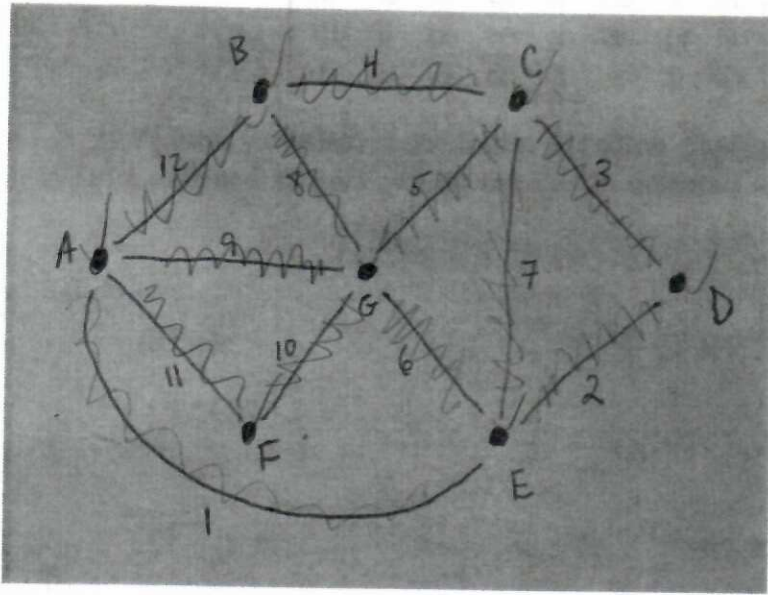


The following questions all refer to the following simple, weighted graph:



1. (2 pts) Is there an Euler path (if so, illustrate it by listing a traversal in order); if not explain why not).

node	Degree
A	4
B	3
C	4
D	2
E	4
F	2
G	5

yes,

B, G, A, B, C, G, E, C, D, E, A, F, G



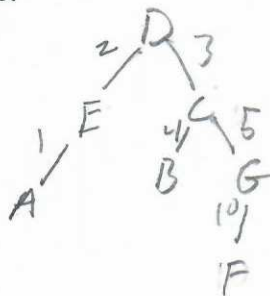
2. (2 pts) Is there a Hamiltonian Circuit (if so, illustrate it by listing a traversal in order); if not explain why not).

yes,

A, F, G, B, C, D, E, A



3. (2 pts) Use Prim's algorithm to create a minimal spanning tree, starting from node D. What is the minimal weight?



D, E, A, C, B, G, F

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A B C D E F G

$$\begin{bmatrix} A & 0 & 12 & \infty & \infty & 1 & 11 & 9 \\ B & 12 & 0 & 4 & \infty & \infty & \infty & 8 \\ C & \infty & 4 & 0 & 3 & 7 & \infty & 5 \\ D & \infty & \infty & 3 & 0 & 2 & \infty & \infty \\ E & 1 & \infty & 7 & 2 & 0 & \infty & 6 \\ F & 11 & \infty & \infty & \infty & \infty & 0 & 10 \\ G & 9 & 8 & 5 & \infty & 6 & 10 & 0 \end{bmatrix}$$

The adjacency matrix of the graph is as follows:

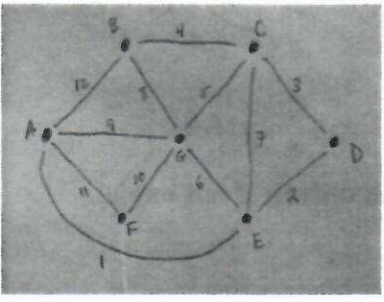
4. (2 pts) Using Dijkstra's method, and the following table, write the initial set of distances from every node to node A, and then the result after the first iteration of the procedure. (If you'd rather, you may illustrate Bellman-Ford - just let me know.)

	A	B	C	D	E	F	G
d	0	12	∞	∞	1	11	9
s	-	A	A	A	A	A	A

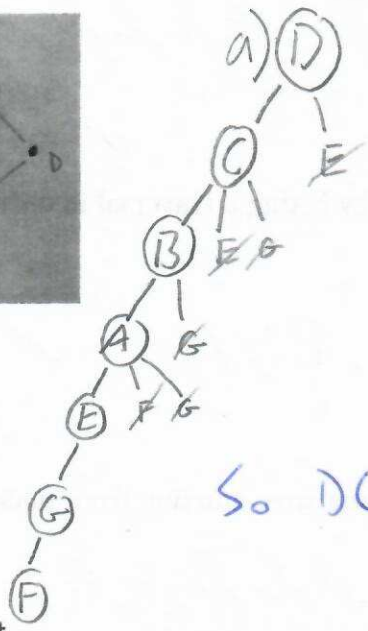
Bellman-Ford I think (+ Dijkstra's!)

	A	B	C	D	E	F	G
d	0	12	8	3	1	11	7
s	-	A	E	E	A	A	E

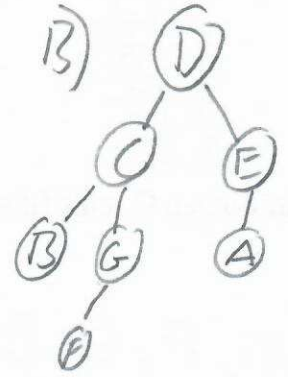
5. (2 pts) Give the two graph traversals we studied, from node D:



a. Depth-first



b. Breadth-first



So DCBAEGF

+ DCEBGA F