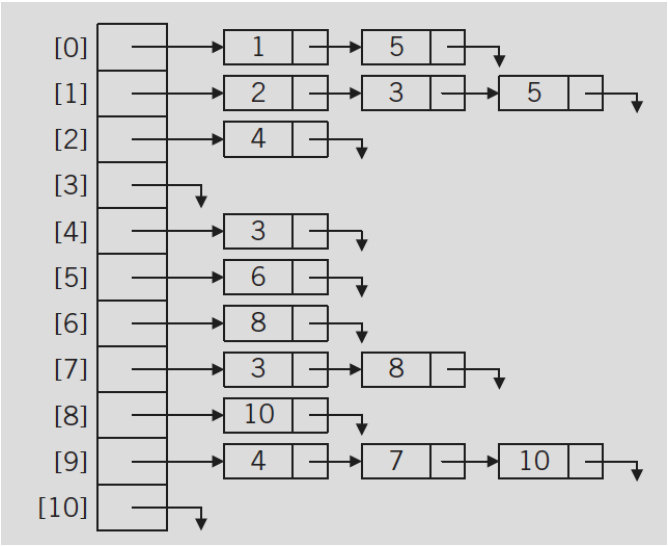
CS 300 Algorithms
Problem Set #22: Graphs

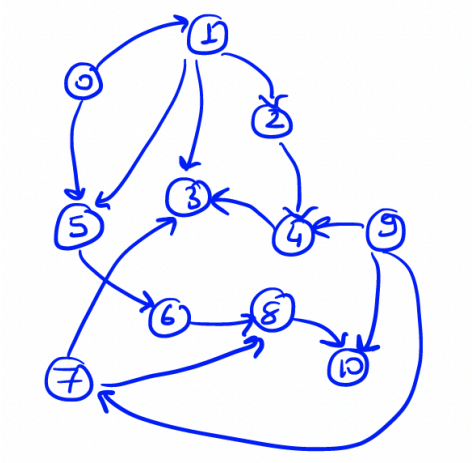
1. You are given the following adjacency list of a graph, G.



a) what is the type of the graph? Directed/Undirected

Directed graph

b) draw the graph



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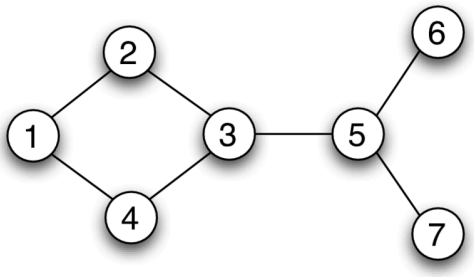
2. You are given the following undirected graph.



a. Please list the vertices in BFS starting at vertex **1**.

1 2 4 3 5 6 7

b. Please list the vertices in DFS starting at vertex **1**.

1 2 3 5 6 7 4

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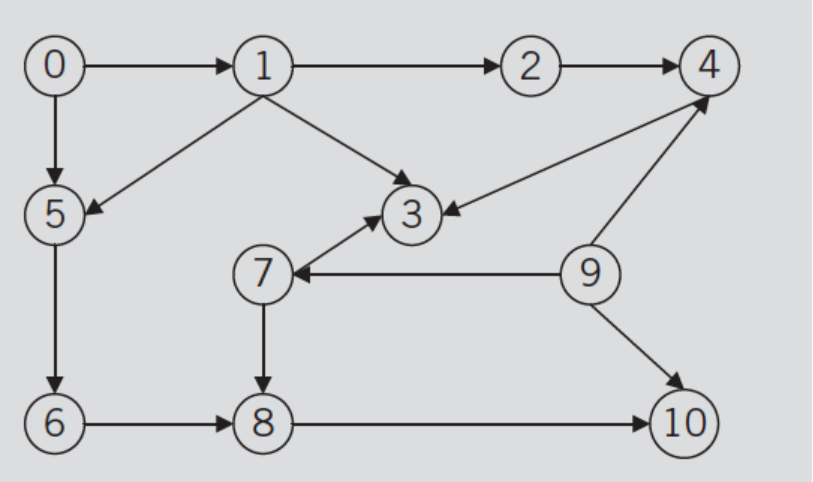
3. Consider the following graph, G.



a) What is the depth first ordering of the vertex 0.

0 1 2 4 3 5 6 8 10

b) What is the breadth first ordering of the vertex 0.

0 1 5 2 3 6 4 8 10

4. Consider the directed graph(digraph) below. Assume the adjacency lists are in sorted order. For example, follow the edge before following.

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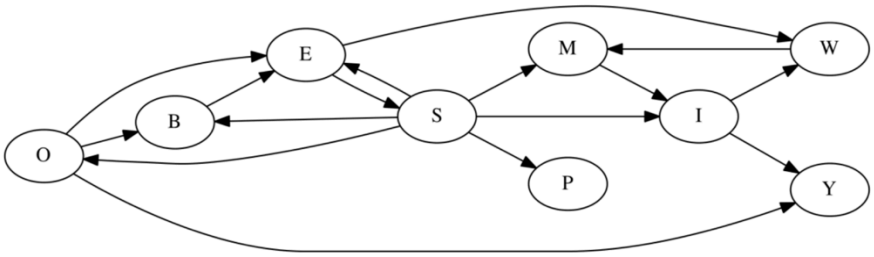

O: B – E – Y
B: E
E: S – W
S: E – I – M – P
M: I
P: -
I: W – Y
W: M
Y: -

a. Give the order in which vertices are visited using depth-first traversal. Start from vertex O.

   O B E S I W M Y P

b. Give the order in which vertices are visited using breath-first traversal. Start from vertex O.

   O B E Y S W I M P