Relational Algebra Assignment

CISC/CMPE 332

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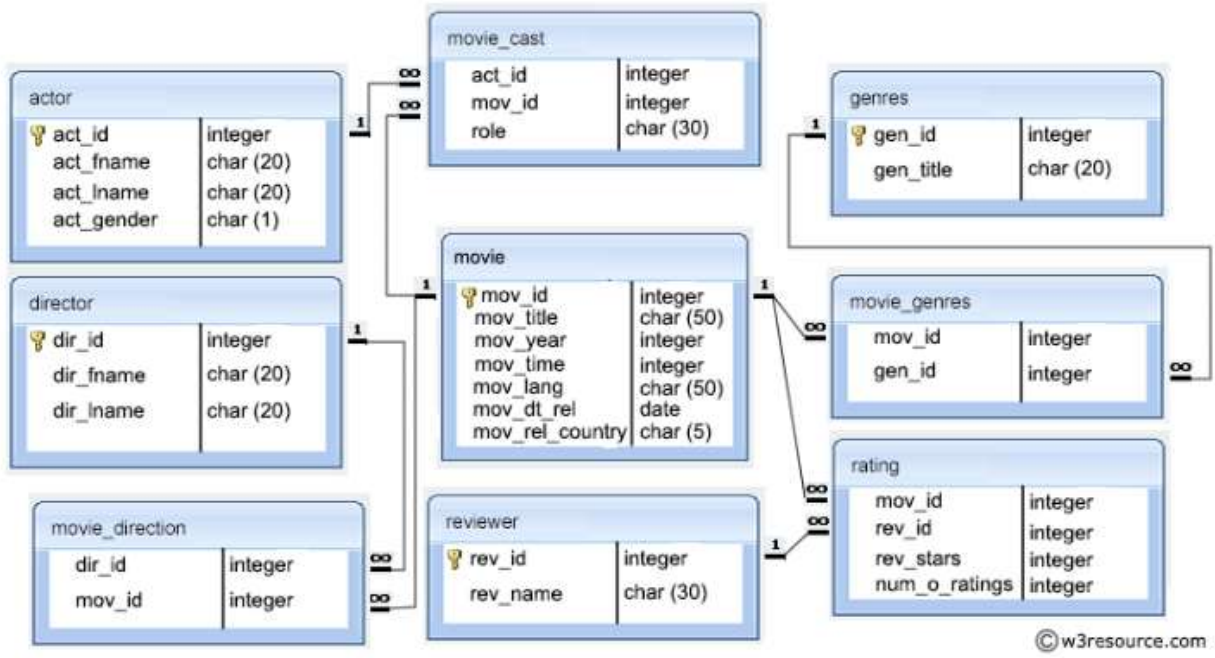

1. List the actors (first and last names) in the movie “Birdbox”

BirdboxID <- $\Pi_{mov_id}(\sigma_{mov_title = \text{“Birdbox”}}(movie))$

ActorID <- $\Pi_{act_id}(\sigma_{mov_id = BirdboxID}(movie_cast))$

Result <- $\Pi_{act_fname,\ act_lname}(\sigma_{act_id = ActorID}(actor))$

2. How many movies have been directed by each director? Your answer should list the director ID and the number of movies directed by that individual.

Result <- $_{dir_id}\ \mathbf{F}\ _{count(mov_id)\ as\ numMovDir}(movie_direction)$

3. For each movie, list the genre title(s) and the movie name.

MovInfo <- movie ⋈ movie_genres

GenID <- $\Pi_{gen_id,\ mov_title}(MovInfo)$

Result <- $\Pi_{gen_id,\ mov_title}(GenID \bowtie genres)$

4. List the names of the movies that were given 4 stars by the reviewer named “Chuck Schmit”

ChuckID <- $\Pi_{rev_id}(\sigma_{rev_name = \text{“Chuck Schmit”}}(reviewer))$

MovList <- $\Pi_{mov_id}(\sigma_{rev_id = ChuckID\ \wedge\ rev_stars = \text{“4”}}(rating))$

Result <- $\Pi_{mov_title}(\sigma_{mov_id = MovList}(movie))$

5. For all the movies produced in 2012, list the movie title, the director(s) and the number of actors in the movie.

MovInfo <- $\Pi_{mov_id,\ mov_title,\ mov_year}$ (movie)

MovDirInfo <- MovInfo ⋈ movie_direction

MovDirFullInfo <- MovDirInfo ⋈ director

Result <- $_{MovDirFullInfo}$ **F** $_{count(actor_id)\ as\ numAct}$ (movie_cast)

6. For all English language movies, list the number of ratings for the movie. Your answer should include any movies that have no ratings. (Please note that this is not referring to the use of the num_o_ratings attribute – please ignore this attribute in the schema above).

EngMov <- Π_{mov_id} ($\sigma_{mov_lang = \text{“English”}}$ (movie))

Result <- $_{EngMov}$ F $_{count(rev_id)\ as\ num_ratings}$ (rating)

7. List the movie name and the average rating (number of stars) for all movies that have exactly 2 or 4 actors in them.

MovInfo <- $\Pi_{mov_id,\ mov_title}$ (movies)

ActCount <- $_{MovInfo}$ **F** $_{count(act_id)\ as\ num_actors}$ (movie_count)

EligibleMov <- $\sigma_{num_actors = \text{“2”}\ or\ num_actors = \text{“4”}}$ (ActCount)

Temp <- $_{EligibleMov}$ **F** $_{avg(rev_stars)\ as\ avg_rating}$ (rating)

Result <- $\Pi_{mov_title,\ avg_rating}$ (Temp)

8. List the movies (movie title) which Selena Gomez appeared in but that are not directed by Woody Allen.

SGID <- Π_{act_id} ($\sigma_{act_fname = \text{“Selena”}\ \wedge\ act_lname = \text{“Gomez”}}$ (actor))

SGMovID <- Π_{mov_id} ($\sigma_{act_id = SGID}$ (movie_cast))

WAID <- Π_{dir_id} ($\sigma_{dir_fname = \text{“Woody”}\ \wedge\ dir_lname = \text{“Allen”}}$ (director))

NotWA <- Π_{mov_id} ($\sigma_{not\ dir_id = WAID}$ (movie_direction))

Result <- Π_{mov_title} ($\sigma_{mov_id = SGMovID\ \wedge\ mov_id = NotWA}$ (movie))

9. For all movies with the genre “Thriller”, list the movie title, the average rating and the number of actors in the movie.

ThrillerID <- Π_{gen_id} ($\sigma_{gen_title = \text{“Thriller”}}$ (genres))

MovID <- Π_{mov_id} ($\sigma_{gen_id = ThrillerID}$ (movie_genres))

MovInfo <- $\Pi_{mov_id,\ mov_title}$ ($\sigma_{mov_id = MovID}$ (movie))

Temp <- $_{MovInfo}$ **F** $_{count(act_id)\ as\ num_actors}$ (movie_cast)

Temp2 <- $_{\text{Temp}}$ **F** $_{\text{avg(rev_stars) as avg_rating}}$ (rating)

Result <- $\Pi_{\text{mov_title, avg_rating, num_actors}}$ (Temp2)

10. List the title of the movie(s) with the largest number of ratings (do not use num_o_ratings).

RevCount <- $_{\text{mov_id}}$ **F** $_{\text{count(rev_id) as num_rev}}$ (rating)

HighestNumRev <- **F** $_{\text{max(num_rev)}}$ (RevCount)

EligibleMov <- $\Pi_{\text{mov_id}}$ ($\sigma_{\text{num_rev = HighestNumRev}}$ (RevCount))

Result <- $\Pi_{\text{mov_title}}$ ($\sigma_{\text{mov_id = EligibleMov}}$ (movie))