Assignment 2
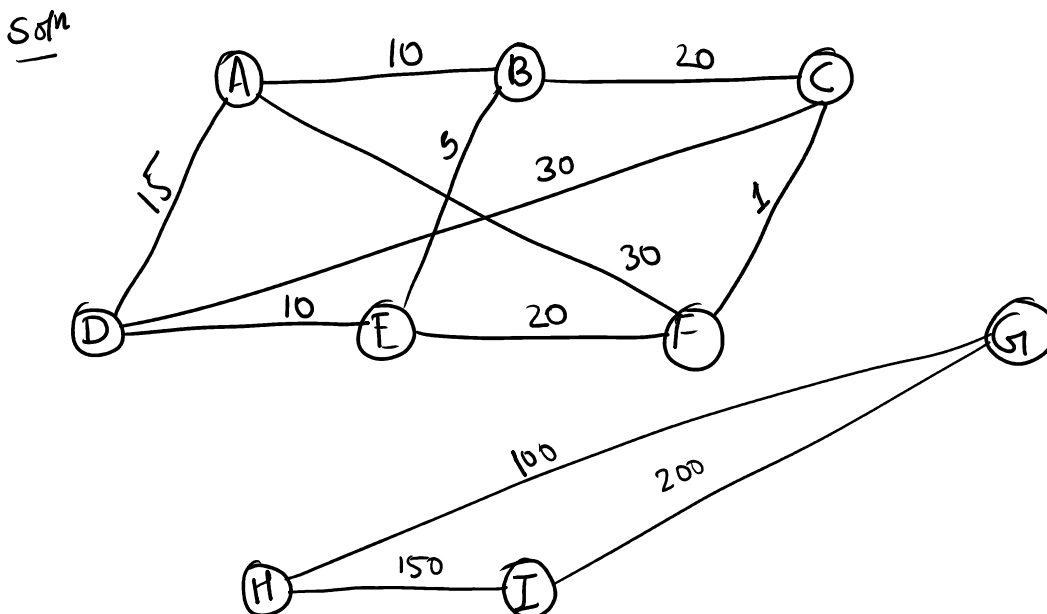## (Data Structures and Algorithms)

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Part 1

1.1 A list of vertices is provided below, and the table contains a set of edges and the corresponding edge weights. Draw the undirected graph represented by the information provided.

Vertices, V = { A, B, C, D, E, F, G, H, I }

Edges, E =

Edge	Weight
(A, B)	10
(B, C)	20
(C, D)	30
(D, E)	10
(E, F)	20
(F, A)	30
(A, D)	15
(B, E)	5
(C, F)	1
(G, H)	100
(H, I)	150
(I, G)	200

Soln

1.2 Answer the following questions about the graph you constructed in question 1.1.
- Is the graph connected or not? Why?
- How many connected components are there in the graph?

Soln   The graph is not connected because there doesn't exist a path from a particular vertex to all other vertices (e.g., from A to I).

There are two connected components in the graph.

1.3 Construct a minimum spanning forest of the graph you constructed in question 1.1. Use Kruskal's
    algorithm and show the steps you followed in constructing the MST.

Soln   For the 1st connected component:

       Edges in ascending order of their weights:

Edge	Weight	Accepted
(C, F)	1	yes
(B, E)	5	Yes
(A, B)	10	Yes
(D, E)	10	Yes
(A, D)	15	No
(B, C)	20	yes
(E, F)	20	No
(C, D)	30	No
(F, A)	30	No
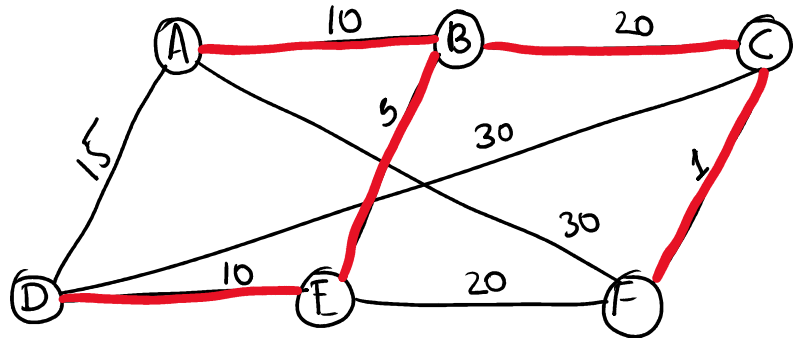
Steps: Draw the least weighted edge, i.e. (C, F).
       The draw the second least weighted (B, E).
       Do this until we reach a edge which forms a loop (A, D). This edge shouldn't be added