데이터베이스 Ch7 HW 20183202I2 김상영

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a. $R_1 \cap R_2 = \{A\}$

$A \to BC$ 이므로. $A \to \{A, B, C\}$. $\therefore R_1 \cap R_2 \to R_1$ 만족. (lossless decomposition)

b. $R_1 \cap R_2 = \{C\}$

$C \to \{A, B, C\}$ 도 성립하지 않음. 따라서 $C \to \{C, D, E\}$ 또한 성립하지 않으므로 lossless decomposition of object.

c.

① $A \to BC$: A is super key

1. $A \to BC$,
2. $(B \to D) \to (BC \to CD)$
3. $CD \to E$

$\Big\}$ $A \to \{B, C, D, E\}$ 이므로 super key

② $CD \to E$: $\{C, D\}$ is superkey

1. $E \to A \to \{A, B, C, D, E\}$

③ $B \to D$: B superkey X. trivial X → $\begin{cases} R_1 = \{B, D\} \\ R_2 = \{A, B, D, E\} \end{cases}$

④ $E \to A$: E is superkey

$(R_1 \cap R_2 = \{B\})$

$\to (R_1 = \{B, D\})$ 이므로 lossless decomposition.

d. $R_1 = \{A, B, D\}$

$R_2 = \{A, B, D, E\}$

① $R_1 \cap R_2 = \{A, B, D\} \to R_1$ 이므로 lossless decomposition.

② R_1, R_2 모두 A를 가지고 있으므로 dependency preserving 하다.

2.

Users : id → {password, paynd, hint}

category : code → type

items : {code, name, price, seller} → stock

trade : X

rating_info : rating → {condition, discount}

account : id → {balance, rating}

즉 schema에서, functional dependency가 $\alpha \rightarrow \beta$ (α is superkey) 를 만족하고 BCNF이다.