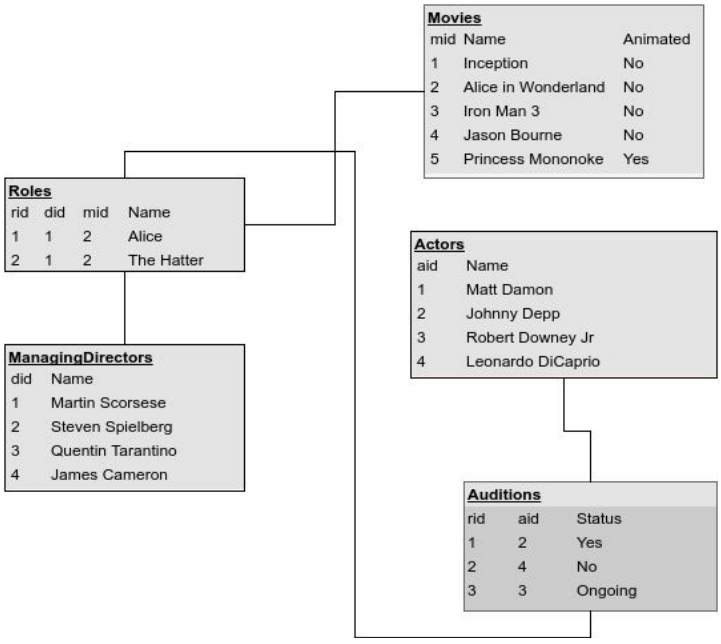
CS 348 Project 2

Part A: Design an E-R diagram for the scenario specified above. Please also indicate the notation you use, e.g., the particular symbols for entities and relationships.



Part B:

1. Convert the E-R model of Part A to its corresponding relational model.



Movies

mid	Name	Animated
1	Inception	No
2	Alice in Wonderland	No
3	Iron Man 3	No
4	Jason Bourne	No
5	Princess Mononoke	Yes

Roles

rid	did	mid	Name
1	1	2	Alice
2	1	2	The Hatter

Actors

aid	Name
1	Matt Damon
2	Johnny Depp
3	Robert Downey Jr
4	Leonardo DiCaprio

ManagingDirectors

did	Name
1	Martin Scorsese
2	Steven Spielberg
3	Quentin Tarantino
4	James Cameron

Auditions

rid	aid	Status
1	2	Yes
2	4	No
3	3	Ongoing

a.

2. For each of the relations in the database,
    a. Specify the functional dependencies that characterize the schema of the relation based on the requirements (A - D) above.

i. There is a dependency between movies and roles, as each role must link back to a movie it is for.
ii. There is a dependency between ManagingDirectors and Roles, as each role must uniquely have a ManagingDirector
iii. There is a dependency between Auditions and Roles, as each Audition must be for a Role.
iv. There is a dependency between Auditions and Actors, so that each Audition can be identified to an Actor performing the audition

b. Determine if the schema is in 3NF with respect to the functional dependencies specified in (a). If not, convert it to be in 3NF. (Source: https://support.microsoft.com/en-us/kb/283878)
    i. For first normalization, we
        1. Eliminate repeating groups in individual tables.
        2. Create a separate table for each set of related data.
        3. Identify each set of related data with a primary key.
    ii. For second normalization, we
        1. Create separate tables for sets of values that apply to multiple records.
        2. Relate these tables with a foreign key.
    iii. For third normalization
        1. Eliminate fields that do not depend on the key.
    iv. We have no repeating groups, separate tables, and related data is with a primary key.
    v. We have separate tables for each set of values, related by keys.
    vi. No fields depend on a key.