

```

1 Problems for Midterm 3
2
3 Arcs
4 -----
5 i A B C E D F G H
6 A - - 1 - - - -
7 B - - 1 - - - 1 -
8 C - 1 - - - - -
9 E - - - - - - -
10 D - - - 1 - 1 - -
11 F - - - - - - -
12 G - - - - - - -
13 H - - - - - - -
14
15 Vertex E is a sink (TRUE): true
16 Vertex C is a sink (FALSE): false
17 O does not exist in this graph.
18 Vertex O is a sink (FALSE): false
19 O does not exist in this graph.
20 Vertex O is a source (FALSE): false
21 A list of all of the sinks in the graph: [E, F, G, H]
22 Vertex A is a source (TRUE): true
23 Vertex B is a source (FALSE): false
24 A list of all of the sources in the graph: [A, D, H]
25 Vertex H is isolated (TRUE): true
26
27 A sample directed graph with no cycles: Sample-DAG.tgf.
28 Arcs
29 -----
30 i a b c d e f g
31 a - 1 - 1 - - -
32 b - - 1 - 1 - -
33 c - - - - - -
34 d - - - - 1 - -
35 e - - 1 - - 1 -
36 f - - - - - -
37 g - - - 1 - - -
38
39 A list of all of the sources in the graph: [a, g]
40 A list of all of the sinks in the graph: [c, f]
41 Clone sampleDAG prior to executing a topological sort.
42 Print the clone:
43 Arcs
44 -----
45 i a b c d e f g
46 a - 1 - 1 - - -
47 b - - 1 - 1 - -
48 c - - - - - -
49 d - - - - 1 - -
50 e - - 1 - - 1 -
51 f - - - - - -
52 g - - - 1 - - -
53
54 A topological sort performed on sampleDAG's clone (algorithm that selects a sink):
55 [g, a, d, b, e, f, c]
56 A topological sort performed on sampleDAG's clone (algorithm that selects a
57 source): [a, g, b, d, e, c, f]
58 DFS starting from vertex A: [a, b, c, e, f, d]
59 BFS starting from vertex A: [a, b, d, c, e, f]
60
61 A sample graph that contains cycles: Contains-Cycle.tgf.
62 Graph containsCycle contains a cycle (TRUE): true
63 Graph contains cycles. Topological sort will not be performed.
64 Attempt to execute topological sort on containsCycle: []
65 Graph sampleDAG does not contain a cycle (FALSE): false
66 DFS starting from non-existent vertex S: []
67 BFS starting from non-existent vertex S: []
68 DFS starting from vertex A: [A, B, C]
69 Arcs
70 -----
71 i d s a b c e
72 d - - - 1 - -
73 s 1 - 1 - 1 -
74 a - - - - -
75 b 1 - - - -
76 c - - - 1 - 1
77 e - 1 - - - -
78
79 DFS starting from vertex s: [s, d, c, b, e, a]
80 BFS starting from vertex s: [s, d, a, c, b, e]
81 DFS starting from vertex a (sink): [a]
82 BFS starting from vertex a (sink): [a]

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