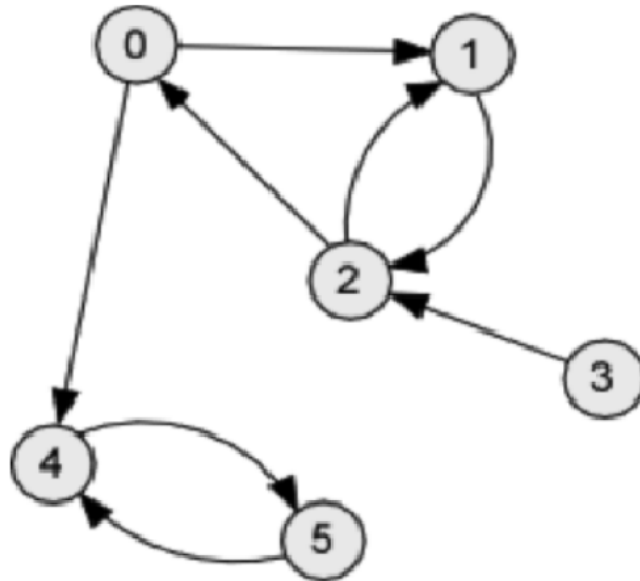


1 Graph Representations



In the parts below, enter the adjacency list corresponding to each node.

For every part, your answer should be **sorted** by least to greatest with a **single space** between each item. For example, a node A that has edges to nodes D, C, and B would be input as: B C D

- a) What is the adjacency list for node 0?
- b) What is the adjacency list for node 1?
- c) What is the adjacency list for node 2?
- d) What is the adjacency list for node 4?

2 Heaps

We have the following heap, representing a Min PQ: [-, 1, 4, 6, 7, 10, 12, 15, 16]. Here, - represents null.

a) What is the left child of element 4?

- 6 7 10 12

b) What is the right child of element 6?

- 7 10 12 15

c) Suppose we insert 0. What is the resulting state of the heap?

- [-, 1, 0, 6, 4, 10, 12, 15, 16, 7]

- [-, 0, 1, 6, 4, 10, 12, 15, 16, 7]

- [-, 0, 1, 4, 6, 10, 12, 15, 16, 7]

- [-, 0, 1, 4, 6, 7, 10, 12, 15, 16]

- None of the above

d) Consider the initial state of the heap again. [-, 1, 4, 6, 7, 10, 12, 15, 16]

Suppose we call `removeMin()`. What is the resulting state of the heap?

- [-, 4, 6, 7, 16, 10, 12, 15]

- [-, 4, 7, 6, 15, 10, 12, 16]

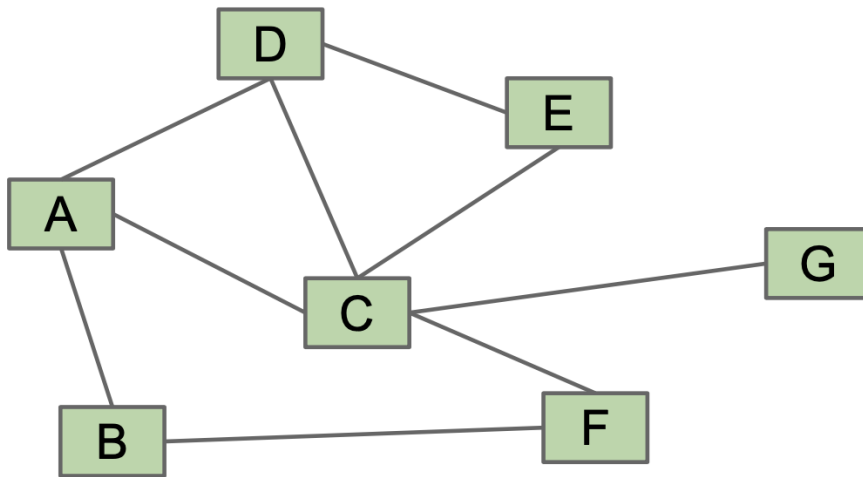
- [-, 6, 4, 12, 7, 10, 16, 15]

- [-, 4, 7, 6, 16, 10, 12, 15]

- None of the above

3 Graphs

Suppose we have the graph below.



For all parts below, assume we break ties alphabetically.

- a) What is the order that vertices are visited if we run DFS preorder starting on vertex A? Enter your answer as a space separated list, e.g. A B C D E F G.
- b) What is the order that vertices are visited if we run DFS postorder starting on vertex A? Enter your answer as a space separated list, e.g. A B C D E F G.
- c) What is the order that vertices are visited if we run BFS starting on vertex A? Enter your answer as a space separated list, e.g. A B C D E F G.