COMP 550 Algorithms and Analysis Spring 2020 Homework 9 Due Tuesday, April 21, 2020.

1. Let G be the undirected graph of integers from 2 to 10 where there is an undirected edge between i and j if (i divides j evenly and i < j) or if j = i + 1. Show the result of performing breadth-first search on this graph starting at the vertex 2. Show d[v] and $\pi[v]$ for all vertices v in G when BFS is done.

2. Let G be the directed graph of integers from 2 to 10 where there is a directed edge from i to j if (i divides j evenly and i < j) or if j = i + 1. Show the result of performing depth-first search on this graph starting at the vertex 2. Show d[v], f[v], and $\pi[v]$ for all vertices v in G when DFS is done. Assume that when the vertices $v \in Adj[u]$ are examined in line 4 of DFS-visit, they are examined in numerical order, so that if u is the number 2 then its neighbors v are examined in the order 3,4,6,8,10 and so on.

For this homework you may work in groups of up to four people and groups are encouraged to turn in only one paper with everyone's names in the group on it. This will make the work of the grader easier. However, people in different groups may not collaborate.

Those who want to be part of a group and can't find others may meet in the front after class and form groups, if you desire to. You may also send email to the TA and he will assign people to groups.