Course Wrap-up

csc343, Fall 2017
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csc343 admin stuff

- We will post when A3 results are available.
- There are extra pre-exam office hours. See Piazza for a schedule
Preparing for the final

- Re-solve parts of the assignments where you didn’t get full marks or your partner lead.
- For topics you aren’t fully confident in, re-do the lecture prep and in-class exercises.
- To hit on things you need to practise, make up
  - your own queries in RA & SQL
  - your own methods in JDBC.
- Solve old tests and finals.
About using old finals

- The website has several
- If solutions aren’t posted, it’s because we don’t have them in any shape for posting.
  - but we’re happy to review them in office hours or exam prep sessions
- If you find old exams elsewhere, beware of coverage mismatches.
- Old E/R questions may use a different notation with weird arrows.
  - You are not responsible for this!
The final

- Comprehensive (covers the whole term), including:
  - relational model
  - RA
  - SQL and JDBC
  - XML and DTDs
  - FD theory and normalization
  - ER modelling and DB design
  - JSON
The final

- You need to know the syntax of each language.
  - Exception: We don’t care much about your Java syntax.
- You don’t need to memorize function/method APIs.
  - We will provide what you need.
- SQL views and RA intermediate steps are always welcome.
- Comments are not necessary, but may help us give you part marks.
The final

- Your exam is 26 pages long, but
  - 4 essentially blank pages are space for rough work
  - 1 page is the cover
- So it’s really 21 pages, with lots of white space
- You need 40% on the final to pass the course, but
  - If the exam is unexpectedly long or difficult, we will raise the marks on it
  - We apply that rule with great care
Theme: expressive power

- RA ⊆ SQL ⊆ Java
- DTDs (very limited!) ⊆ XML Schema
- DTDs vs DDL to express constraints
- You can sometimes do surprisingly much with what appears to be very little
Theme: expressive power

- Expressive power vs computational complexity
  - SQL general assertions vs intra-table constraints.
  - SQL triggers are a tradeoff.

- Expressive power vs *language* complexity
  - RA vs SQL vs Java:
    - how complex are expressions/statements in the language; proofs about them?
  - But is some of the difference just good/bad design?
Theme: tradeoffs

- Materialized views vs virtual views
  - Save time: don’t have to be recomputed on every use
  - Lose time: must be updated when base tables change
  - Lose space: must be stored

- Indices
  - Save time: search and other operations are faster
  - Lose time: to build and maintain indices
  - Lose space: must be stored

- Rigidity of SQL vs flexibility of XML
- Normalized schema vs fast operations
- No redundancy vs preserve dependencies
“Database System Technology”
Takes the perspective of the DBMS builder.
Topics like:
– indices; query optimization
– managing storage; concurrency control
– transaction management
– tuning for performance
– data mining, data warehousing
Trends in DB Research

- managing huge amounts of data: approximate querying, statistical methods, self-tuning, power management
- managing uncertainty
- data privacy and security
- different kinds of data, e.g., temporal, spatial, data from sensors, social network data
- new languages (e.g., declarative) and interfaces, visualization of data
- Check out the VLDB conference
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