Assignment 2 - Question 1

due Friday, January 28, 2022

(from DPV) Here’s a problem that occurs in automatic program analysis. For a set of variables \(x_1, x_2, \ldots, x_n\) you are given some equality constraints of the form “\(x_i = x_j\)” and some disequality constraints of the form “\(x_i \neq x_j\)”. Is it possible to satisfy all of them?

For example, the constraints

\[x_1 = x_2, x_2 = x_3, x_3 = x_4, x_1 \neq x_4\]

cannot be satisfied. Give an algorithm that takes as input \(m\) constraints over \(n\) variables and decides whether the constraints can be satisfied.