

COMPLEX CONSTRAINTS AND BIG DATA

MSiA 413
Week 10

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ENGINEERING

Announcements

- This is the last discussion section
- The final is next Thursday!
 - Nikos's next lecture is going to be a retrospective of the whole course
 - Ask him final-related questions
 - No practice problems for the final
 - All lectures are fair game
 - Any supplemental discussion material I've brought up won't be on the final
- HW 6 is out

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ANY QUESTIONS?

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Triggers

- When should you use triggers to enforce constraints?
- Given the following schema, enforce the constraint that no manager has more than five immediate subordinates?

Employees	
<u>EmployeeId</u>	INTEGER NOT NULL
ManagerId*	INTEGER
Name	VARCHAR(80) NOT NULL

```
CREATE TRIGGER MaxTeamSizeIs5
BEFORE INSERT ON Employees
FOR EACH ROW
BEGIN
    SELECT CASE
        WHEN (SELECT COUNT(*)
              FROM Employees
              WHERE Employees.ManagerId = new.ManagerId)>5
        THEN RAISE(FAIL, "Error: max team of 5)
        END;
END;
```

- How would you restructure the data to avoid the need for this trigger?

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Transactions

- How do transactions help enforce ACID constraints?
- How do transactions help parallelize databases?
- Is there a benefit to wrapping a single select statement into a transaction?
- Assume you have the following transaction
 1. Read(A)
 2. Read(B)
 3. $B := B - A$
 4. Write(B)
 5. Commit
- Could another transaction Read from B between lines 2-3?
- Could another transaction Read from B between lines 5-6?
- Could another transaction Write to B between lines 2-3?
- Could another transaction Write to B after line 5?

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Partitioning

- What are vertical partitioning and horizontal partitioning?
 - What is the difference between a JOIN and a horizontal partition?
 - What is the difference between a UNION and a vertical partition?
- What is the difference between partitioning and indexing?
 - Can you use an index on a partitioned table?
- Why use table partitioning?
 - Can partitioning be useful in small databases?

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NoSQL

- What are key-value stores?
- How do you specify queries to NoSQL databases if they don't SQL?
- What kind of queries are key-value stores useful for?
- Can you imagine other paradigms for NoSQL databases?
 - Graph databases
 - Column-based store
 - Document-based store

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NoSQL

• nosql
Search term

+ Compare

United States ▼

2004 - present ▼

All categories ▼

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Interest over time ⓘ



