

Lesson 6: Principles of Data Manipulation and Management

Lesson 7: Relational Algebra

Lesson 8: SQL for Data Science

▶ **Video:** From SQL to RA  
6 min

▶ **Video:** Thinking in RA: Logical Query Plans  
4 min

▶ **Video:** Practical SQL: Binning Timeseries  
5 min

▶ **Video:** Practical SQL: Genomic Intervals  
6 min

▶ **Video:** User-Defined Functions  
3 min

▶ **Video:** Support for User-Defined Functions  
4 min

Lesson 9: Key Principles of Relational Databases

Assignment 2: SQL

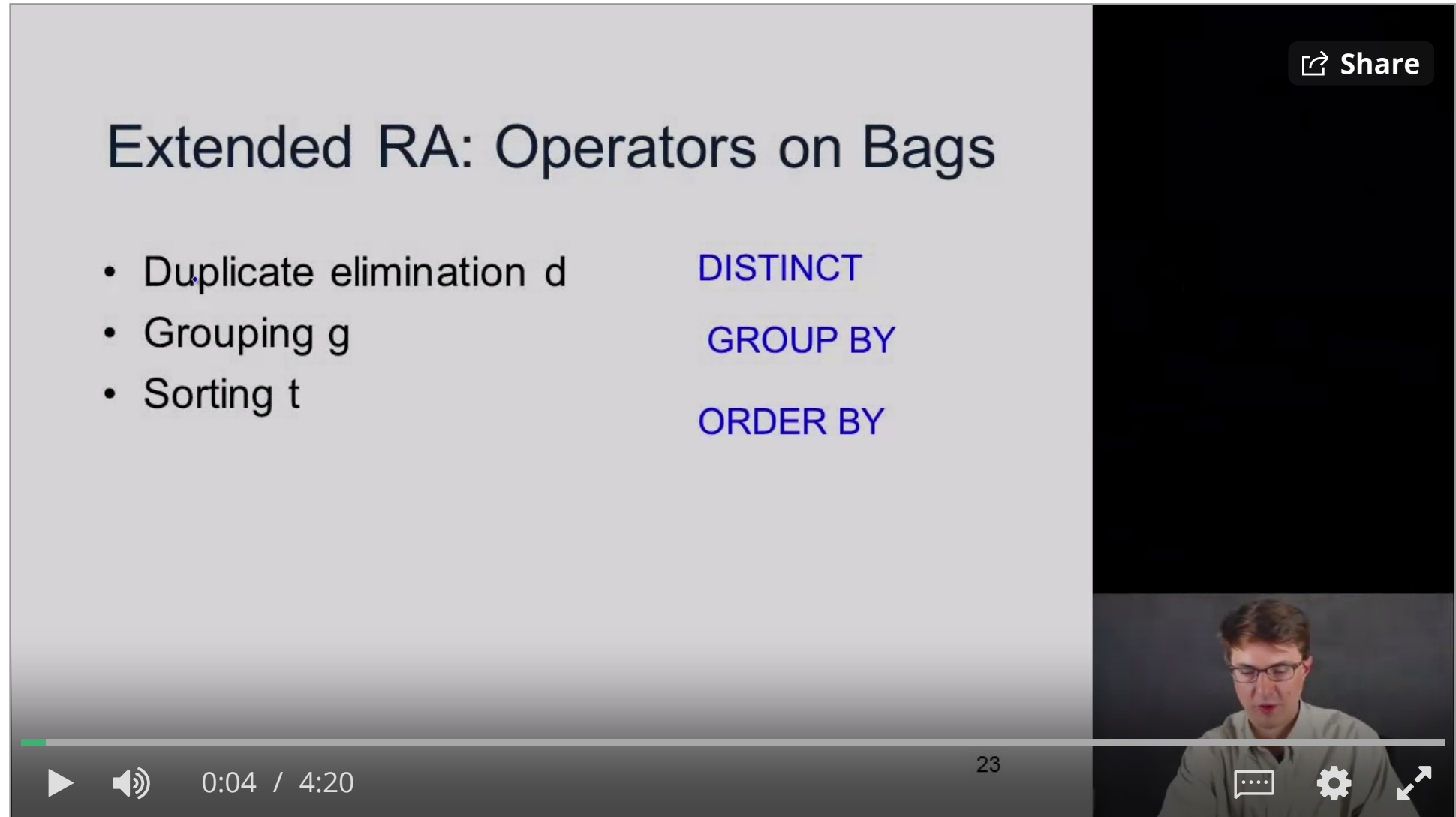


## Thinking in RA: Logical Query Plans

### Extended RA: Operators on Bags

- Duplicate elimination d DISTINCT
- Grouping g GROUP BY
- Sorting t ORDER BY

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0:00 [MUSIC] So we talked about duplicate elimination operation corresponding to the distinct keyword in SQL.

0:12 We did not talk too much about a grouping operation. We'll see an example of that in a minute.

0:19 But I'm not gonna talk about the relational algebra operator too much right now. It'll come up again later when we talk about implementations of some of these. Okay? And that corresponds to the group by clause in a sequel statement and then we talked about sorting well we sorry we didn't talk about sorting but we mentioned sorting and that corresponds to this order by clause