CS 3530: Assignment 8a

Fall 2014

Problem 7.9 (20 points)

Problem

A triangle in an undirected graph is a 3-clique. Show $TRIANGLE \in P$, where $TRIANGLE$=$\{\langle G\rangle|$G contains a triangle$\}$.

Solution

A depth limited search should determine if a triangle is formed from the list of given connected nodes. Starting with a given node and checking all of its childeren to see if their childeren conect back to the start node. This works out well since depth limited searches are only $O(b^d)$ where b is the branching factor and d is the depth we search until which, in this case, is d=3.