**Relational Algebra 2**

**Class Exercises**

Books Database

Authors (authorID, firstName, lastName, city, state)

Books (ISBN, ***authorID***, title, copyright, price, ***publisherID***)

Publishers (PID, pName, city)

Relational algebraic symbols: σ, π, ρ, γ, **δ,** ⋈, 🡨, ∩, **∪**

2.1 Natural join. First name and last name of author, and Book title for all books with a price < 10

π firstName,LastName, title (σ price<10 (Authors ⋈ Books)

2.2 Book title and publisher name with copyright before 1950. Cannot do a natural join. Why? Do a theta join instead.

Π title, pName (σ copyright < 1950 (Books ⋈ Books.publisherID = Publishers.PID Publishers))

2.3 List copyright years without duplicates and rename resulting relation BookCopyrightYears.

Ρ BookCopyrightYears (σ **δ copyright (Books))**

Correct -> ρBookCopyrightYearsδ(πcopyright(Books))

2.4 what is the maximum book price

Y max(price) (Books)

2.5 for each copyright year, list the number of books for that year

correct -> γcopyright, count(\*)(Books)

2.6 Author first and last name and the publisher of their books.

Π firstName, lastName, pName Author ⋈ (Books ⋈ Books.publisherID = Publishers.PID Publishers))