Homework #4
(100 points)

Due Date: April 6th, 2022, at the beginning of class

Directions

1. This is an INDIVIDUAL assignment; do your own work! Submitting answers created by other people is NOT doing your own work.

2. Start early! Getting help is much easier n days before the due date/time than it will be n hours before.

3. Write complete answers to each of the following questions, in accordance with the given directions. Create your solutions as a PDF document such that each question is on a separate page; all parts of a multi–part question may be on the same page. Show your work, when appropriate, for possible partial credit.

4. Questions of the form “α,β” are found in the Connolly/Begg text, available via D2L, as question β at the end of chapter α. For questions with sub–parts, note that a notation of “(w,z)” is asking you to complete parts w and z only, not parts x and y.

5. If you have questions about any aspect of this assignment, help is available from the class staff via piazza.com and our office hours.

6. When your answers are ready to be turned in, do so on gradescope.com. Be sure to assign pages to problems after you upload your PDF. Need help? Visit https://help.gradescope.com/ and search for “Submitting an Assignment.”

7. Remember that you can use at most one late day on a homework assignment, because we will be distributing solutions after that time.

1. (5 points) 5.12 (d) (just Relational Algebra)
2. (5 points) 5.26 (again, just R.A.)
3. (5 points) 5.28 (again again, just R.A.)

4. (5 points) 6.4
5. (5 points) 6.10. Note that this question, and the next three, refer to the Hotel schema at the start of the Exercises at the end of Chapter 4.
6. (5 points) 6.14
7. (5 points) 6.20
8. (5 points) 6.24
9. (5 points) 7.7
10. (10 points) 7.11 (b,d,f) Only create the Room and Booking tables.
11. (5 points) 7.14
12. (10 points) 8.7 Just discuss BEFORE and AFTER.
13. (10 points) 8.8
14. (5 points) 14.4
15. (5 points) 14.6

(Continued …)
Non-book questions:

16. (5 points) JDBC hides its use of cursors, but they are still there. Explain how a cursor is used by the JDBC.java program to process its query.

17. (5 points) Consider this schema: \( R(A, B, C, D, E, F, G) \). Also consider the FDs \( C \rightarrow BDEF \) and \( D \rightarrow AG \). Compute \( A^+ \) and \( C^+ \).

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The following question was removed from the homework, but is retained here so that you can do it for practice ahead of Exam #2.

18. (0 points) Given the set of FDs \( S = \{ W \rightarrow Z, WY \rightarrow X, Y \rightarrow Z, W \rightarrow XY \} \), find a minimal cover of \( S \).