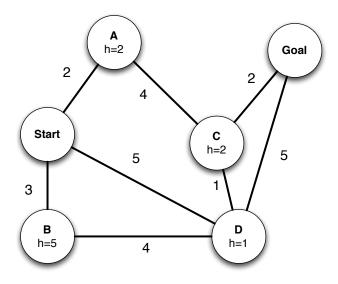# CS188 Spring 2014 Section 0: Search

1 Search algorithms in action

For each of the following graph search strategies, work out the order in which states are expanded, as well as the path returned by graph search. In all cases, assume ties resolve in such a way that states with earlier alphabetical order are expanded first. The start and goal state are S and G, respectively. Remember that in graph search, a state is expanded only once.

a) Depth-first search.
States Expanded: Start, A, C, D, B, Goal
Path Returned: Start-A-C-D-Goal

b) Breadth-first search.
States Expanded: Start, A, B, D, C, Goal
Path Returned: Start-D-Goal

c) Uniform cost search.
States Expanded: Start, A, B, D, C, Goal
Path Returned: Start-A-C-Goal

d) Greedy search with the heuristic h shown on the graph.
States Expanded: Start, D, Goal
Path Returned: Start-D-Goal

e) $A^\star$ search with the same heuristic.
States Expanded: Start, A, D, C, Goal
Path Returned: Start-A-C-Goal