



Assignment: KirimBarang

1 Preliminary

- $R = \{A, B, C, D, E, F, G\}$
- $\Sigma = \{ \{A\} \rightarrow \{B\}, \{A, B\} \rightarrow \{C\}, \{C\} \rightarrow \{A, B, D\}, \{E\} \rightarrow \{F\}, \{A, E\} \rightarrow \{F, G\}, \{C, E\} \rightarrow \{G\} \}$

2 Questions

1. (1 point) Keys

Comments:

$\{A, E\}$ and $\{C, E\}$

2. (1 point) Minimal Cover

Comments:

A few possibilities:

- $\{ \{A\} \rightarrow \{C\}, \{C\} \rightarrow \{A\}, \{C\} \rightarrow \{B\}, \{C\} \rightarrow \{D\}, \{C, E\} \rightarrow \{G\}, \{E\} \rightarrow \{F\} \}$
- $\{ \{A\} \rightarrow \{C\}, \{A, E\} \rightarrow \{G\}, \{C\} \rightarrow \{A\}, \{C\} \rightarrow \{B\}, \{C\} \rightarrow \{D\}, \{E\} \rightarrow \{F\} \}$
- $\{ \{A\} \rightarrow \{B\}, \{A\} \rightarrow \{C\}, \{C\} \rightarrow \{A\}, \{C\} \rightarrow \{D\}, \{C, E\} \rightarrow \{G\}, \{E\} \rightarrow \{F\} \}$
- $\{ \{A\} \rightarrow \{B\}, \{A\} \rightarrow \{C\}, \{A, E\} \rightarrow \{G\}, \{C\} \rightarrow \{A\}, \{C\} \rightarrow \{D\}, \{E\} \rightarrow \{F\} \}$

3. (1 point) 3NF but not BCNF

Comments:

Left-hand side superkey but right-hand side not prime attributes.

- $\{A, B\} \rightarrow \{C\}$
- $\{C\} \rightarrow \{A\}$

4. (1 point) BCNF Decomposition

Comments:

One possible decomposition: $\{A, B, C, D\}$, $\{A, E, G\}$, $\{E, F\}$.

5. (1 point) 3NF Decomposition

Comments:

Consider the possible minimal cover from before.

- $\{ \{A\} \rightarrow \{C\}, \{C\} \rightarrow \{A\}, \{C\} \rightarrow \{B\}, \{C\} \rightarrow \{D\}, \{C, E\} \rightarrow \{G\}, \{E\} \rightarrow \{F\} \}$
 - $\{ \{A\} \rightarrow \{C\}, \{C\} \rightarrow \{A, B, D\}, \{C, E\} \rightarrow \{G\}, \{E\} \rightarrow \{F\} \}$
 - $\{A, B, C, D\}, \{C, E, G\}, \{E, F\}$
- $\{ \{A\} \rightarrow \{C\}, \{A, E\} \rightarrow \{G\}, \{C\} \rightarrow \{A\}, \{C\} \rightarrow \{B\}, \{C\} \rightarrow \{D\}, \{E\} \rightarrow \{F\} \}$
 - $\{ \{A\} \rightarrow \{C\}, \{A, E\} \rightarrow \{G\}, \{C\} \rightarrow \{A, B, D\}, \{E\} \rightarrow \{F\} \}$
 - $\{A, B, C, D\}, \{A, E, G\}, \{E, F\}$
- $\{ \{A\} \rightarrow \{B\}, \{A\} \rightarrow \{C\}, \{C\} \rightarrow \{A\}, \{C\} \rightarrow \{D\}, \{C, E\} \rightarrow \{G\}, \{E\} \rightarrow \{F\} \}$
 - $\{ \{A\} \rightarrow \{B, C\}, \{C\} \rightarrow \{A, D\}, \{C, E\} \rightarrow \{G\}, \{E\} \rightarrow \{F\} \}$
 - $\{A, B, C\}, \{A, C, D\}, \{C, E, G\}, \{E, F\}$
- $\{ \{A\} \rightarrow \{B\}, \{A\} \rightarrow \{C\}, \{A, E\} \rightarrow \{G\}, \{C\} \rightarrow \{A\}, \{C\} \rightarrow \{D\}, \{E\} \rightarrow \{F\} \}$
 - $\{ \{A\} \rightarrow \{B, C\}, \{A, E\} \rightarrow \{G\}, \{C\} \rightarrow \{A, D\}, \{E\} \rightarrow \{F\} \}$
 - $\{A, B, C\}, \{A, C, D\}, \{A, E, G\}, \{E, F\}$

There is a set of option, but there is no $\{C, E, G\}$ in the option. So you need to start from the appropriate minimal cover. None of the above is not the correct answer here because you have to find one and there is at least 2 possible answers.