A SINCERE NOTE THE GRADER:

Due to the intensity of my exams and other homeworks, I only had the last day of this homework to do it.

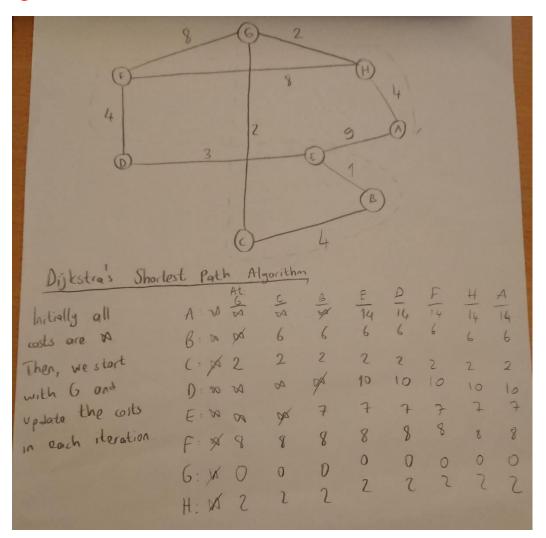
I know that it was written that hand-written solutions will not be accepted. Thus, I am not submitting a hand-written copy but a pdf © I added necessary explanations in necessary fields. I hope nothing is missing and I hope it is done properly. I wrote completely legibly and tried to make everything as clear as possible.

I used this method due to the lack of time.

Please do not deduct points right away and please read and see what I did.

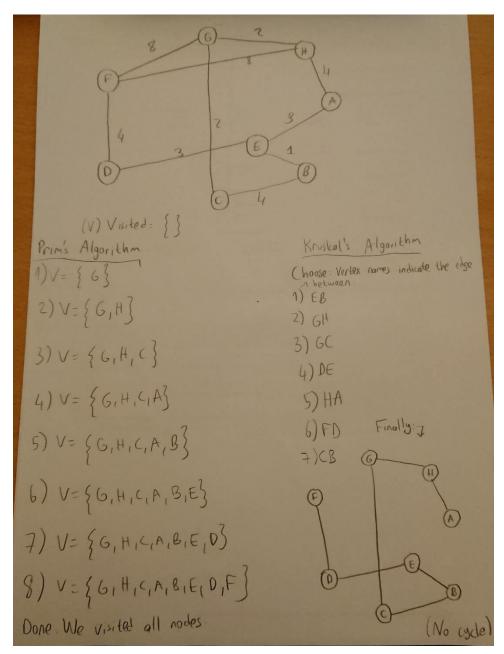
Thank you. ©

Question 1:



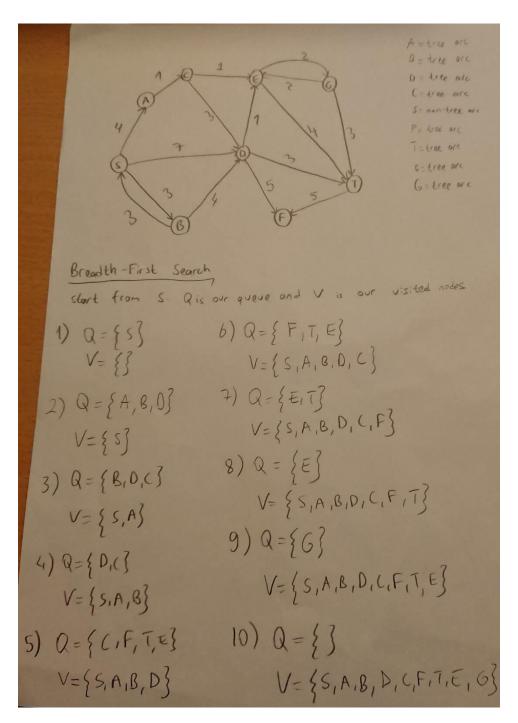
In this question, I showed where I am and how the values of the nodes are changing when the cost to that path is changing. If a path's cost is changed I crossed it out and showed properly.

Question 2 and 3:



In this question, I show the Prim's and Kruskal's algorithms side by side. Prims's algorithm needs a Visited node track as shown. Kruskal's algorithm, however, do not use that kind of system but the lowest code choice of nodes. Explanation is already written but to make it even more clear, in my representation, EB denotes the edge between the vertices E and B.

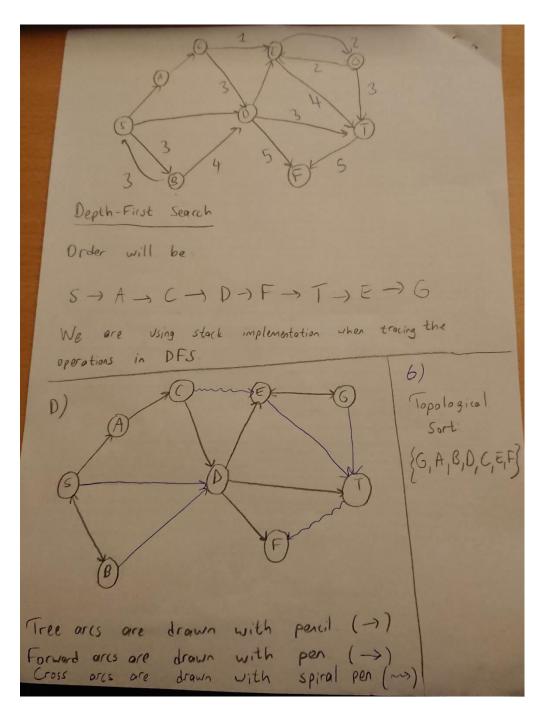
Question 4:



In this question, I tried to show how breadth-first search proceeds. Q is the queue used in the algorithm and V is the visited array in the algorithm. (I hope I did not get confused and wrote wrong wrong order in V)

Question 5:

A, **D**:



Order of DFS and arc types are pointed out as shown.

B,**S**:

Pre Post (Numbers)

A: 14 17

B: 2 3

C: 15 16

D: 4 13

E: 9 12

F: 5 6

G: 10 11

T: 7 8

S: 1 18

Pre and post numbers for each edge is shown.

Question 6:

It is written in the snapshot of the paper in the Question 5. (right side). Again, here, it is:

 $\{G, A, B, D, C, E, F\}$