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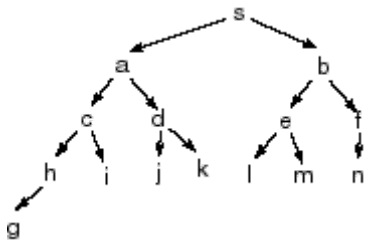
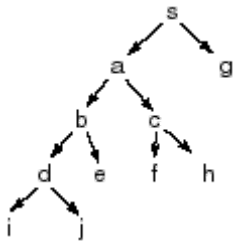
# Solution to generating graphs

In all of these graphs, we assume that we are on a plane, with Euclidean distance (straight-line distance) as the arc cost and as the heuristic function. We also assume that the neighbours are ordered from left to right. The start node is *s* and the goal node is *g*.

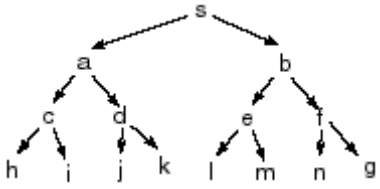
a. Give a graph where depth-first search is much more efficient (expands fewer nodes) than breadth-first search. Here depth-first search expands five nodes, whereas breadth-first search expands every node:



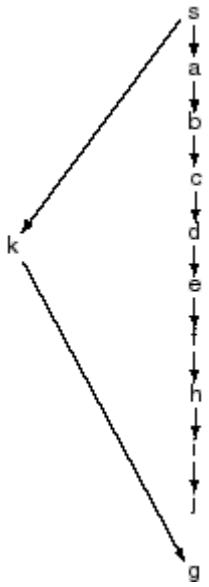

b. Give a graph where breadth-first search is much better than depth-first search. Here depth-first search expands every node, whereas breadth-first search expands three nodes:




c. Give a graph where A* search is more efficient than either depth-first search or breadth-first search. Here depth-first search and breadth-first search expand every node, whereas A* search expands 4 nodes.




d. Give a graph where depth-first search and breadth-first search are both more efficient than A* search. Here depth-first search expands three nodes, breadth-first search expands 4, yet A* search expands every nodes.

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