

IT251 Lab 6 Problems -- 26 Feb 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: Disjoint Set Data Structure

Implement the Disjoint-Set Data Structure (with the union-by-rank and path-compression heuristics). Create a separate class for the Data Structure and implement the three operations i.e. **makeset**, **findset** and **union** as three class methods. Test the working of your data structure by doing a series of the above three operations and ensuring that the sets are maintained as expected.

Problem 2: Kruskal's MST algorithm

Implement Kruskal's MST algorithm on an undirected graph. Use the data structure you have implemented in Problem 1 in your code here. Use modules to import your code. For e.g. you can refer to <https://www.programiz.com/python-programming/modules> or <https://docs.python.org/2/tutorial/modules.html> on how to build/import modules. Test your code on the example discussed in class (and other examples designed by you!)