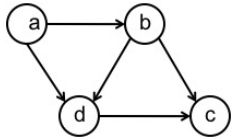
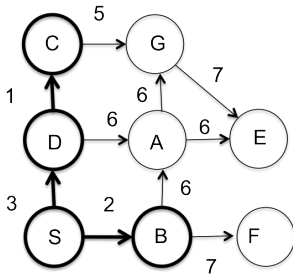


1. (3) Show a result of topological sort of the following graph assuming that the vertices are traversed by DFS in the alphabetical order. Topological order would be a,b,d,c with all the edges as in the original

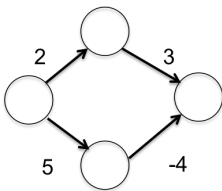


graph.

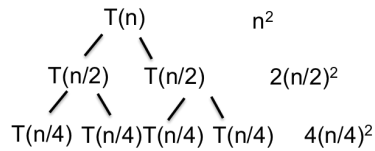
2. (3) We are running one of these three algorithms on the graph below, where the algorithm has already processed the bold-face edges. (ignore the directions on the edges for Prim's and Kruskal's).
- Which vertex would be added next in Prim's algorithm. G
 - Which edge would be added next in Kruskal's algorithm. CG
 - Which vertex would be marked next in Dijkstra's algorithm (which started in S and the shortest path from S to D and B and C has been found) ? A



3. Give an example of a directed graph with negative weights on which the Dijkstra's algorithm would produce incorrect answer. You can demonstrate this on a graph which is square, i.e. has 4 nodes connected by edges of the square. Figure out what the weights should be.



Answer for the problem below



4. Draw 3 levels of the recurrence tree for the following recurrence $T(n) = 2T(n/2) + n^2$