

CISC220 Homework 5

Homework due December 8 in lab.

You may not help other people with this homework assignment.

1. **[INDIVIDUAL 20 pts.]** Using Prim's algorithm, draw the minimum spanning tree rooted at the farthest left node (the filled circle) in the graph. Label each node with the numerical order that they are expanded.

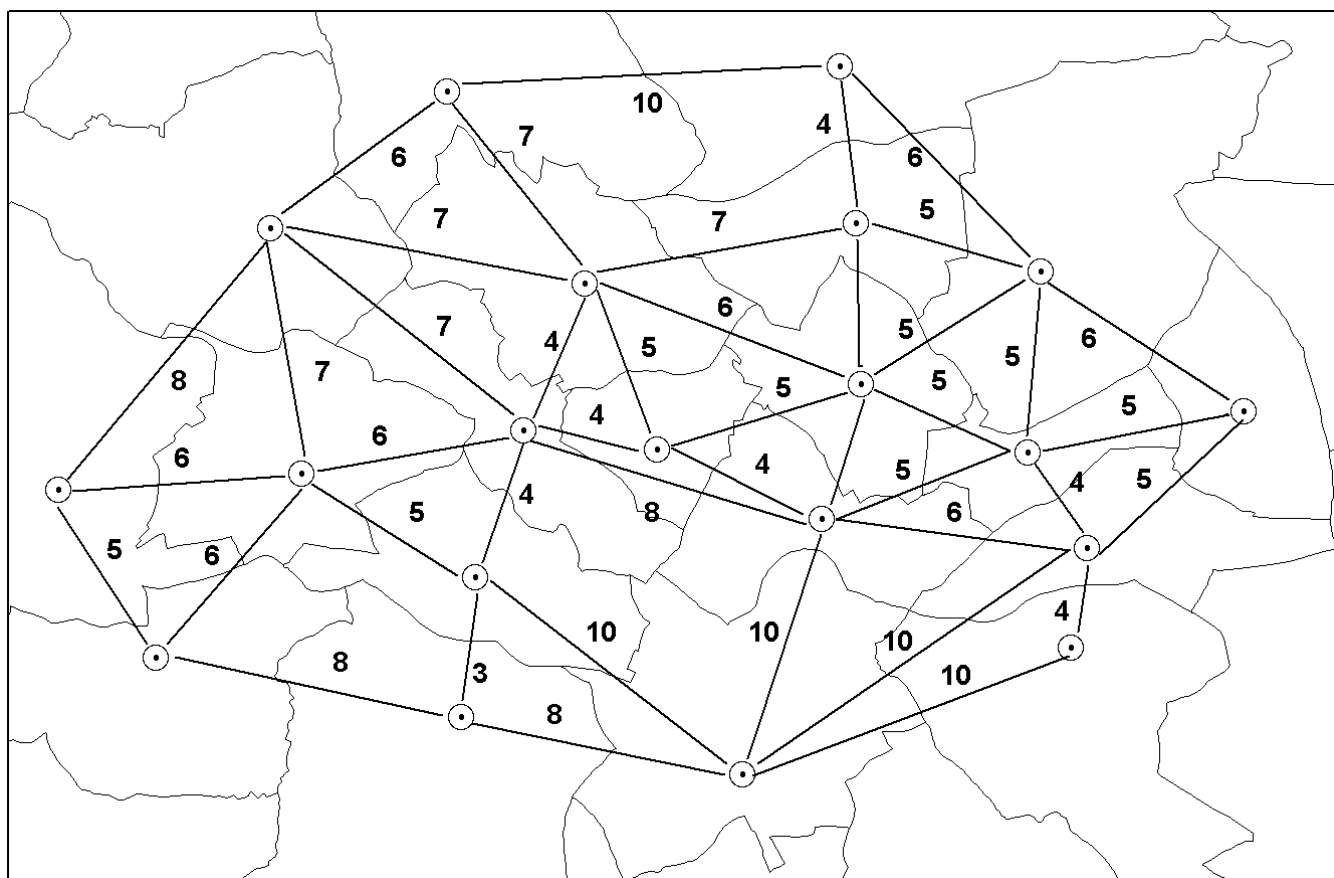
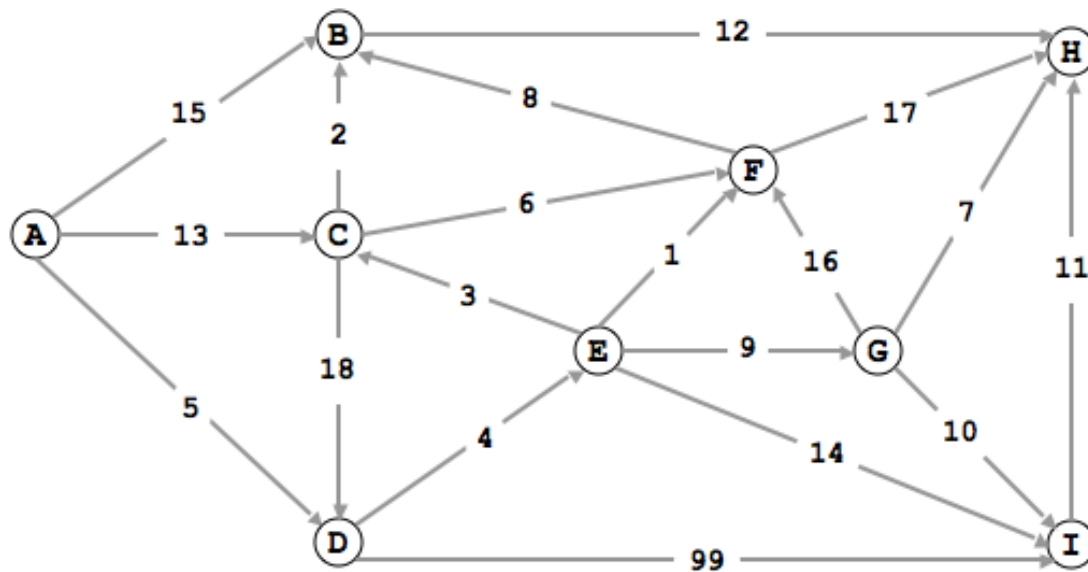


Figure 1: A map of electricity distribution hubs in West Yorkshire, England

2. **[INDIVIDUAL 30 pts.]** Run Dijkstra's algorithm on the following DIRECTED graph using vertex A as the source.



Write the label of the vertex in the order that it is removed from the priority queue:

0 1 2 3 4 5 6 7 8

A

Give the distance of the shortest path from A to each vertex v and the last edge on the shortest path to v .

v	$\text{dist}[v]$	$\text{pred}[v]$
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A	0	null

B

C

D

E

F

G

H

I