



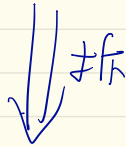
Database Design



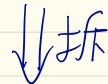
$$\begin{aligned}
 1) \quad B^+ &= \{A, B, C, D, G\} \\
 (BF)^+ &= \{A, B, C, D, F, G, H\} \\
 C^+ &= \{A, C, G\} \\
 (CEH)^+ &= \{A, B, C, D, E, F, G, H\} \\
 (CH)^+ &= \{A, B, C, D, G, H\}
 \end{aligned}$$

$$\text{Ans: } B \rightarrow CD, BF \rightarrow H, C \rightarrow AG, CH \rightarrow B$$

$$\begin{aligned}
 2) \quad (B, C, D) \text{ 和 } (A, B, E, F, G, H) \\
 F = \{B \rightarrow CD\} \quad F = \{B \rightarrow AG, BF \rightarrow H\}
 \end{aligned}$$



$$\begin{aligned}
 (A, B, G) \text{ 和 } (B, E, F, H) \\
 F = \{B \rightarrow AG\} \quad F = \{BF \rightarrow H\}
 \end{aligned}$$



$$\begin{aligned}
 (B, F, H) \text{ 和 } (B, E, F) \\
 F = \{BF \rightarrow H\} \quad F = \{\}
 \end{aligned}$$

$$\text{Ans: } (B, C, D), (A, B, G), (B, F, H), (B, E, F)$$

$$3) \quad F = \{B \rightarrow CD, BF \rightarrow H, C \rightarrow AG, CEH \rightarrow F, CH \rightarrow B\}$$

$$F' = \{B \rightarrow CD\} \cup \{B \rightarrow AG\} \cup \{BF \rightarrow H\}$$

$$F^+ \neq F'^+$$

$$\text{Ans: NO}$$

2.

- 1) CF, A
- 2) $F = \{A \rightarrow CF, BCG \rightarrow D, CF \rightarrow AH, D \rightarrow B, H \rightarrow DEG\}$
- 3) $(A, C, F), (B, C, D, G), (A, C, F, H), (B, D), (D, E, G, H)$
- 4) (B, C, D, G)
 $F = \{BCG \rightarrow D, D \rightarrow B\}$ 不满足 BCNF \Rightarrow 故 allow redundancy

3. 1) d

2) $F^+ = \{A \rightarrow B, B \rightarrow C, A \rightarrow C, C \rightarrow A, B \rightarrow A, C \rightarrow B\}$

x a) $F^+ = \{B \rightarrow A, B \rightarrow C, C \rightarrow B, C \rightarrow A\}$

v b) $F^+ = \{C \rightarrow B, B \rightarrow A, C \rightarrow A, A \rightarrow C, B \rightarrow C, A \rightarrow B\}$

x c) $F^+ = \{A \rightarrow B, B \rightarrow A, B \rightarrow C, A \rightarrow C\}$

x d) $F^+ = \{A \rightarrow B, A \rightarrow C, C \rightarrow A, C \rightarrow B\}$

Ans: b

3) d