Sample 3NF Problem

Questions

Consider a relation $R$ with attributes $ABCDEFGH$ and functional dependencies $S$:

$S = \{A \rightarrow CD, ACF \rightarrow G, AD \rightarrow BEF, BCG \rightarrow D, CT \rightarrow AH, CH \rightarrow G, D \rightarrow B, H \rightarrow DEG\}$

1. Compute all keys for $R$.

2. Compute a minimal basis for $S$. In your final answer, put the FDs into alphabetical order.

3. Using the minimal basis from the previous step, employ the 3NF synthesis algorithm to obtain a lossless and dependency-preserving decomposition of relation $R$ into a collection of relations that are in 3NF.

4. Does your schema allow redundancy?

Explain all your answers and show your rough work.