

Lesson 6: Principles of Data Manipulation and Management

Lesson 7: Relational Algebra

Lesson 8: SQL for Data Science

Lesson 9: Key Principles of Relational Databases

▶ **Video:** Optimization: Physical Query Plans
5 min

▶ **Video:** Optimization: Choosing Physical Plans
4 min

▶ **Video:** Declarative Languages
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▶ **Video:** Declarative Languages: More Examples
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Assignment 2: SQL



Declarative Languages

UNIVERSITY of WASHINGTON

Equivalent logical expressions; different costs

$$\sigma_{p=\text{knows}}(R) \bowtie_{o=s} (\sigma_{p=\text{holdsAccount}}(R) \bowtie_{o=s} \sigma_{p=\text{accountHomepage}}(R))$$

right associative

$$(\sigma_{p=\text{knows}}(R) \bowtie_{o=s} \sigma_{p=\text{holdsAccount}}(R)) \bowtie_{o=s} \sigma_{p=\text{accountHomepage}}(R)$$

left associative

$$\sigma_{p1=\text{knows} \ \& \ p2=\text{holdsAccount} \ \& \ p3=\text{accountHomepage}}(R \times R \times R)$$

cross product

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0:04 / 5:24



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0:00

[MUSIC] Okay, last time we talked about algebraic optimization. And I argued that all three of these expressions, without going into a lot of detail. But I argued that all three of these were equivalent and they differed only in the order in which things were evaluated. Here you evaluate this join first and this join second. And in this expression you evaluate this join first and this join second, and here you sort of find all possible combinations of tuples and then filter that.

0:32

So if you don't understand exactly what's going on in these expressions that's okay, you're not going to know that yet. We'll talk about it, in fact, in this segment I think, but the takeaway here is

