Taller 3

a) Mostrar los actores cuyo nombre sea Brad.

```
BRAD = σ(first_name = 'Brad') (actors)
BRAD
```

actors.id	actors.first_name	actors.last_name	actors.gender
24973	'Brad'	'Baldridge'	'M'
127712	'Brad'	'Dourif'	'M'
376249	'Brad'	'Pitt'	'M'

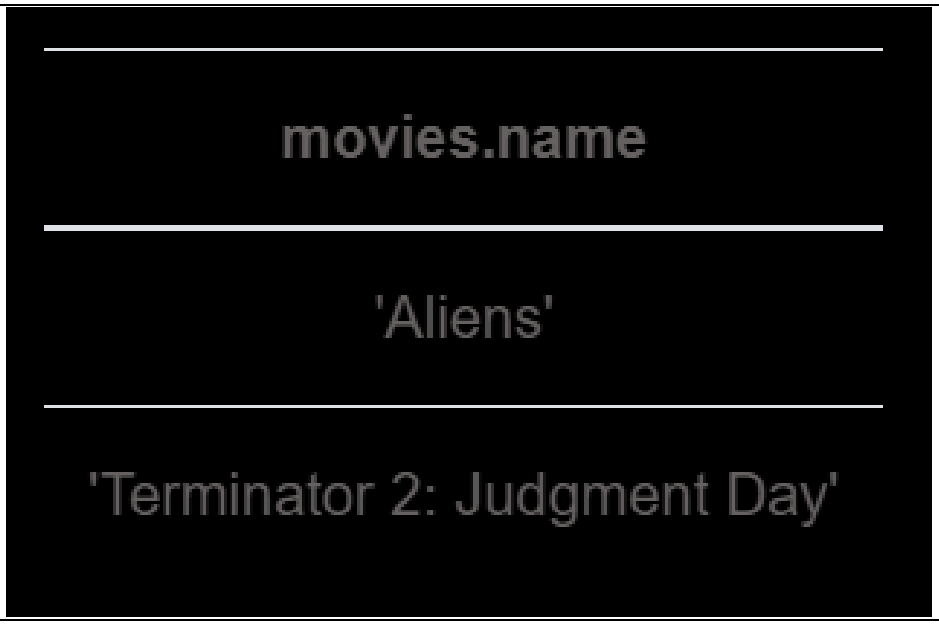
b) Mostrar el nombre y apellido de directores catalogados como de 'Sci-Fi' (ciencia ficción) con una probabilidad mayor igual a 0.5.

```
DIRECTORS_ID = π directors_genres.director_id (σ (directors_genres.genre = 'Sci-Fi' ∧ directors_genres.prob >= 0.5) (directors_genres))

DIRECTORS_NAMES = π directors.first_name, directors.last_name (DIRECTORS_ID ⋈ (directors_genres.director_id = directors.id) directors)

DIRECTORS_NAMES
```

directors.first_name	directors.last_name
'James (I)'	'Cameron'
'Richard (II)'	'Kelly'

c) Mostrar los nombres de las películas filmadas por James(I) Cameron que figuren en la base.

```
CAMERON = σ (directors.first_name='James (I)' ∧
directors.last_name='Cameron') (directors)

ID_CAMERON = π directors.id (CAMERON)

ID_MOVIES_CAMERON = π movies_directors.movie_id (ID_CAMERON ⋈
(directors.id = movies_directors.director_id) movies_directors)

NAME_MOVIES_CAMERON = π movies.name (ID_MOVIES_CAMERON ⋈
(movies_directors.movie_id = movies.id) movies)

NAME_MOVIES_CAMERON
```



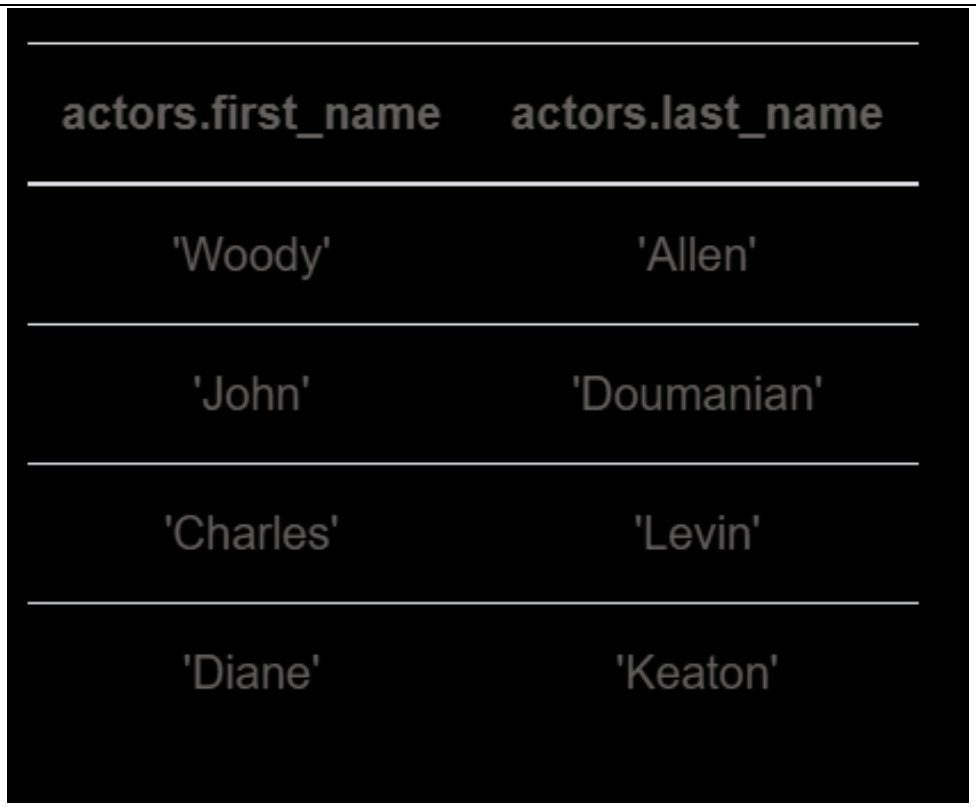
d) Mostrar los nombres y apellidos de las actrices que trabajaron en la película ’Judgment at Nuremberg’.

```
MOVIE = σ (movies.name = 'Judgment at Nuremberg') (movies)

ID_MOVIE = π movies.id (MOVIE)

ID_ACTORS = π actor_id (ID_MOVIE ⋈ (movies.id=roles.movie_id) roles)

WOMAN_ACTORS = σ (gender = 'F') (actors)

NAME_ACTORS = π first_name, last_name (ID_ACTORS ⋈ (roles.actor_id =
actors.id) WOMAN_ACTORS)

NAME_ACTORS
```

actors.first_name	actors.last_name
'Sheila'	'Bromley'
'Virginia'	'Christine'
'Marlene'	'Dietrich'
'Olga'	'Fabian'
'Bess'	'Flowers'
'Judy (I)'	'Garland'
'Jana'	'Taylor'

e) Muestre los actores que trabajaron en todas las películas de Woody Allen de la base. ¿Cuántas películas de este director hay en la base?.

```
ALLEN = σ (first_name = 'Woody' ∧ last_name = 'Allen') (directors)

ID_ALLEN = π directors.id (ALLEN)

ID_MOVIES = π movies_directors.movie_id (ID_ALLEN ⋈ (directors.id =
movies_directors.director_id) movies_directors)

ID_ACTORS = π roles.actor_id, movies_directors.movie_id (ID_MOVIES ⋈
(movies_directors.movie_id = roles.movie_id) roles)

ID_ACTORS_ALL_MOVIES = ID_ACTORS ÷ ID_MOVIES

NAME_ACTORS = π actors.first_name, actors.last_name
(ID_ACTORS_ALL_MOVIES ⋈ (roles.actor_id = actors.id) actors)

NAME_ACTORS
```



actors.first_name	actors.last_name
'Woody'	'Allen'
'John'	'Doumanian'
'Charles'	'Levin'
'Diane'	'Keaton'

f) Directores que abarcaron, al menos, los mismos géneros que Welles (géneros en directores).

WELLES = σ (last_name = 'Welles') (directors)

ID_WELLES = π directors.id (WELLES)

GENRES_WELLES = π genre (ID_WELLES ⋈ (directors.id = directors_genres.director_id) directors_genres)

ID_DIRECTORS_GENRES = π directors_genres.director_id, directors_genres.genre (directors_genres)

ID_DIRECTORS_SAME_GENRES = ID_DIRECTORS_GENRES ÷ GENRES_WELLES

NAME_DIRECTORS = π directors.first_name, directors.last_name (ID_DIRECTORS_SAME_GENRES ⋈ (directors_genres.director_id = directors.id) directors)

NAME_DIRECTORS

directors.first_name	directors.last_name
'George'	'Cukor'
'Stanley'	'Kubrick'
'Alfred (I)'	'Hitchcock'
'Orson'	'Welles'
'Billy'	'Wilder'
'Fred'	'Zinnemann'

g) Actores que filmaron más de una pelicula en algún año a partir de 1999.

MOVIES = σ (year >= 1999) (movies)

MOVIES_ID = π movies.id, movies.year (MOVIES)

ACTORS_MOVIES_IDS = π roles.actor_id, movies.year, roles.movie_id (MOVIES_ID ⋈ (movies.id = roles.movie_id) roles)

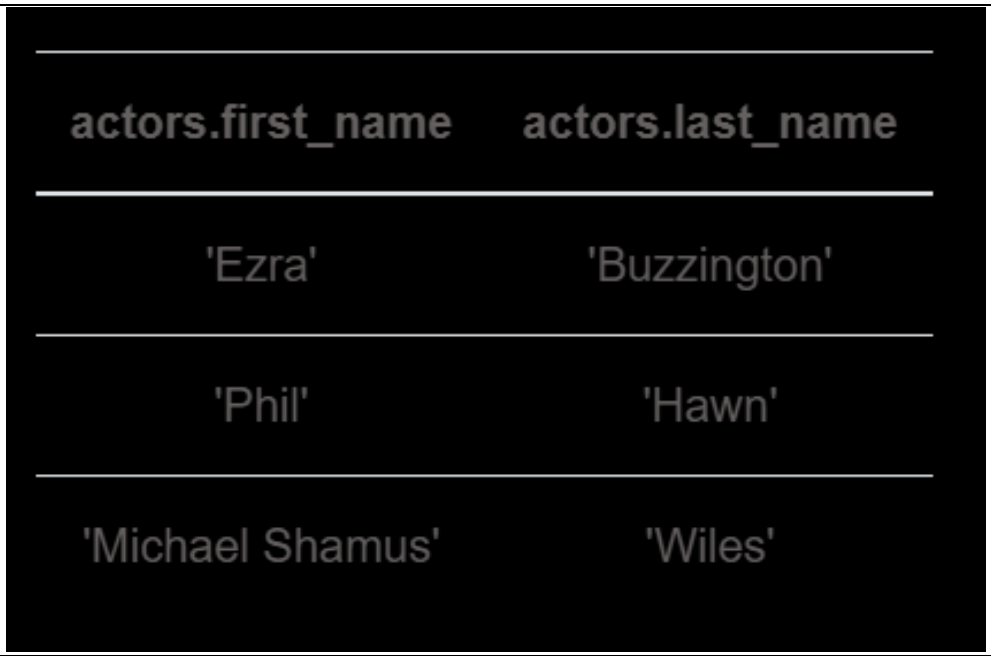
ACTORS_MOVIES_IDS1 = ρ p1(ACTORS_MOVIES_IDS)
ACTORS_MOVIES_IDS2 = ρ p2(ACTORS_MOVIES_IDS)

ACTORS_MOVIES_IDS12 = π p1.actor_id, p1.year, p1.movie_id (ACTORS_MOVIES_IDS1 ⋈ (p1.actor_id = p2.actor_id ∧ p1.year = p2.year ∧ p1.movie_id ≠ p2.movie_id) ACTORS_MOVIES_IDS2)

ACTORS_IDS = π p1.actor_id (ACTORS_MOVIES_IDS12)

ACTORS_NAMES = π actors.first_name, actors.last_name (ACTORS_IDS ⋈ (p1.actor_id = actors.id) actors)

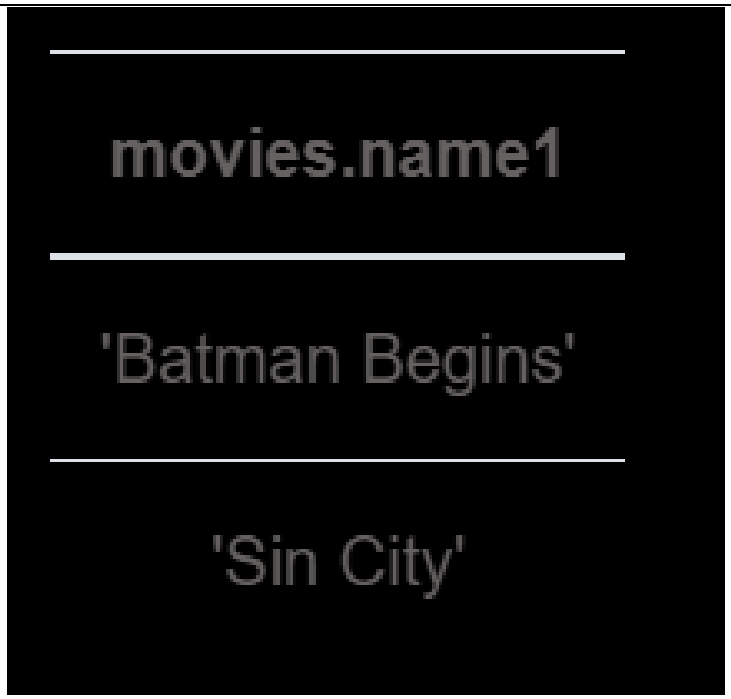
ACTORS_NAMES



actors.first_name	actors.last_name
'Ezra'	'Buzzington'
'Phil'	'Hawn'
'Michael Shamus'	'Wiles'

h) Listar las películas del último año.

```
MOVIES = π id, name, year (movies)

MOVIES1 = ρ p1(MOVIES)
MOVIES2 = ρ p2(MOVIES)

MOVIES12 = π p1.id, p1.name, p1.year (MOVIES1 ⋈ (p1.year < p2.year) MOVIES2)

MOVIES_LAST_YEAR = π p1.name (MOVIES1 - MOVIES12)

MOVIES_LAST_YEAR
```



i) Películas del director Spielberg en las que actuó Harrison (I) Ford.

SPIELBERG_ID = π directors.id (σ (directors.last_name = 'Spielberg') (directors))

MOVIES_SPIELBERG_ID = π movies_directors.movie_id ((SPIELBERG_ID ⋈ (directors.id = movies_directors.director_id) movies_directors))

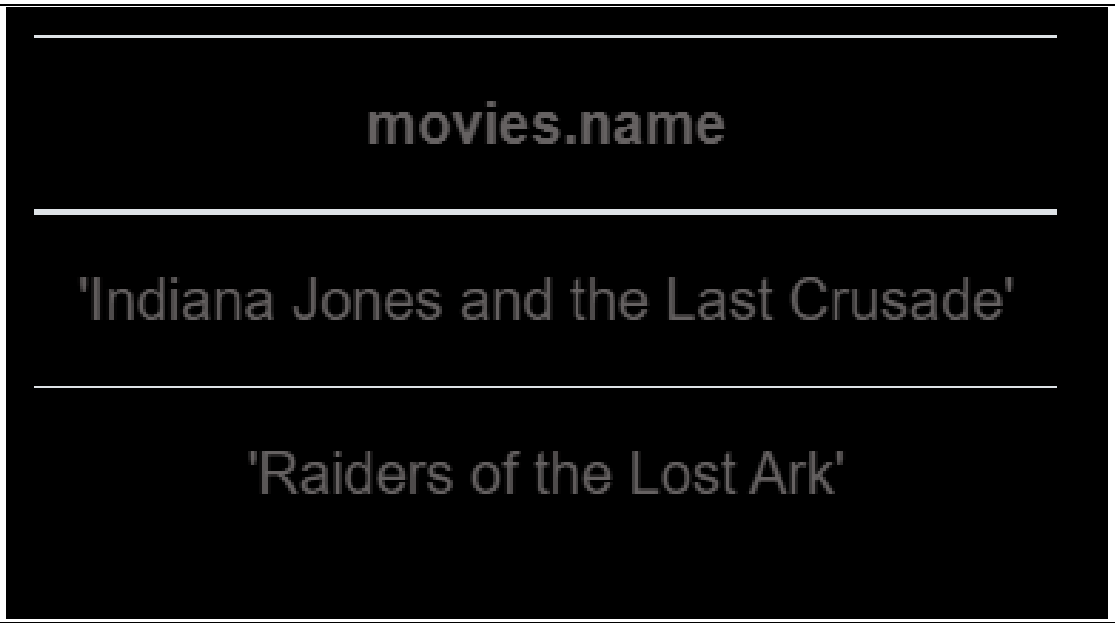
HARRISON_ID = π actors.id (σ (actors.first_name = 'Harrison (I)' ∧ actors.last_name = 'Ford') (actors))

MOVIES_HARRISON_ID = π roles.movie_id ((HARRISON_ID ⋈ (actors.id = roles.actor_id) roles))

MOVIES_SPIELBERG_HARRISON_ID = π movies_directors.movie_id (MOVIES_HARRISON_ID ⋈ (movies_directors.movie_id = roles.movie_id) MOVIES_SPIELBERG_ID)

MOVIES_SPIELBERG_HARRISON_NAMES = π movies.name (MOVIES_SPIELBERG_HARRISON_ID ⋈ (movies_directors.movie_id = movies.id) movies)

MOVIES_SPIELBERG_HARRISON_NAMES



j) Películas del director Spielberg en las que no actuó Harrison (I) Ford.

SPIELBERG_ID = π directors.id (σ (directors.last_name = 'Spielberg') (directors))

MOVIES_SPIELBERG_ID = π movies_directors.movie_id ((SPIELBERG_ID ⋈ (directors.id = movies_directors.director_id) movies_directors))

HARRISON_ID = π actors.id (σ (actors.first_name = 'Harrison (I)' ∧ actors.last_name = 'Ford') (actors))

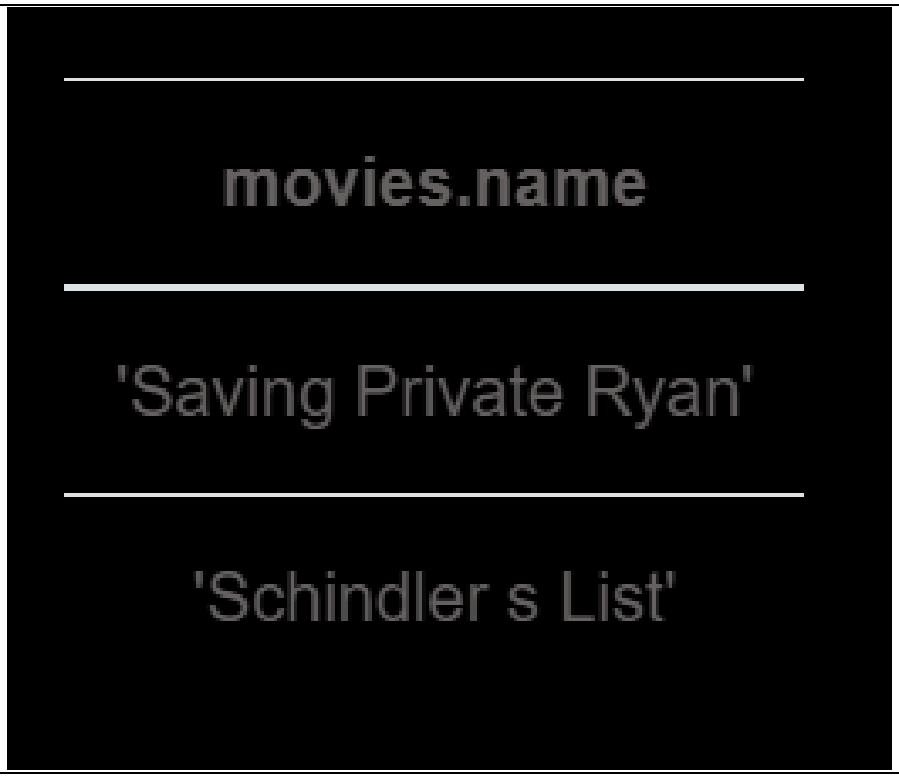
MOVIES_HARRISON_ID = π roles.movie_id ((HARRISON_ID ⋈ (actors.id = roles.actor_id) roles))

MOVIES_SPIELBERG_HARRISON_ID = π movies_directors.movie_id (MOVIES_HARRISON_ID ⋈ (movies_directors.movie_id = roles.movie_id) MOVIES_SPIELBERG_ID)

MOVIES_SPIELBERG_WHITOUT_HARRISON_ID = MOVIES_SPIELBERG_ID - MOVIES_SPIELBERG_HARRISON_ID

MOVIES_SPIELBERG_WHITOUT_HARRISON_NAMES = π movies.name (MOVIES_SPIELBERG_WHITOUT_HARRISON_ID ⋈ (movies_directors.movie_id = movies.id) movies)

MOVIES_SPIELBERG_WHITOUT_HARRISON_NAMES



k) Películas en las que actuó Harrison (I) Ford que no dirigió Spielberg.

SPIELBERG_ID = π directors.id (σ (directors.last_name = 'Spielberg') (directors))

MOVIES_SPIELBERG_ID = π movies_directors.movie_id ((SPIELBERG_ID ⋈ (directors.id = movies_directors.director_id) movies_directors))

HARRISON_ID = π actors.id (σ (actors.first_name = 'Harrison (I)' ∧ actors.last_name = 'Ford') (actors))

MOVIES_HARRISON_ID = π roles.movie_id ((HARRISON_ID ⋈ (actors.id = roles.actor_id) roles))

MOVIES_HARRISON_WITHOUT_SPIELBERG_ID = MOVIES_HARRISON_ID - MOVIES_SPIELBERG_ID

MOVIES_HARRISON_WITHOUT_SPIELBERG_NAMES = π movies.name (MOVIES_HARRISON_WITHOUT_SPIELBERG_ID ⋈ (roles.movie_id = movies.id) movies)

MOVIES_HARRISON_WITHOUT_SPIELBERG_NAMES

l) Directores que filmaron películas de más de tres géneros distintos, uno de los cuales sea ’Film-Noir’.

```
DIRECTORS_MOVIES_IDS = π directors.id, movies_directors.movie_id (directors ⋈ (directors.id = movies_directors.director_id) movies_directors)

DIRECTORS_GENRES_IDS = π directors.id, movies_genres.genre (DIRECTORS_MOVIES_IDS ⋈ (movies_directors.movie_id = movies_genres.movie_id) movies_genres)

DGI1 = ρ p1 (σ (movies_genres.genre = 'Film-Noir') (DIRECTORS_GENRES_IDS))
DGI2 = ρ p2 (DIRECTORS_GENRES_IDS)
DGI3 = ρ p3 (DIRECTORS_GENRES_IDS)

DGI_TWO_GENRES = DGI1 ⋈ (p1.id = p2.id) DGI2

DGI_THREE_GENRES = DGI_TWO_GENRES ⋈ (p2.id=p3.id) DGI3

DGI_UNIQUE_THREE_GENRES = σ (p1.genre ≠ p2.genre ∧ p2.genre ≠ p3.genre ∧ p1.genre ≠ p3.genre) (DGI_THREE_GENRES)

DIRECTORS_NAMES = π directors.first_name,directors.last_name (DGI_UNIQUE_THREE_GENRES ⋈ (p1.id=directors.id) directors)

DIRECTORS_NAMES
```

directors.first_name	directors.last_name
'Alfred (I)'	'Hitchcock'
'Billy'	'Wilder'