

1-

$A = \pi \text{ first\_name, last\_name actors}$

$B = \pi \text{ first\_name, last\_name directors}$

$C = A \cap B$

$\pi \text{ first\_name, last\_name } C$

2-

$A = \pi \text{ first\_name, last\_name actors}$

$B = \pi \text{ first\_name, last\_name directors}$

$C = A - B$

$\pi \text{ first\_name, last\_name } C$

3-

$A = \pi \text{ first\_name, last\_name actors}$

$B = \pi \text{ first\_name, last\_name directors}$

$C = A \cup B$

$\pi \text{ first\_name, last\_name } C$

4-

$\text{TodosFilmes} = \pi \text{ name, id (movies)}$

$\text{FilmesComDiretores} = \pi \text{ id (movies} \bowtie \text{movies.id = movies\_directors.movie\_id movies\_directors)}$

$\text{FilmesSemDiretores} = \pi \text{ id TodosFilmes} - \text{FilmesComDiretores}$

$\pi \text{ name (FilmesSemDiretores} \bowtie \text{movies)}$

5-

$\text{NumFilmes} = \gamma \text{ actor\_id; count(movie\_id)} \rightarrow \text{num\_filmes(roles)}$

$\text{AtoresMenosDeDoisFilmes} = \sigma \text{ num\_filmes} < 2 (\text{NumFilmes})$

$\pi \text{ first\_name, last\_name (AtoresMenosDeDoisFilmes} \bowtie \text{actors)}$

6-  $\text{NumAtores} = \gamma \text{ movie\_id; count(actor\_id)} \rightarrow \text{num\_atores(roles)}$

$\text{MenosDoisAtores} = \sigma \text{ num\_atores} < 2 (\text{NumAtores})$

$\text{GenerosAno} = \text{MenosDoisAtores} \bowtie \text{movies} \bowtie \text{movies\_genres}$

$\gamma \text{ genre, year; avg(num\_atores)} \rightarrow \text{media\_filmes (GenerosAno)}$