

- Example 1: $F = \{ a \rightarrow b, b c \rightarrow d, a c \rightarrow d \}$
Give the minimal cover M for the set F of FDs.

- Step 1: $F = \{ a \rightarrow b, b c \rightarrow d, a c \rightarrow d \}$
- Step 2:
 - 1) 假设去掉 $a \rightarrow b$, 则 $F = \{ b c \rightarrow d, a c \rightarrow d \}$
计算 $\{ a \}_F^+ = \{ a \}$
 $\because b \notin \{ a \}_F^+$
 \therefore 不能去掉 $a \rightarrow b$

- Example 1: $F = \{ a \rightarrow b, b c \rightarrow d, a c \rightarrow d \}$
Give the minimal cover M for the set F of FDs.

- Step 2:
 - 2) 假设去掉 $b c \rightarrow d$, 则 $F = \{ a \rightarrow b, a c \rightarrow d \}$
计算 $\{ b, c \}_F^+ = \{ b, c \}$
 $\because d \notin \{ b, c \}_F^+$
 \therefore 不能去掉 $b c \rightarrow d$

- Example 1: $F = \{ a \rightarrow b, b c \rightarrow d, a c \rightarrow d \}$
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- Step 2:
 - 3) 假设去掉 $a c \rightarrow d$, 则 $F = \{ a \rightarrow b, b c \rightarrow d \}$

计算 $\{ a, c \}_F^+ = \{ a, c, b, d \}$

$\because d \in \{ a, c \}_F^+$

$\therefore a c \rightarrow d$ 是一个冗余的函数依赖关系, 可以从 F 中删除, 则 F 变为:

$$F = \{ a \rightarrow b, b c \rightarrow d \}$$

- $F = \{ a \rightarrow b, b c \rightarrow d \}$
- Step 3: 只需要考虑对 $b c \rightarrow d$ 的处理
 - 1) 假设将 $b c \rightarrow d$ 精简为 $c \rightarrow d$ ，则将 F 转变为下面的函数依赖集: $G = \{ a \rightarrow b, c \rightarrow d \}$
计算 $\{c\}_F^+ = \{c\}$
 $\because d \notin \{c\}_F^+$
 \therefore 不能用 $c \rightarrow d$ 来代替 $b c \rightarrow d$
 - 2) 假设将 $b c \rightarrow d$ 精简为 $b \rightarrow d$ ，则将 F 转变为下面的函数依赖集: $G = \{ a \rightarrow b, b \rightarrow d \}$
计算 $\{b\}_F^+ = \{b\}$
 $\because d \notin \{b\}_F^+$
 \therefore 也不能用 $b \rightarrow d$ 来代替 $b c \rightarrow d$

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- Step 3 & 4:
计算结果为: $F = \{ a \rightarrow b, b c \rightarrow d \}$