HW 1, Normalization and FDs

This assignment is due March 3.

1. (10 points) Minimal Cover Let $F = \{A \rightarrow BCD, B \rightarrow C, B \rightarrow D, D \rightarrow E\}$. Compute a minimal cover of F.

2. (5 points) Closure. For the same set of FDs F above, compute A^+.

3. (5 points) Closure. For the same set of FDs F above, compute B^+.

4. (15 points) Decomposition. Assume $R = (A\ B\ C\ D\ E)$ and $F = \{AB \rightarrow CDE, C \rightarrow E, D \rightarrow B\}$. Decompose R into BCNF, lossless, dependency preserving. If this is not possible, decompose into 3NF, lossless, dependency preserving. Show your decomposition and state whether it is BCNF or 3NF.

5. (15 points) Decomposition. Assume $R = (A\ B\ C\ D\ E)$ and $F = \{A \rightarrow BCDE, C \rightarrow E, D \rightarrow B\}$. Decompose R into BCNF, lossless, dependency preserving. If this is not possible, decompose into 3NF, lossless, dependency preserving. Show your decomposition and state whether it is BCNF or 3NF.