

CS140 - Sample Problems for Midterm 3

Below are some practice problems to help give you study for the upcoming midterm. Note that not all of these would necessarily be good exam problems, but are there to provide you with some additional practice on the materials.

1. Suppose we are given a connected undirected graph with distinct edge weights. We greedily delete the heaviest edge that does not disconnect the graph, until we cannot delete any more edges. Is the result guaranteed to be a minimum spanning tree of the original graph? If so, justify your answer. If not, give a counterexample.
2. T/F: If we make all the edges in a DAG undirected, we will always end up with a tree (undirected, acyclic graph).
3. T/F: If we modify DFS and BFS to record the edge (u, v) that was traversed to get to a particular vertex v and we run them starting at a particular vertex r in a tree (undirected, acyclic graph), BFS and DFS would always record identical edges for all vertices.
4. T/F: If we modify DFS and BFS to record the edge (u, v) that was traversed to get to a particular vertex v and we run them starting at a particular vertex r on a DAG, BFS and DFS would always record identical edges for all vertices.