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CS 260

**Homework 8**

1)

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Dijkstra’s algoritm can start on Node 1, poping it off the priority queue. There are two places it can go which are 1 -> 2 and 1 ->3, but it will go to 3 because it has a lower cost. So it will pop 3 off the priority queue and see 3->4, so it will pop 4 off the priority queue. Now it will go back to 2 since it will go back to the lowest remaining node, popping 2 off the priority queue. The distance to Node 3 will be updated -1. The algorithm will say that the shortest path from 1 to 4 is 1 ->3->4 because Dijkstra’s algorithm does not handle negative edge weights well.

2)

To insert the edge(I, j) into the adjacency list the algorithm will go to i and scan the adjacency list to see if j already exists there. If J exsists then nothing will happen, if it does not then it will be appended to the list. The algorithm will then go to j and look for I, appending it if it doesn’t exist. To delete edge(I,j) it’s the same as inserting but with deleting.

3)

Delete(I, J, S)

For j in adj[i]

Delete j.SharingEdge

Delete j

This will have a linear run time with the number of items in the adjacency matrix since we have to loop through it.

4)

a) C:\Users\Steve\AppData\Local\Microsoft\Windows\INetCacheContent.Word\Untitled Diagram (1).png

b)

C:\Users\Steve\AppData\Local\Microsoft\Windows\INetCacheContent.Word\Untitled Diagram (2).png

d) i)

C:\Users\Steve\AppData\Local\Microsoft\Windows\INetCacheContent.Word\Untitled Diagram (4).png

ii) C:\Users\Steve\AppData\Local\Microsoft\Windows\INetCacheContent.Word\Untitled Diagram (3).png