

Homework Assignment #6
Due: April 28, 2009

6. (a) Consider the problem STRONGLY-CONNECTED: given a directed graph, you must determine whether there is a path from every vertex to every other vertex. Prove that STRONGLY-CONNECTED is **NL**-complete.
- (b) The integer programming (IP) problem is defined as follows: Given an $m \times n$ matrix A of integers and a vector $b \in \mathbb{Z}^n$, does there exist a vector $x \in \mathbb{Z}^n$ such that $Ax \leq b$? The 2-IP problem is a special case where each row of A contains at most 2 non-zero values. Prove that 2-IP is **NL**-hard.