

Fall 2007 CS186 Discussion Section:  
Week 12, 11/12 - 11/16

Your friendly TAs

November 13, 2007

## 1 Attribute Closure

Consider the attribute set  $R = ABCDE$  and the FD set  $F = \{AB \rightarrow C, A \rightarrow D, D \rightarrow E, \text{ and } AC \rightarrow B\}$ . Compute the attribute closure for each of  $A$ ,  $AB$ ,  $B$ , and  $D$ .

## 2 Schema Decomposition

Decompose the following attribute sets,  $R$ , and FD sets,  $F$ , into (a) BCNF and (b) 3NF:

- $R = ABCEG$ ;  $F = \{AB \rightarrow C, AC \rightarrow B, BC \rightarrow A, E \rightarrow G\}$ .
- $R = ABCDE$ ,  $F = \{AB \rightarrow C, DE \rightarrow C, \text{ and } B \rightarrow D\}$ .
- $R = ABCDEFG$ ,  $F = \{AB \rightarrow CD, C \rightarrow EF, G \rightarrow A, G \rightarrow F, CE \rightarrow F\}$ .
- $R = ABCDEFGH$ ,  $F = \{ABH \rightarrow C, A \rightarrow DE, BGH \rightarrow F, F \rightarrow ADH, BH \rightarrow GE\}$ .

## 3 Lossless? Dependency Preserving?

Which of the following decompositions of  $R = ABCDEG$ , with  $F = \{AB \rightarrow C, AC \rightarrow B, AD \rightarrow E, B \rightarrow D, BC \rightarrow A, E \rightarrow G\}$  is (i) dependency-preserving? (ii) lossless-join?

- $AB, BC, ABDE, EG$
- $ABC, ACDE, ADG$