

Подчертаните са нарушители.

$R(A,B,C,D,E)$

$A \twoheadrightarrow B$

$BC \twoheadrightarrow CD$

$A \rightarrow D$

$D \rightarrow C$

$AB \rightarrow E$

Единични:

$X=\{A\}$ и $A \rightarrow D$

$X=\{A,D\}$ и $D \rightarrow C$

$X=\{A,C,D\}$

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

$A \rightarrow C$

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

$\{C\}^+ = \{C\}$

$X=\{D\}$ и $D \rightarrow C$

$X=\{C,D\}$

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

$\{E\}^+ = \{E\}$

Двойки:

$X=\{A,B\}$ и $A \rightarrow D$

$X=\{A,B,D\}$ и $D \rightarrow C$

$X=\{A,B,C,D\}$ и $AB \rightarrow E$

$X=\{A,B,C,D,E\}$

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

$\{A,B\}$ е ключ

$AB \rightarrow D$

$AB \rightarrow C$

$X=\{A,C\}$ и $A \rightarrow D$

$X=\{A,C,D\}$

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

$$\underline{AC \rightarrow D}$$

$$X=\{A,D\} \text{ и } D \rightarrow C$$

$$X=\{A,C,D\}$$

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

$$\underline{AD \rightarrow C}$$

$$X=\{A,E\} \text{ и } A \rightarrow D$$

$$X=\{A,D,E\} \text{ и } D \rightarrow C$$

$$X=\{A,C,D,E\}$$

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

$$\underline{AE \rightarrow D}$$

$$\underline{AE \rightarrow C}$$

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

$$X=\{B,D\} \text{ и } D \rightarrow C$$

$$X=\{B,C,D\}$$

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

$$\underline{BD \rightarrow C}$$

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

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

$$\{C,E\}^+ = \{C,E\}$$

$$X=\{D,E\} \text{ и } D \rightarrow C$$

$$X=\{C,D,E\}$$

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

$$\underline{DE \rightarrow C}$$

Тройки:

$$\{A,B,C\}^+ = \{A,B,C,D,E\} \text{ тъй като } \{A,B\} \text{ е ключ}$$

$$\{A,B,C\} \text{ е суперключ}$$

$$ABC \rightarrow D$$

$$ABC \rightarrow E$$

$$\{A,B,D\}^+ = \{A,B,C,D,E\} \text{ тъй като } \{A,B\} \text{ е ключ}$$

$\{A,B,D\}$ е суперключ

$ABD \rightarrow C$

$ABD \rightarrow E$

$\{A,B,E\}^+ = \{A,B,C,D,E\}$ тъй като $\{A,B\}$ е ключ

$\{A,B,E\}$ е суперключ

$ABE \rightarrow C$

$ABE \rightarrow D$

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

$X=\{A,C,E\}$ и $A \rightarrow D$

$X=\{A,C,D,E\}$

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

$ACE \rightarrow D$

$X=\{A,D,E\}$ и $D \rightarrow C$

$X=\{A,C,D,E\}$

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

$ADE \rightarrow C$

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

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

$X=\{B,D,E\}$ и $D \rightarrow C$

$X=\{B,C,D,E\}$

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

$BDE \rightarrow C$

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

Четворки:

$\{A,B,C,D\}^+ = \{A,B,C,D,E\}$ тъй като $\{A,B\}$ е ключ

$\{A,B,C,D\}$ е суперключ

$ABCD \rightarrow E$

$\{A,B,C,E\}^+ = \{A,B,C,D,E\}$ тъй като $\{A,B\}$ е ключ

$\{A,B,C,E\}$ е суперключ

$ABCE \rightarrow D$

$\{A,B,D,E\}^+ = \{A,B,C,D,E\}$ тъй като $\{A,B\}$ е ключ

$\{A,B,D,E\}$ е суперключ

$ABDE \rightarrow C$

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

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

$\{A,B,C,D,E\}$ е суперключ

Декомпозиция:

$ACE \rightarrow D$

$R_1(A,C,D,E)$ и $R_2(A,B,C,E)$

$R_1(A,C,E,D)$

$A \rightarrow D$

$D \rightarrow C$

$A \rightarrow C$

$AC \rightarrow D$

$AD \rightarrow C$

$AE \rightarrow D$

$AE \rightarrow C$

$DE \rightarrow C$

$ADE \rightarrow C$

$ACE \rightarrow D$

Ключове: $\{A,E\}$

$AC \rightarrow D$

$R_{11}(A,C,D)$ и $R_{12}(A,C,E)$

$R_{11}(A,C,D)$

$A \rightarrow D$

$D \rightarrow C$

$A \rightarrow C$

$AC \rightarrow D$

$AD \rightarrow C$

Ключове: $\{A\}$

$D \rightarrow C$

$R_{111}(C,D)$ и $R_{112}(A,D)$

$R_{12}(A,C,E)$

$A \rightarrow C$

Ключове: $\{A,E\}$

$A \rightarrow C$

$R_{121}(A,C)$ и $R_{122}(A,E)$

$R_2(A,B,C,E)$

$A \rightarrow B$

$A \rightarrow C$

$AE \rightarrow C$

Ключове: $\{A,B,E\}$

$AE \rightarrow C$

$R_{21}(A,C,E)$ и $R_{22}(A,B,E)$

$R_{21}(A,C,E)$

$A \rightarrow C$

$AE \rightarrow C$

Ключове: $\{A,E\}$

$A \rightarrow C$

$R_{211}(A,C)$ и $R_{212}(A,E)$

$R_{22}(A,B,E)$

$A \rightarrow B$

Ключове: $\{A,B,E\}$

$A \rightarrow B$

$R_{221}(A,B)$ и $R_{222}(A,E)$

Край на декомпозицията.