

IT251 Lab 7 Problems -- 4 March 2020

Instructions:

1. Do the below problems in the order given.
2. For each of the problems below, test your code on different input graphs.
3. Use the adjacency list format in *input.txt* of the previous lab to read in graphs.

Problem 1: Prim's MST algorithm

Implement Prim's MST algorithm on a weighted undirected graph. Use the same input file format for weighted graphs as the previous lab's Kruskal's algorithm. Store the graph as a adjacency list (not as an adjacency matrix).

Problem 2: Comparing implementations.

Compare the performance (runtime) of the following three MST implementations:

- i) Kruskal's algorithm using Disjoint Set DS without Path compression
- ii) Kruskal's algorithm using Disjoint Set DS with Path compression
- iii) Prim's algorithm using Binary Heaps.

Read up about timing programs online, for e.g. [here](#). Run your programs on graphs of increasing large sizes. You could plot a graph of the results of your experiments.