CSE680 Homework 7
Due Tuesday, November 20, by class time

1. Give a counterexample to the conjecture that if there is a path from \( u \) to \( v \) in a directed graph \( G \), and if \( vn(u) < vn(v) \) in a depth-first search of \( G \), then \( v \) is a descendant of \( u \) in the depth-first forest produced.

2. A directed graph \( G = (V, E) \) is said to be weakly connected if, for all pairs of vertices \( u, v \in V \), we have a path from \( u \) to \( v \) or a path from \( v \) to \( u \). Give an \( O(n^2) \) algorithm to determine whether \( G \) is weakly connected. (Hints: (1) for simplicity, you may assume \( G \) to be acyclic; (2) use topological sort.)