CMSC 461 Introduction to Database Management Systems **Spring 2008**

Problem Set 3

Out: March 26, 2008 *Due: April 2, 2008*

Chapter 7 - Relational Database Design

- Exercise 7.21 (pg. 309) – Use Armstrong's axioms to prove the soundness of the decomposition rule.
- Exercise 7.23 (pg. 309) – Show that the following decomposition of the schema R of Practice Exercise 7.1 (pg. 307) [R = (A, B, C, D, E) and F = {A→BC, CD→E, B→D, E→A}]is not a lossless decomposition:

  (A, B, C)
  (C, D, E)

  Hint: Give an example of a relation r on the schema R such that: $\prod_{A,B,C}(r) \bowtie \prod_{C,D,E}(r) \neq r$
- Exercise 7.24 (pg. 309) – List the three design goals for relational databases, and explain why each is desirable.