Student Information

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Due Date: 23-Nov 4:00pm.

Submit electronic version online through dropbox. Submission without student information will **NOT** be marked!

Week 10

Problem 1

For a general graph with positive and negative weights, we like to find the nodes that are reachable from s through paths that have loops with negative weight.

1. We can do that in time $O(mn)$. (T/F)   F

2. We need exponential time since there may be exponentially many possible paths to check. (T/F)

F

Problem 2

Given a graph $G = (V, E)$ with postive edge weights, the Bellman-Ford algorithm and Dijkstra's algorithm can produce different shortest-path trees despite always producing the same shortest-path weights.(T/F)   T

Problem 3

Dijkstra's algorithm may not terminate if the graph contains negative-weight edges.(T/F)

No negative edges allowed in Dijkstra   F

Problem 4

Consider a weighted directed graph $G = (V, E, w)$ and let X be the shortest $s-t$ path for $s, t \in V$. If we double the weight of every edge in the graph, setting $w'(e) = 2w(e)$ for each $e \in E$, then X will still be a shortest s_t path in (V, E, w')(T/F)   T