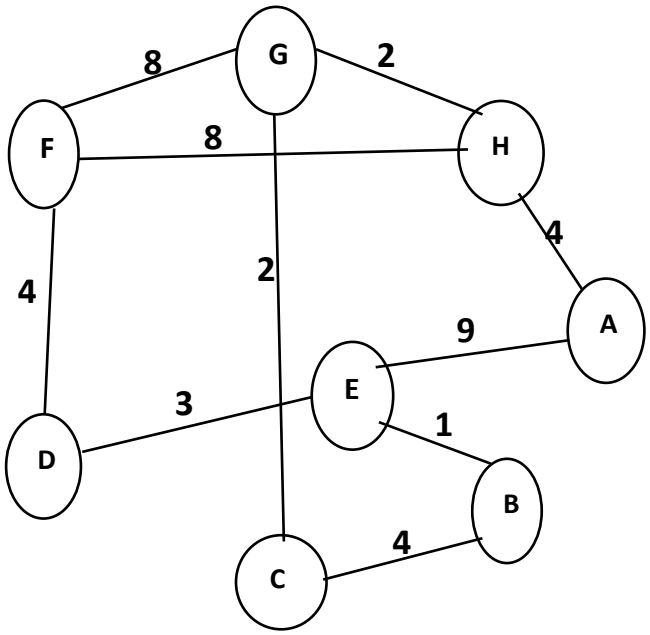
CS300 – Spring 2022-2023 - Sabancı University

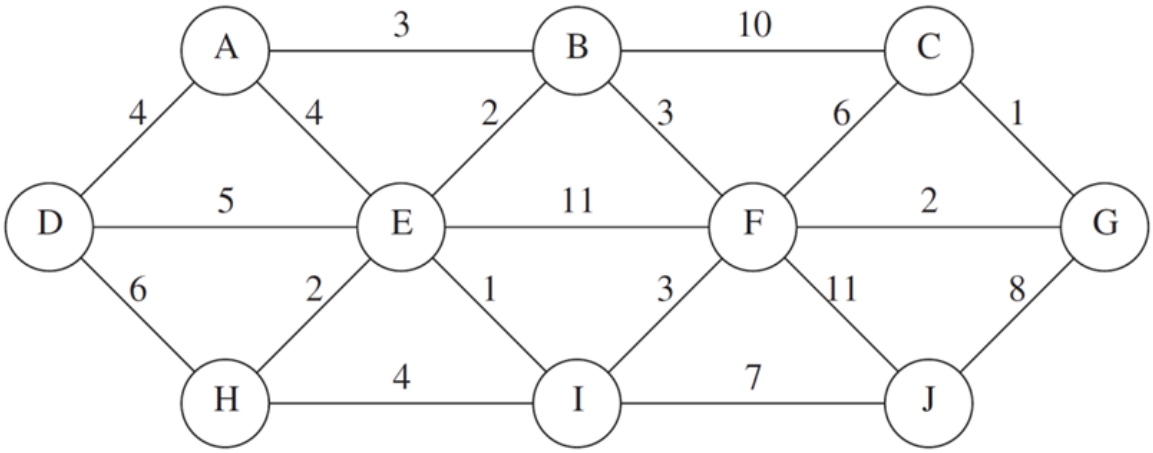
Homework #6: Graphs

Due June 3, Saturday, 23:00

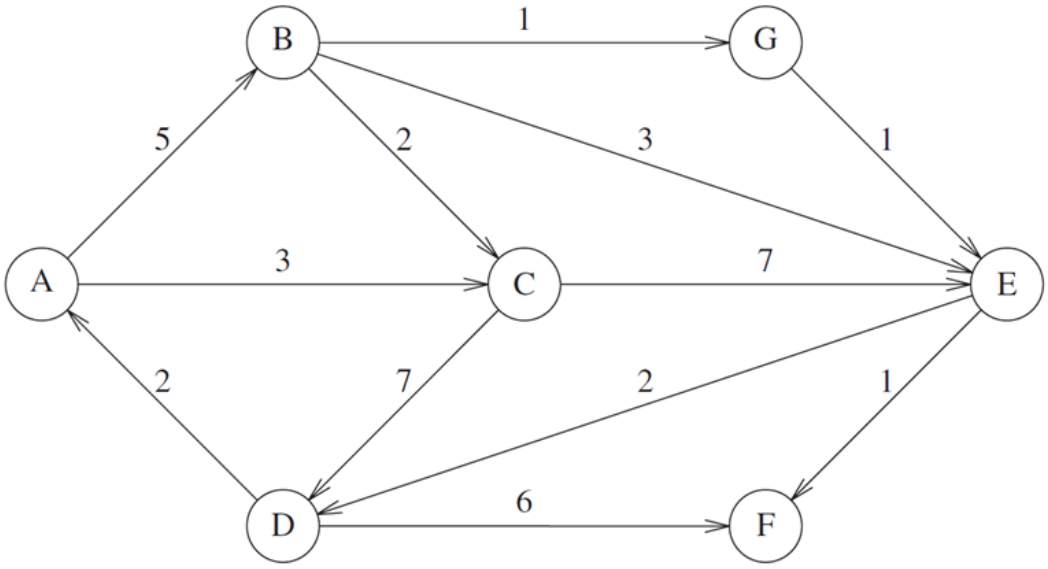
1) **(35 points)** Trace in detail the operation of Dijkstra's weighted shortest path algorithm for the undirected weighted graph below. Use **vertex E** as your start vertex.



2) (20 points) Find a minimum spanning tree for the graph below using Kruskal's algorithm. Draw the resulting spanning tree as your solution where the edges are numbered with their selection order by Kruskal's algorithm.



3) (25 points) Find the shortest path from *B* to ALL other vertices for the graph below. Show your steps while you construct the shortest path such as B-->E-->D.



4) (20 points) Perform a depth-first search on the following graph starting at A. Label every edge in the graph with T if it's a tree edge, B if it's a backward edge, F if it's a forward edge, and C if it's a cross arc (edge). Assume that whenever faced with a decision of which node to pick from a set of nodes, pick the node whose label occurs earliest in the alphabet.