Home Work 5.
Algorithms and Data Structures

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HW5.0 Suppose that we want to solve the Minumum Spanning Tree problem for a graph with in integer weights in the range $[1, .., |V|]$, can we modify Prim's algorithm to make it faster? Can we modify Kruskal's algorithm to make it faster?

HW5.0bis Suppose that we want to solve the Minumum Spanning Tree problem for a graph with in integer weights in the range $[1, .., C]$, for a constant C. Can we modify Prim's algorithm to make it faster? Can we modify Kruskal's algorithm to make it faster?

HW5.1 Analyze the running time of the the algorithm Strongly-conn-comp code and if it is not $O(|V| + |E|)$ modify the algorithm so to make it run in that time.

HW5.2 (CLR 26.2-5) Use the output of Floyd-Warshall algorithm to decide whether there is a negative cycle in G.

HW5.3 Modify Floyd-Warshall2 to detect a negative cycle in G.

HW5.4 Modify Bellman-Ford's algorithm so that it sets $d[v] = infinity$ for any node v for which there is a negative cycle on some path from s to v.