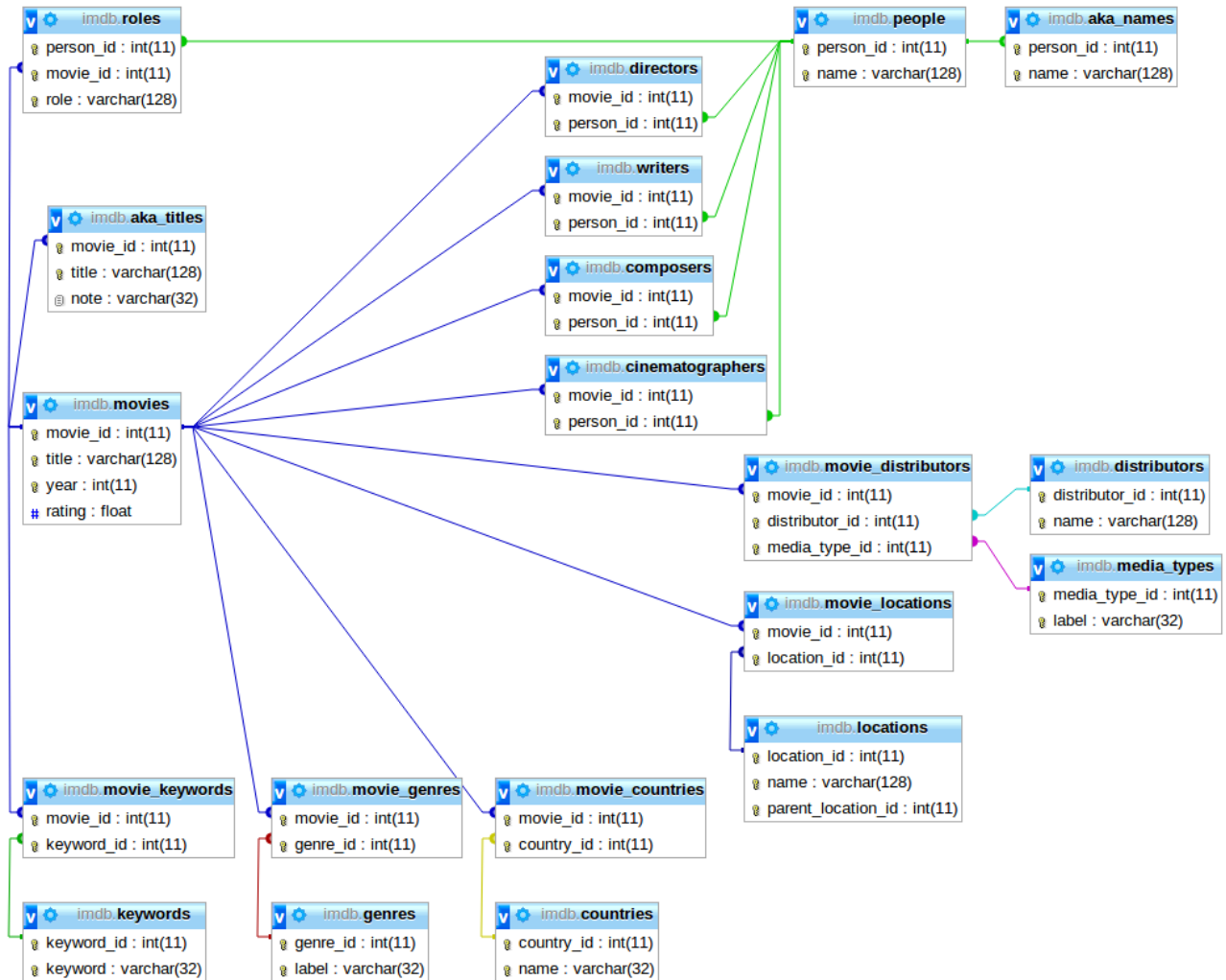


# Relational Algebra: Inner Joins, Self Joins

## Database Schema



## Problems

1. Find the id's of movies that have been distributed by "Universal Pictures".
2. Find the name of the companies that distributed movies released in 2006.
3. Find all pairs of movie titles released in the same year, after 2010.
4. Find the names and movie titles of directors that also acted in their movies.

Answers:

1.

```

      π md.movie_id
      |
      σ d.name="Universal Pictures"
      |
      ⋈
      md.distributor_id = d.distributor_id
      /      \
movie_distributors md      distributors d

```

```

SELECT md.movie_id
FROM movie_distributors md
INNER JOIN distributors d ON md.distributor_id = d.distributor_id
WHERE d.name = "Universal Pictures";

```

```

+-----+
| movie_id |
+-----+
|      8  |
|     29  |
|     46  |
|     47  |
|     63  |
|     93  |
|    121  |
|    122  |
|    125  |
|    132  |
|    138  |
|    171  |
|    173  |
|    189  |
|    212  |
|    216  |
|    220  |
|    229  |
|    234  |
+-----+

```

2.

```

      π d.name
      |
      σ m.year = 2006
      |
      ⋈
      md.movie_id = m.movie_id
      /          \
      ⋈
      md.distributor_id = d.distributor_id      movies m
      /          \
      movie_distributors md      distributors d
```

```
SELECT d.name
FROM movie_distributors md
INNER JOIN distributors d ON md.distributor_id = d.distributor_id
INNER JOIN movies m ON m.movie_id = md.movie_id
WHERE m.year = 2006;
```

name
Sony Pictures Classics
Sony Pictures Home Entertainment
New Line Home Video
Picturehouse Entertainment
Warner Home Video
Warner Bros. Pictures
FX Network
ION Television
Warner Bros. Home Entertainment Group
Buena Vista Pictures
Newmarket Films
Buena Vista Home Entertainment

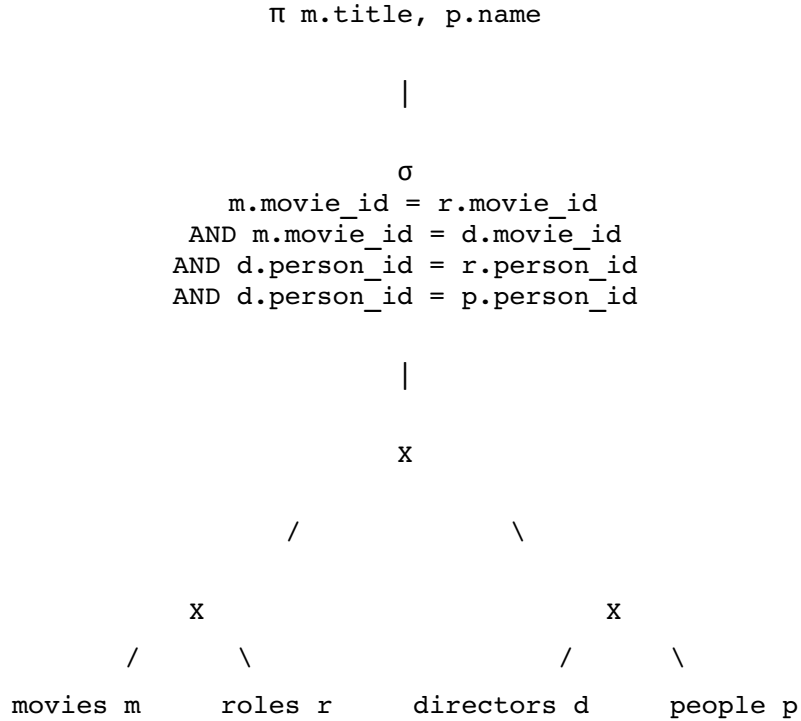
3.

```
π m1.title, m2.title
|
σ m1.movie_id < m2.movie_id
|
⋈
m1.year = m2.year
/ \
movies m1    movies m2
```

```
SELECT m1.title, m2.title
FROM movies m1
INNER JOIN movies m2 ON m1.year = m2.year
WHERE m1.movie_id < m2.movie_id
AND m1.year > 2010;
```

title	title
Intouchables	Jodaeiye Nader az Simin
The Dark Knight Rises	The Avengers
Intouchables	Warrior
Jodaeiye Nader az Simin	Warrior
Intouchables	The Artist
Jodaeiye Nader az Simin	The Artist
Warrior	The Artist
The Avengers	Argo
The Dark Knight Rises	Argo
Intouchables	Harry Potter and the Deathly Hallows: Part 2
Jodaeiye Nader az Simin	Harry Potter and the Deathly Hallows: Part 2
The Artist	Harry Potter and the Deathly Hallows: Part 2
Warrior	Harry Potter and the Deathly Hallows: Part 2

4.



```
SELECT m.title, p.name
FROM movies m, roles r, directors d, people p
WHERE m.movie_id = r.movie_id
AND m.movie_id = d.movie_id
AND d.person_id = r.person_id
AND d.person_id = p.person_id;
```

title	name
A Beautiful Mind	Howard, Ron (I)
Annie Hall	Allen, Woody
Apocalypse Now	Coppola, Francis Ford
Argo	Affleck, Ben
Argo	McBride, David (VI)
Beauty and the Beast	Newall, Guy
Beauty and the Beast	Thomas, Paul (I)
Blade Runner	Kucan, Joseph D.
Bom yeoreum gaeul gyeoul geurigo bom	Kim, Ki-duk (II)
Braveheart	Gibson, Mel (I)
Bronenosets Potyomkin	Eisenstein, Sergei M.
Chinatown	Polanski, Roman
Citizen Kane	Welles, Orson
City Lights	Chaplin, Charles
City Lights	Purcell, Kingslee
Dial M for Murder	Hitchcock, Alfred (I)
Full Metal Jacket	Kubrick, Stanley (I)
Gran Torino	Eastwood, Clint
Groundhog Day	Ramis, Harold
Harvey	Giles, Drew
.....	.....