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CSc 134 - 01
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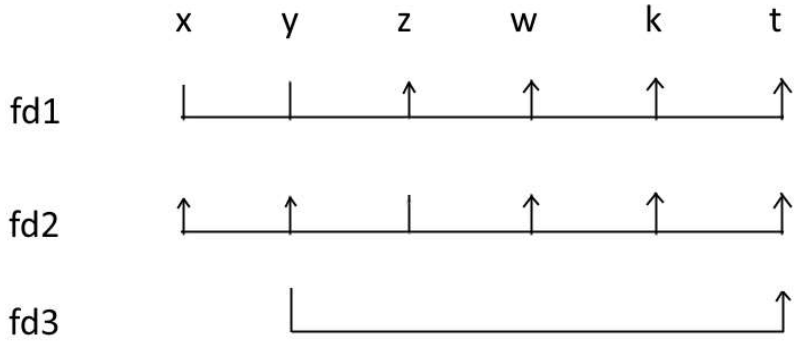
Assignment 6

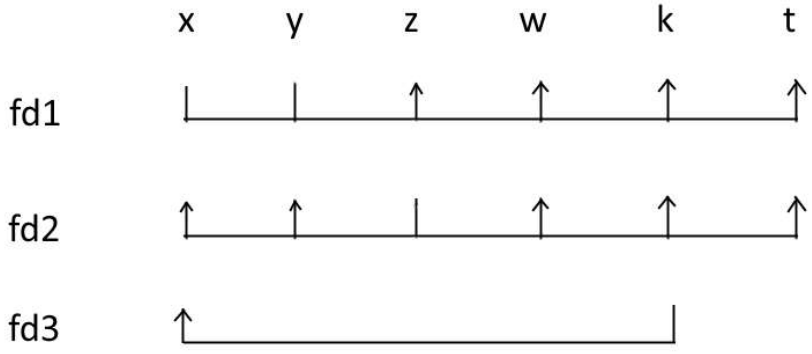
1. F = {a→b, b→c, c→ {d,e}} is given.
   Finding out $\{b\}^+$.
   b→c
   c→ {d,e}
   Therefore, $\{b\}^+ = \{b, c, d, e\}$

2. R(x,y, z, w, k, t)
   two keys: (x,y) and z
   F = { {x,y} → {z,w,k,t}, z → {x,y,w,k,t }, y→t}



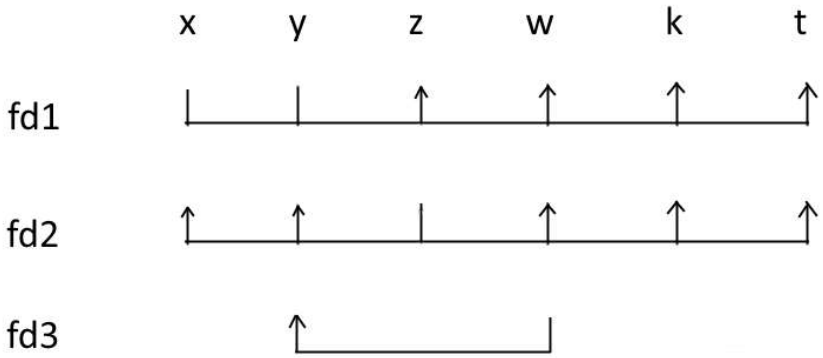
   Looking at t, {x, y} → t and y→t meaning that t is not fully functionally dependent on {x, y}. Because of fd1 and fd3, R is not in 2NF.

3. F = { {x,y} → {z,w,k,t}, z → {x,y,w,k,t }, k→x}



   For 3NF, in every non-trivial X→A, either X has to be a superkey or A has to be a prime attribute. In fd1, xy is a key. In fd2, z is a key. In fd3, x is a prime attribute. Therefore R is in 3NF.

4. F = { fd1:{x,y} → {z,w,k,t}, fd2: z → {x,y,w,k,t }, fd3: w→ y}



For BCNF, every non-trivial X→A X has to be a superkey. In fd3, w is not a superkey. Therefore, R is not in BCNF.