University of Toronto
CSC343 Fall 2017

In-class Exercises: The Chase Test

1. Suppose we have a relation on attributes $NFLCG$ with these FDs:

$$N \rightarrow FL, NC \rightarrow G$$

   (a) Suppose we decompose into relations NF, FLC and LCG. Use the Chase Test to determine whether this is a lossless-join decomposition.

   (b) Suppose we decompose into relations NF, NL and NCG. Use the Chase Test to determine whether this is a lossless-join decomposition.

   (c) Suppose we decompose into relations NFC, and NLG. Use the Chase Test to determine whether this is a lossless-join decomposition.

2. Suppose we have a relation on attributes $ABCDEF$ and it is to be decomposed into relations $ABCD$ and DEF.

   (a) Invent a set of FDs that would make this a lossless-join decomposition.

   (b) Invent a set of three FDs that would make this is a *lossy*-join decomposition.

   (c) If there were no FDs at all, is it possible that the decomposition is lossless?

Important: In practise, one never invents FDs! They are facts about the domain that either hold or don't hold. So this question is completely unrealistic, but if you can solve it, you really understand the Chase Test.