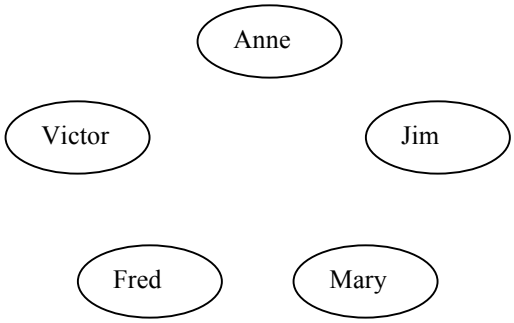
Review GRAPHS

1. A graph can be used to show relationships. For example, given the following list of people belonging to the same club and their friendships:

People = {Anne, Fred, Jim, Mary, Victor}
Friendship = { {Anne, Victor }, {Anne, Fred}, {Jim, Fred},
{Jim, Anne}, { Victor, Fred} }



(A). Draw the graph.

(B). Give the adjacency matrix representation.

Anne
Fred
Jim
Mary
Victor

(C). Using the adjacency matrix representation, explain how would you determine whether a node is disjoint.

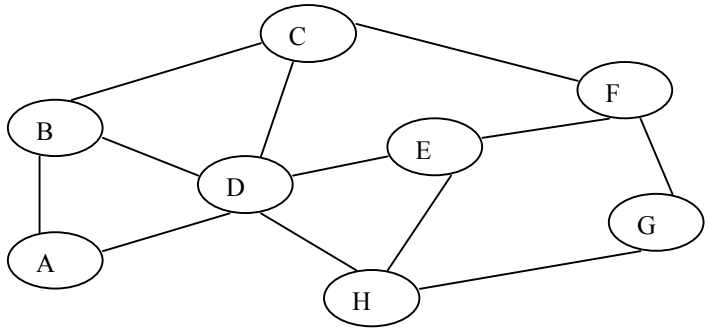
(D). Give the adjacency list representation.

Review GRAPHS

2. **(A).** What is the degree of node D?

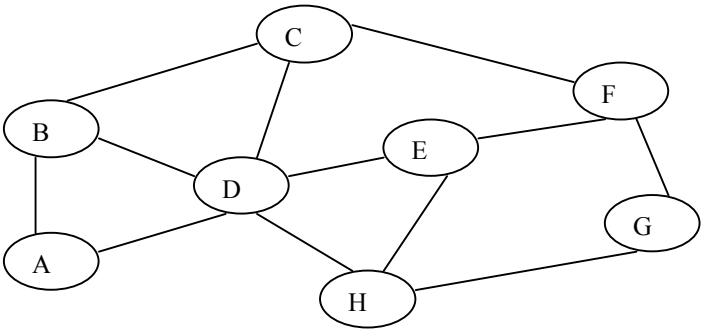
(B). List all nodes adjacent to C:

(C). Draw a non-cyclic path of length 5 between C and H.



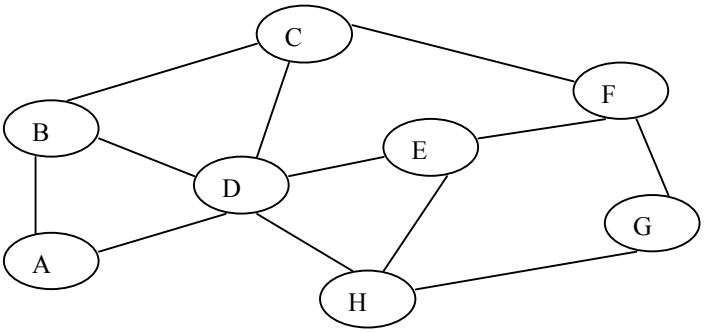
(D). List one of the many graph applications:

3. (A). Give the breadth-first traversal for the following graph Begin with A. Show how you get the answer.



A

(B). Give the depth-first traversal for the following graph. Begin with A. Show how you get the answer.



A

Review GRAPHS

4. Minimum Spanning tree.

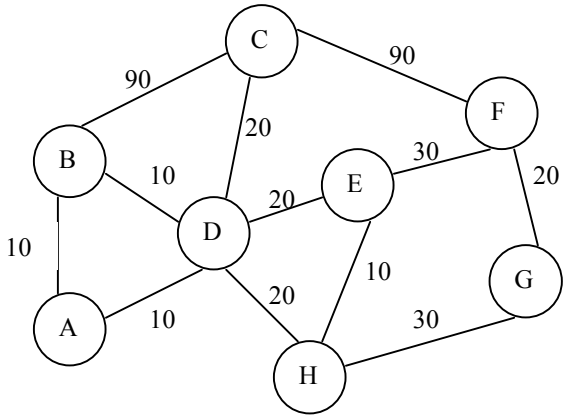
(A). Circle the algorithm of your choice:

(a) Build the MST edge by edge? (Kruskal) or

(b) Build the MST node by node? (Prim)

(B) Show how you get the answer, step by step (8 nodes => 7 steps).

(C) What is the minimum weight of your tree?



Review GRAPHS

5. Dijkstra's Shortest Path algorithm (begin with A). Show how you get the answer step by step (8 nodes => 7 steps).