CS350 Homework 3

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22.1-1

The out-degree of a vertex is just its adjacency list, so in $\Theta(V)$ time you can get the out-degree of every vertex. Finding the in-degree for every vertex would require looking for that vertex in every vertex's adjacency list. So the entire adjacency list must be visited, which would be $\Theta(V * E)$, where V is the total number of vertices, and E is the total number of edges.

22.1-3

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Adjacency List
[(1,[2,3]),
 (2,[4,5]),
 (3,[6,7])]
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Adjacency Matrix
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	1	2	3	4	5	6	7
1	0	1	1	0	0	0	0
2	0	0	0	1	1	0	0
3	0	0	0	0	0	1	1
4	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0