

2010 Paper 3 Question 2

Algorithms II

- (a) Describe the basic operations on the disjoint-set data structure. [3 marks]
- (b) Describe the simple linked-list implementation of the disjoint-set data structure, without the weighted-union or path compression optimisations. Explain the complexity of each operation. [6 marks]
- (c) Describe Kruskal's algorithm for finding a minimum spanning tree. [6 marks]
- (d) If the simple linked-list implementation (part (b)) is used to implement the disjoint-set data structure in Kruskal's algorithm, what is the resulting complexity? [5 marks]