FIT2004: Lab questions for week 11

Objectives: This prac provides a platform for you to practise through implementation various graph algorithms introduced in weeks 9 & 10 lectures.

This prac is **NOT** assessed. Implement these questions using Python programming language.

1. Prim's algorithm to solve the minimum spanning tree problem shares many similarities with Dijkstra's algorithm for finding shortest paths in an undirected weighted graph. Implement Prim's algorithm using a Priority Queue, as introduced in the lecture on this topic. Test your implementation on road network provided for assessment week 10. Also, change some weights to be negative. Does Prim's algorithm work on undirected graphs containing negative weights? Justify your answer.

2. Implement the Union-Find data structure on disjoint sets introduced in lecture 10 as a building block for solving Kruskal's algorithm for Minimum Spanning Tree (MST) problem.

3. Solve the problem described at this link: http://projecteuler.net/problem=107. [1]

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[1] For those unfamiliar with Project Euler, read this `http://en.wikipedia.org/wiki/Project_Euler`