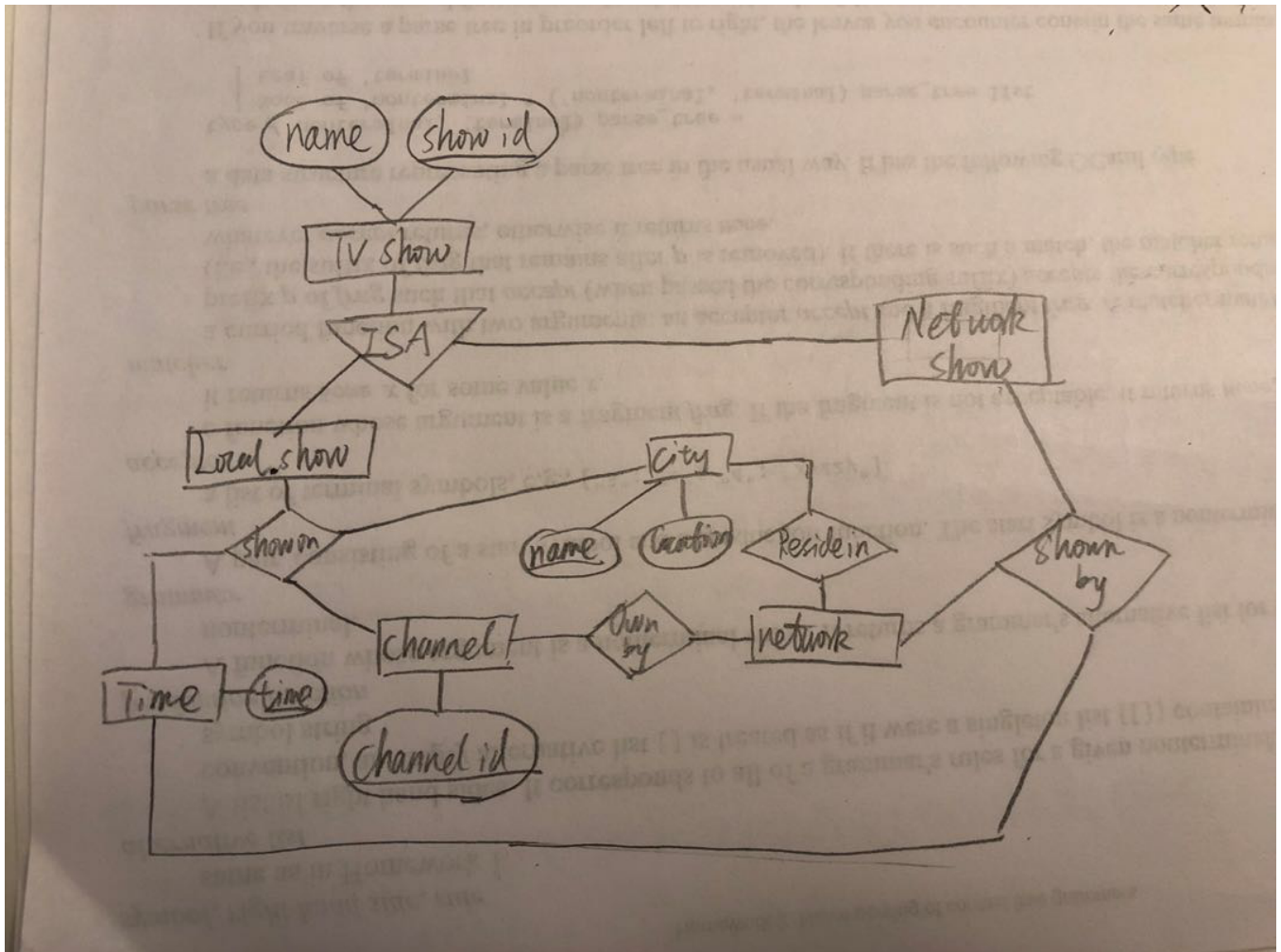


Tianyu Zhang

HW5

1.



2.

Parts(number);

Assembly(number, cost);

ComposedOf(assembly\_number, part\_number, cost);

3.

(A,B,C,F) and (A,D,E) share attribute A

A is the key for decomposed table (A,D,E),  
so it is lossless

4.

A → B

C → A

5.

(a). yes,  $E \rightarrow ABCDE$

(b). yes,  $BC \rightarrow ABCDE$

6.

NO.

$A \rightarrow BC$ ,  $C \rightarrow E$ ,  $B \rightarrow D$  violates BCNF

$R(A, B, C, D, E, F)$  using  $B \rightarrow D$

$R_1(A, B, C, E, F)$

$R_2(B, D)$

$R_1(A, B, C, E, F)$  using  $C \rightarrow E$

$R_3(A, B, C, F)$

$R_4(C, E)$

$R_3(A, B, C, F)$  using  $A \rightarrow BC$

$R_5(A, F)$

$R_6(A, B, C)$

final tables:

$R_2(B, D)$   $R_4(C, E)$   $R_5(A, F)$   $R_6(A, B, C)$