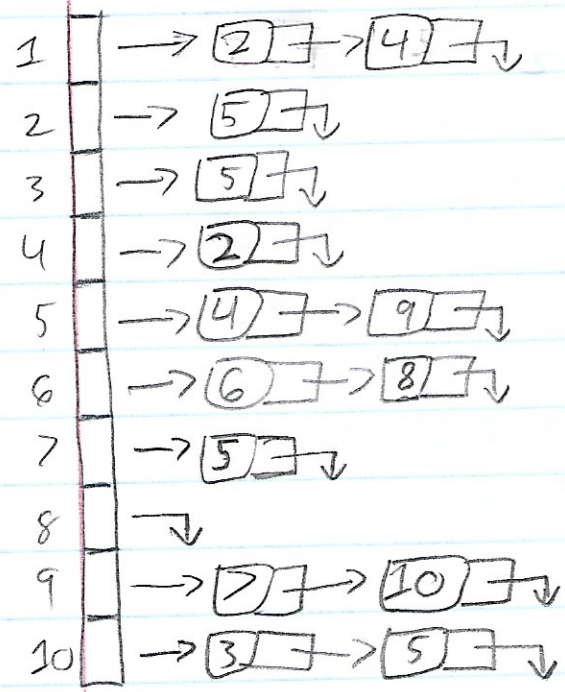
Brandon Patton

Homework 3

1.

A \ B	1	2	3	4	5	6	7	8	9	10
1	0	1	0	1	0	0	0	0	0	0
2	0	0	0	0	1	0	0	0	0	0
3	0	0	0	0	1	0	0	0	0	0
4	0	1	0	0	0	0	0	0	0	0
5	0	0	0	1	0	0	0	0	1	0
6	0	0	0	0	0	1	0	1	0	0
7	0	0	0	0	1	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	1	0	0	1
10	0	0	1	0	1	0	0	0	0	0

2.



3. 1, 2, 4, 5, 9, 7, 10, 3, 6, 8

4. 1, 2, 5, 4, 9, 7, 10, 3, 6, 8

5A. $\Theta(V^2)$

B. $\Theta(V+E)$

6A. $\Theta(V^2)$

B $\Theta(V+E)$

7. Adjacency Matrices will be better for smaller graphs and dense graphs. Adjacency Lists will be better for large and sparse graphs. When there's a lot of space and less vertices and edges to traverse, using an adjacency list is better since the sparsity will cause many cells in adjacency matrices to remain unused and waste memory.

8. A topological sort is not possible on this graph because there is a cycle present at vertex 6. Also, vertices beyond and including 5 cannot be visited because 5's parents are only accessed through 5, which cannot be visited if its parents are not first visited, therefore topological sort cannot exist.

9. 1, 4, 2, 5, 6, 8, 9, 7, 10, 3