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COMP-3421

Mar.02, 2016

Assignment 6

1) Minimal cover of F = {A -> B, B -> CDE}.

2) A^+ = (A B C D E).

3) B^+ = (B C D E).

4) Decompose R into BCNF: R_1(A C D), R_2(C E), R_3(D B). R_1, R_2, and R_3 are BCNF.

   F_1 = { }, F_2 = {C -> E}, F_3 = {D -> B}

   $\because (F' = F_1 \cup F_2 \cup F_3)^+ \not\equiv F^+$, $F'^+ \not\supseteq$ AB -> CDE

   $\therefore$ It is not dependency preserving.

   So it is not BCNF.

   Decompose R into 3NF: R_1(A B C D), R_2(C E), R_3(D B). R_1 is not BCNF, R_2 and R_3 are BCNF. So it is 3NF.

5) Decomposition: R_1(A, C, D), R_2(C, E), R_3(D, B). R_1, R_2, and R_3 are BCNF.

   F_1 = {A -> CD}, F_2 = {C -> E}, F_3 = {D -> B}

   $\because (F' = F_1 \cup F_2 \cup F_3)^+ \equiv F^+$

   $\therefore$ It is dependency preserving.

   So it is BCNF and it isn't 3NF.