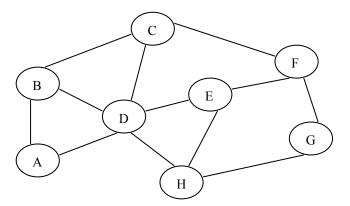
Review GRAPHS

1.

- **(A).** List one of the many graph applications:
- **(B).** What is the degree of node D?
- **(C).** List all nodes adjacent to C:
- **(D).** Draw a non-cyclic path of length 5 between C and H.



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

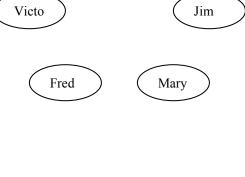
People = {Anne, Fred, Jim, Mary, Victor}

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

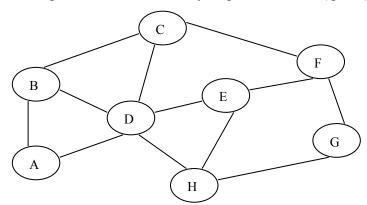


(C). Using the adjacency matrix representation, explain how would you determine whether a node is disjoint.

(D). Give the adjacency list representation

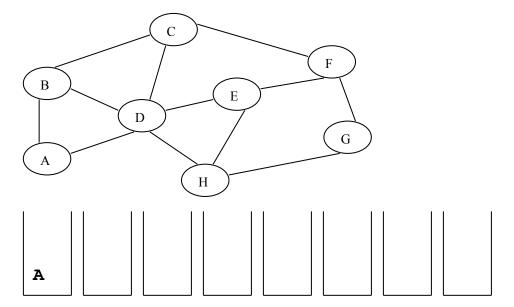
Review GRAPHS

- **3.** Stacks and Queues are often used as auxiliary data structures in tree and graph algorithms, such as graph traversals.
- (A). Give the breadth-first traversal for the following graph Begin with A. Show how you get the answer (queue)



A		

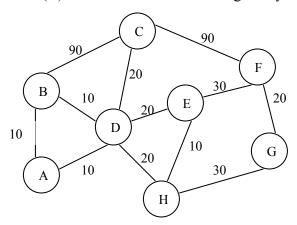
(B). Give the depth-first traversal for the following graph. Begin with A. Show how you get the answer (stack)



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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 \Rightarrow 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).

