Homework Assignment 6  
(due Wednesday, March 14, 2012)

• Read Sections 5.3, 7.1, and 10.2 from the textbook.

• Exercise 3.4.1 parts a) and d) only; Exercise 3.4.2 for parts a) and d) of Exercise 3.4.1; Exercise 3.5.3.

• Problem 1: Let $R$ be a relation schema with attributes $A, B, C, D$ and assume that the functional dependencies $A \rightarrow B$, $C \rightarrow D$, $D \rightarrow A$ hold on $R$.

  1. Give two different reasons to the effect that $R$ is not in Third Normal Form.
  2. Give a transitive dependency that holds on $R$.

• Problem 2. Let $R(A, B, C, D, E)$ be a relation schema with the indicated attributes and assume that the functional dependencies $A \rightarrow B$, $BC \rightarrow E$, $ED \rightarrow A$ hold on $R$.

  1. Is $R$ in Third Normal Form? Justify your answer.
  2. In the previous homework assignment, you were asked to give a BCNF, lossless join decomposition of $R$. Give such a decomposition again and determine whether or not it is dependency preserving.