

Introduction to Databases, ITU, Fall 2005

Rasmus Pagh

October 21, 2005

Exercises on October 24

Note that there will be feedback meetings from 16.00. The schedule can be found on the course home page (internal pages).

The exercises start at 16.30. You are strongly encouraged to use the time between the lecture and the exercises to fill in the course evaluation. In particular, your feedback regarding the following points would be appreciated:

- **Experiences with the group project.** Including the tasks given, the random composition of groups, the time allocated for each part, and the value of feedback meetings.
- **Experiences with exercises apart from hand-ins.** Did you find the Gradiance system useful? Also, if you were not sufficiently motivated to work on most exercises, what might make you more motivated? How big a part of the exercises are you likely to do before the exam?

1. G UW 5.2.1 a), b), c), d), e), f), g). For each relational algebra expression, write a corresponding SQL expression. If you like, you can try it out in Oracle (on the sample data entered at the first exercises). In that case you can verify that the result agrees with the value of your relational algebra expression (interpreted as relational algebra on bags).
2. Gradiance “homework” *Extended Relational Algebra*.
3. Consider the following SQL expressions:
 - (a) `(S UNION (SELECT DISTINCT * FROM R WHERE A ≥ 0))
NATURAL JOIN (SELECT DISTINCT * FROM R WHERE B = 0)`
 - (b) `(SELECT DISTINCT * FROM (R NATURAL JOIN S) WHERE B = 0)
UNION (SELECT DISTINCT * FROM R WHERE (B = 0 AND A ≥ 0))`

Convert the expressions into relational algebra. Try to show that (a) and (b) are equivalent. What algebraic laws do you use?