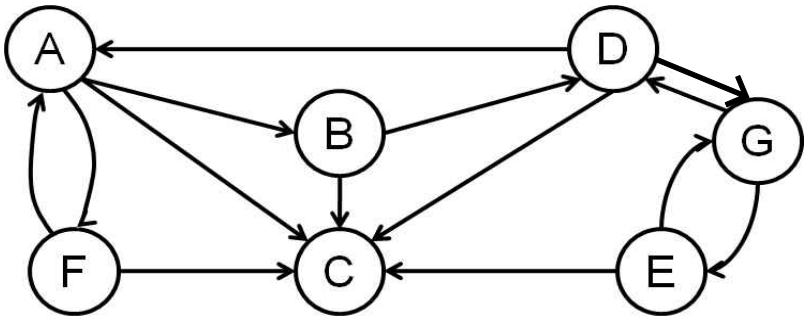
Algorithm Analysis Homework 3

Due by 4/19(Thur.) in class

1. Apply breadth-first search algorithm on the following graph. Assume the vertices are in alphabetical order in the *Adj* array and that each adjacency list is in alphabetical order. What is the minimum distance of vertex B, C, and E from the root? Show you work.



2. For the same graph, apply depth-first search algorithm. Assume the vertices are in alphabetical order in the *Adj* array and that each adjacency list is in alphabetical order. What is the discovery time and finish time of each vertex C, D, and E? Show you work.

3. Solve the following knapsack problem with dynamic programming. (Show your work.)
   Knapsack weignt = 5 lb Max.
   Item 1: $10, 4 lb, Item 2: $7, 3 lb, Item 3: $5, 2 lb

4. Solve the following problem with branch and bound. (Show you work.)
   Knapsack weignt = 5 lb Max.
   Item 1: $11, 4 lb, Item 2: $7, 3 lb, Item 3: $5, 2 lb

   (a) What is benefit, weight, and bound of node (2,1) and (2,3)?
   (b) List all vertices that become 'non-promising'?