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7.1

	A	B	C	D	E
(A,B,C)	a_1	a_2	a_3	a_4	b_{15}
(A,D,E)	a_1	a_2	a_3	a_4	a_5

是无损分解.

7.6 R{A,B,C,D,E}

$\{A\}^+ = \{A,B,C,D,E\}$

$\{B\}^+ = \{B,D\}$　$\{E\}^+ = \sqcup$

$\{C\}^+ = \{C\}$　$\{D\}^+ = \{D\}$

$\{A,B\}^+ = \{A,B,C,D,E\}$

$\{A,C\}^+ = \{A,B,C,D,E\}$

$\{A,D\}^+ = \{ABCDE\}$

$\{A,E\}^+ = \{A,B,C,D,E\}$

$\{B,C\}^+ = \{A,B,C,D,E\}$

$\{B,D\}^+ = \{B,D\}$

$\{B,E\}^+ = \{A,B,C,D,E\}$

$\{C,D\}^+ = \{A,B,C,D,E\}$

$\{C,E\}^+ = \{A,B,C,D,E\}$

全$\{ABCDE\} = \sqcup$

$\{DE\}^+ = \{A,B,C,D,E\}$　$\{ABCD\}^+ = \sqcup$

$\{ABC\}^+ = \{A,B,C,D,E\}$　$\{ABCE\}^+ = \sqcup$

$\{ABD\}^+ = \{A,B,C,D,E\}$　$\{ABDE\}^+ = \sqcup$

$\{A,B,E\}^+ = \{A,B,C,D,E\}$　$\{ACDE\}^+ = \sqcup$

$\{ACD\}^+ = \{ABCDE\}$　$\{BCDE\}^+ = \sqcup$

$\{A,C,E\}^+ = \{A,B,C,D,E\}$　$\{ABCDE\}^+ = \sqcup$

$\{A,D,E\}^+ = \{ABCDE\}$

$\{BCD\}^+ = \{ABCDE\}$

$\{BCE\}^+ = \sqcup$

$\{BDE\}^+ = \sqcup$

$\{CDE\}^+ = \sqcup$

候选码：

~~AB　AC~~

$A \cap XNL = \{\}$

$A \cap XNR = \{A,B,C,D,E\}$

候选码有 A、E、BC、CD.

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7.30.

(a) $B^+ = \{A, B, C, D, E\}$.

(b) 令 $A \to BC$

分解 $A \to B$, $A \to C$, $A \to D$

$\because BC \to DE$ $\Rightarrow A \to DE$

分解 $A \to D$, $A \to E$

$\therefore \{A\}^+ = \{A, B, C, D, E\}$

$\{AG\}^+ = \{A, B, C, D, E, G\}$

$\therefore AG$ 是超码.

(c) ① 分解

$F_C = \{A \to B, A \to C, A \to D, BC \to D, BC \to E, B \to D, D \to A\}$.

② $A \to B$, $B \to D \Rightarrow A \to D$

$F_C = \{A \to B, A \to C, BC \to D, BC \to E, B \to D, D \to A\}$

③ $B \to D$ $\therefore BC \to D$ 冗余.

$F_C = \{A \to B, A \to C, BC \to E, B \to D, D \to A\}$

④ $A \to B$, $A \to C \Rightarrow A \to BC$

$\therefore F_C = \{A \to BC, BC \to E, B \to D, D \to A\}$.

(d)

$U_1 = (A, B, C)$ $F_1 = \{A \to BC\}$

$U_2 = (B, C, E)$ $F_2 = \{BC \to E\}$

$U_3 = (B, D)$ $F_3 = \{B \to D\}$

$U_4 = (D, A)$ $F_4 = \{D \to A\}$

加入一组候选码 $\{AG\}$. $F_5 = \emptyset$