Q1: Run BFS from 7 and give the values of the resulting edgeTo map.

edgeTo[0] =
edgeTo[1] =
edgeTo[2] =
edgeTo[3] =
edgeTo[4] =
edgeTo[5] =
edgeTo[6] =
edgeTo[7] =
edgeTo[8] =
edgeTo[9] =

?: What is the runtime for graph traversal given an adjacency list representation?

?: How many graph traversals can be completed in O(EV) time?

Q1: Given a digraph, design an algorithm to find a directed cycle with the minimum number of edges (or report that the graph is acyclic) in O(EV) time.
Given a digraph and a set of source vertices, find shortest path from any vertex in the set to every other vertex.

\[ S = \{1, 5, 7\} \]

- Shortest path to 0 is 7-6-0.
- Shortest path to 2 is 5-2.
- Shortest path to 4 is 5-2-4.

Q1: Given a digraph and a set of source vertices, find shortest path from any vertex in the set to every other vertex.

?: Give a runtime bound for this problem.

Given a digraph G and a source vertex s, design a linear-time algorithm to determine all vertices that are reachable from s via a path with an even number of edges. This path may contain a cycle.

Suppose the source vertex is 7.

- Path to 2 is 7-6-2.
- Path to 3 is 7-6-2-3-5-2-3.
- Path to 5 is 7-6-2-3-5.

?: Give a runtime bound for this problem.

?: Consider modifying a graph traversal algorithm.

?: Consider introducing additional edges or vertices.

Q1: Given a digraph G and a source vertex s, design a linear-time algorithm to determine all vertices that are reachable from s via a path with an even number of edges. This path may contain a cycle.