



RELATIONAL ALGEBRA

Section A

Discussion Session 4

RELATIONAL ALGEBRA OPERATORS

- Selection $\sigma_{f(x)}(\cdot)$
- Projection $\pi_{i,j,\dots}(\cdot)$
- Union $R \cup S$
- Intersection $R \cap S$
- Difference $R - S$
- Cross-product $R \times S$
- Renaming $\rho(R(f), Exp)$
- Condition join $R \bowtie_{c(r,s)} S$
- Equijoin $R \bowtie_{eq(r,s)} S$
- Natural join $R \bowtie S$
- Division R/S

RELATIONAL ALGEBRA PRACTICE EXERCISES ON THE MOVIE DB

- Consider the following DB relational schema, according to our previous session's **movie-production** example:

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Movie( mid, title, director, year, rating, country )  
Finances( mid, cname, amount )  
Company( cname, ceo, country )
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Note: Solutions are provided separately

Movie(mid, title, director, year, rating, country)
Finances(mid, cname, amount)
Company(cname, ceo, country)

1. List all production companies whose CEO is “Lois Griffin”.
2. Find the directors of movies that were filmed in Japan in 1986.
3. Find the titles of the financed movies that were filmed in the same country as the country of any of their producing companies.
4. List the title and year of all of our independent movies (i.e. those movies that were not produced by any company).



Movie(mid, title, director, year, rating, country)

Finances(mid, cname, amount)

Company(cname, ceo, country)

5. Find the titles of the Canadian movies financed by all of the production companies.
6. Find the highest rating of any movie in the DB.
7. List the directors of the movie(s) with the worse rating ever.
8. Find the names of the companies who have financed movies from either Japan or China.
9. Find the movie(s) that have received the largest investment from any production company.