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Homework #5 (100pt), Due. 04-25-2017

Q1. [30pt] Implement a program that can determine whether a given graph is acyclic. Use the provided graph as inputs (HW5-mediumEWG.txt). Discuss the results.

Q2. [40pt] Implement two MST algorithms -- Kruskal and Prim (lazy version) – and run them on the given graph (HW5-mediumEWG.txt). Compare and discuss the results.

Q3. [40pt] Implement DFS and BFS algorithms and apply for the dataset of the undirected road network of New York City (HW5-NYC.txt). You program needs to print out logs for the first 50 vertices in the order that you mark those vertices. The printed logs should have information about the visited vertex ID and the internal values associated with it (e.g., distTo, edgeTo, etc.). Compare and discuss the results. The graph contains 264346 vertices and 733846 edges. It is connected, contains parallel edges, but no self-loops. The edge weights are travel times and are strictly positive.