

Prof. Dr. Agnès Voisard, Nicolas Lehmann

Datenbanksysteme, SoSe 2017

Übungsblatt 5

Tutor: Nicolas Lehmann

Tutorium 10

Boyan Hristov, Julian Habib

6. Juni 2017

Link zum Git Repository: <https://github.com/BoyanH/Freie-Universitaet-Berlin/tree/master/Datenbanksysteme/Solutions/homework5>

1. Aufgabe

a)

Minimal $F = \{$
 $\{B\} \rightarrow \{CD\}$
 $\{C\} \rightarrow \{E\}$
 $\{D\} \rightarrow \{E\}$
 $\{AE\} \rightarrow \{D\}$
 $\}$

\Rightarrow

$F^+ = \{$
 $\{B\} \rightarrow \{CD\}$
 $\{C\} \rightarrow \{E\}$
 $\{D\} \rightarrow \{E\}$
 $\{AE\} \rightarrow \{D\}$
 $\{B\} \rightarrow \{C\}$
 $\{B\} \rightarrow \{D\}$
 $\{BC\} \rightarrow \{CDE\}$
 $\{BD\} \rightarrow \{CDE\}$
 $\{CD\} \rightarrow \{E\}$
 $\{AB\} \rightarrow \{CDE\}$
 \dots
 $\}$

Damit ist AB ein Key / Schlüssel.

b) Pseudotransitivitat ware hier

$$\begin{aligned} & \{C\} \rightarrow \{E\} \wedge \{AE\} \rightarrow D \\ \Rightarrow & \{AC\} \rightarrow \{D\} \end{aligned}$$

c)

$$\begin{aligned} & \{BE\} \rightarrow \{B\} (\text{Reflexivity}) \\ \Rightarrow & \{A\} \rightarrow \{BE\} \wedge \{BE\} \rightarrow \{B\} \\ \Rightarrow & \{A\} \rightarrow \{B\} (\text{Transitivity}) \\ \Rightarrow & \{A\} \rightarrow \{B\} \wedge \{A\} \rightarrow \{A\} (\text{Reflexivity}) \\ \Rightarrow & \{A\} \rightarrow \{AB\} (\text{Union}) \wedge \{AB\} \rightarrow \{C\} \\ \Rightarrow & \{A\} \rightarrow \{C\} (\text{Transitivity}) \\ \Rightarrow & \{A\} \rightarrow \{C\} \wedge \{C\} \rightarrow \{D\} \\ \Rightarrow & \{A\} \rightarrow \{D\} (\text{Transitivity}) \end{aligned}$$