

CS1555 Recitation 10

Objective: to practice normalization, finding canonical forms, checking for lossless decompositions.

Part 1: For each of the following relations R and sets of functional dependencies F, find the canonical cover (minimal cover) of F.

1. Consider the following set of functional dependencies F on a relation R (A, B, C, D, E):

$A \rightarrow BC$
 $A \rightarrow D$
 $B \rightarrow C$
 $C \rightarrow D$
 $DE \rightarrow C$
 $BC \rightarrow D$

2. Consider the following set of functional dependencies F on relation R (A, B, C, D, E, H):

$A \rightarrow C$
 $AC \rightarrow D$
 $E \rightarrow AD$
 $E \rightarrow H$
 $A \rightarrow CD$
 $E \rightarrow AH$

Part 2: Assume that R is decomposed into:

R1 (A, B), F1 = {A \rightarrow B}, key (A)

R2 (B, C), F2 = {B \rightarrow C}, key (B)

R3 (C, D, E), F3 = {C \rightarrow D, DE \rightarrow C}, key (DE), (CE)

Is this decomposition a lossless-join decomposition? Use the table method.