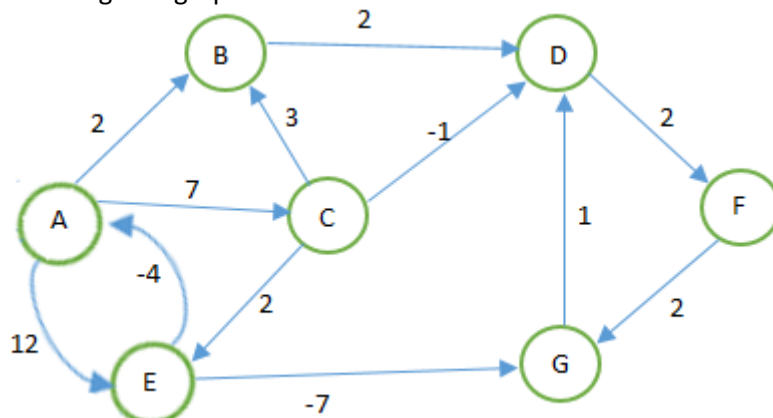


Exercise I: Dijkstra (35 points)

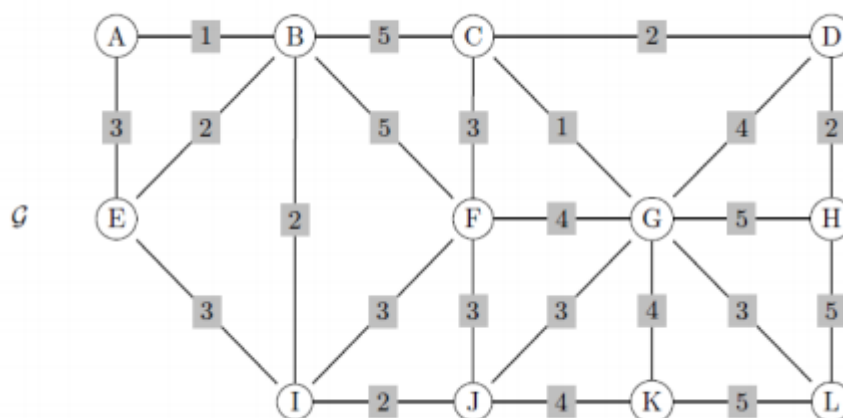
Consider the following directed weighted graph:



- 1- Step through Dijkstra's algorithm to calculate the shortest paths from A to every other vertex. Show your steps as the algorithm proceeds.
- 2- Dijkstra's algorithm found the wrong paths to some of the vertices. Indicate those wrong paths and correct them.
- 3- What single edge could be removed from the graph such that Dijkstra compute the correct path for all vertices in the remaining graph?

Exercise II: Electrical Network (35 points)

The government wants to construct an electrical network between 12 commuters. The cost of each cable is shown in the graph below. Following a political decision, GH and AE cable links are imposed. Determine a minimum cost cabling complying with these constraints. (You will specify the algorithm used, the adaptation of this algorithm to the specific case of the exercise and finally its application step by step.)



Good Luck