CID	SID	TextId

$X \twoheadrightarrow Y$

Relation R $\quad X \subseteq R,\ Y \subseteq R$

$Z = R - (X \cup Y)$

If two tuples t_1, t_2 s.t.

$t_1[X] = t_2[X]$,

then t_3 and t_4 should exist w/ the properties:

$t_3[X] = t_4[X] = t_1[X] = t_2[X]$

$t_3[Y] = t_1[Y]$ and $t_4[Y] = t_2[Y]$

$t_3[Z] = t_2[Z]$ and $t_4[Z] = t_1[Z]$

CID	SID	TextId	
cs360	0001	T1	t_1
cs360	0001	T2	t_3
cs360	0002	T1	t_4
cs360	0002	T2	t_2

$CID \twoheadrightarrow SID \mid TextID$

$CID \twoheadrightarrow TextID \mid SID$

$X \twoheadrightarrow Y$ is trivial

if a) $Y \subseteq X$

b) $X \cup Y = R$

Decompose (4NF) $CID \twoheadrightarrow SID \mid TextID$

$R_1(CID, SID)$ $\quad R_2(CID, TextID)$

4NF: for every non-trivial MVD $X \twoheadrightarrow Y$, X is a superkey

R(A, B, C, D, E)

MVD

$A \twoheadrightarrow B$

$AB \twoheadrightarrow C$

FD:

$A \to D$ ✗

$AB \to E$

BCNF

Key: A, B, C

$R_1(A, D)$

$A \to D$ ✓

$R_2(A, B, C, E)$

$AB \to E$

Key: AB, C

$R_3(A, B, E)$

$AB \to E$ ✓

$R_4(A, B, C)$

$A \twoheadrightarrow B$ ✓

R_1, R_3, R_4 in BCNF

$A \twoheadrightarrow B$

$R_5(A, B)$ $R_6(A, E)$

$\equiv$

$R_7(A, B)$ $R_8(A, C)$

3NF

$A \rightarrow B \rightarrow C$

$A \rightarrow C$