

Lesson 6: Principles of Data Manipulation and Management

Lesson 7: Relational Algebra

✓ **Video:** Algebraic Optimization Overview
6 min

✓ **Video:** Relational Algebra Overview
4 min

✓ **Video:** Relational Algebra Operators: Union, Difference, Selection
6 min

✓ **Video:** Relational Algebra Operators: Projection, Cross Product
4 min

✓ **Video:** Relational Algebra Operators: Cross Product cont'd, Join
6 min

✓ **Video:** Relational Algebra Operators: Outer Join
4 min

▶ **Video:** Relational Algebra Operators: Theta-Join
4 min

Lesson 8: SQL for Data Science

Lesson 9: Key Principles of Relational Databases

Assignment 2: SQL

Relational Algebra Operators: Projection, Cross Product

Projection

- Eliminates columns

$$\Pi_{A_1, \dots, A_n}(R)$$

- Example: project social-security number and names:
 - P SSN, Name (Employee)
 - Answer(SSN, Name)

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English ▾

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0:00 [MUSIC] A project operator eliminates columns, and this is another one where you have to be sort of careful about set versus bag. So when you see a projection in the set semantics, you're going to remove all columns that aren't explicitly listed.

0:19 But you're also gonna remove all duplicates that might remain, okay?

0:24 So, if I project away all columns except for the last name, then you might think I get Bob Smith and John Smith and I get rid of first name, I'm left with two tuples or one tuple? Well in set semantics, everything must be a set, and so duplicates get removed automatically. In bag