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COSC-386

Dr. Jing

1)

R(A,B,C,D)

F={AB->C, C->D, D->A}

KEYS: AB BC DB

BCNF VIOLATIONS

C->D IS NOT TRIVIAL & C IS NOT A SUPERKEY ON R

D->A IS NOT TRIVIAL & D IS NOT A SUPERKEY ON R

C->A IS NOT TRIVIAL & C IS NOT A SUPERKEY ON R

BCNF DECOMPOSITION

{C}+=(ACD)

R1(A, C, D} NOT IN BCNF

R2(C, B) IN BCNF

R1(A, D) IN BCNF

R2(C, B) IN BCNF

R3(C, D) IN BCNF

3NF VIOLATIONS

NONE

R IS IN 3NF

2)

R(A,B,C,D)

F={B->C, B->D}

KEYS: AB

BCNF VIOLATIONS

B->C IS NOT TRIVIAL & B IS NOT A SUPERKEY ON R

B->D IS NOT TRIVIAL & B IS NOT A SUPERKEY ON R

B->CD IS NOT TRIVIAL & B IS NOT A SUPERKEY ON R

BCNF DECOMPOSITION

{B}=(BCD)

R1(B, C, D} IN BCNF

R2(A, B) IN BCNF

3NF VIOLATIONS

B->C IS NOT TRIVIAL & B IS NOT A SUPERKEY ON R & Y IS NOT A PROPER SUBSET OF A KEY

B->D IS NOT TRIVIAL & B IS NOT A SUPERKEY ON R & Y IS NOT A PROPER SUBSET OF A KEY

B->CD IS NOT TRIVIAL & B IS NOT A SUPERKEY ON R & Y IS NOT A PROPER SUBSET OF A KEY

3NF DECOMPOSITION

SAME AS IN BCNF DECOMPOSITOIN

3)

R(A,B,C,D)

F={AB->C, BC->D, CD->A, AD->B}

KEYS: AB, BC, CD, AD

BCNF VIOLATIONS

NONE

R IS IN BCNF

3NF VIOLATIONS

NONE

R IS IN BCNF SO R IS ALSO IN 3NF