

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

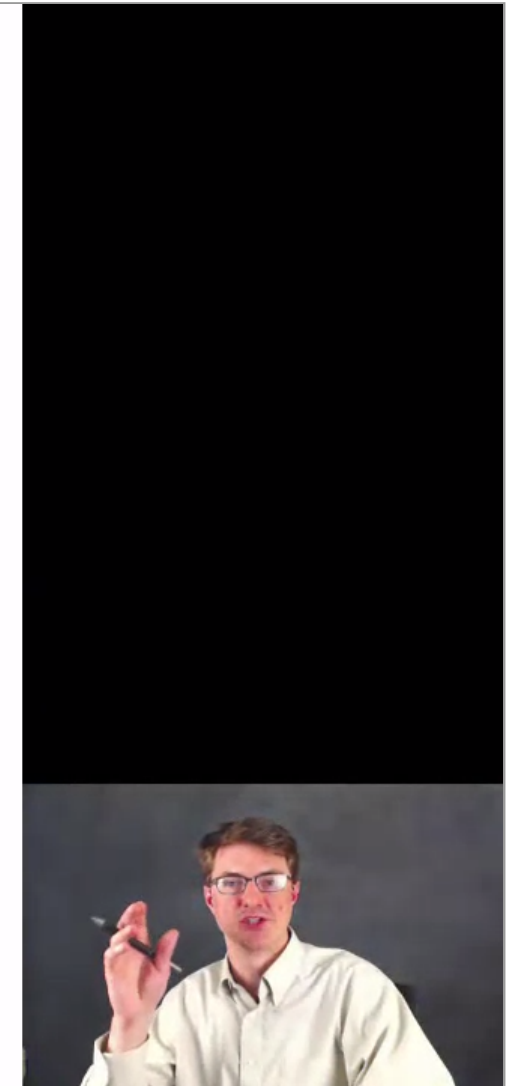
Lesson 9: Key Principles of Relational Databases

Assignment 2: SQL

Relational Algebra Operators: Union, Difference, Selection

Sets v.s. Bags

- Sets: {a,b,c}, {a,d,e,f}, { }, . . .
- Bags: {a, a, b, c}, {b, b, b, b, b}, . . .
- Relational Algebra has two semantics:
- Set semantics = standard Relational Algebra
- Bag semantics = extended Relational Algebra
- Rule of thumb:
 - Every paper will assume set semantics
 - Every implementation will assume bag semantics



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English



Help Us Translate

0:00 [MUSIC] So this notion of sets versus bags, the duplicate question.

0:08 So, first of all, what is a set? A set is a collection of objects where there are no duplicates and a bag is a collection of objects where there can be duplicates and so, right up here.

0:21 A is not repeated at all in a set, but it may be repeated in a bag. And whether that's legal or illegal is what gives you the semantics of a set versus bag. You can define a relational algebra in terms of these two different semantics. You can define it in terms of set, or you can define it in terms of Bag, and this notion of an extended relational algebra comes from the need to sort of work with