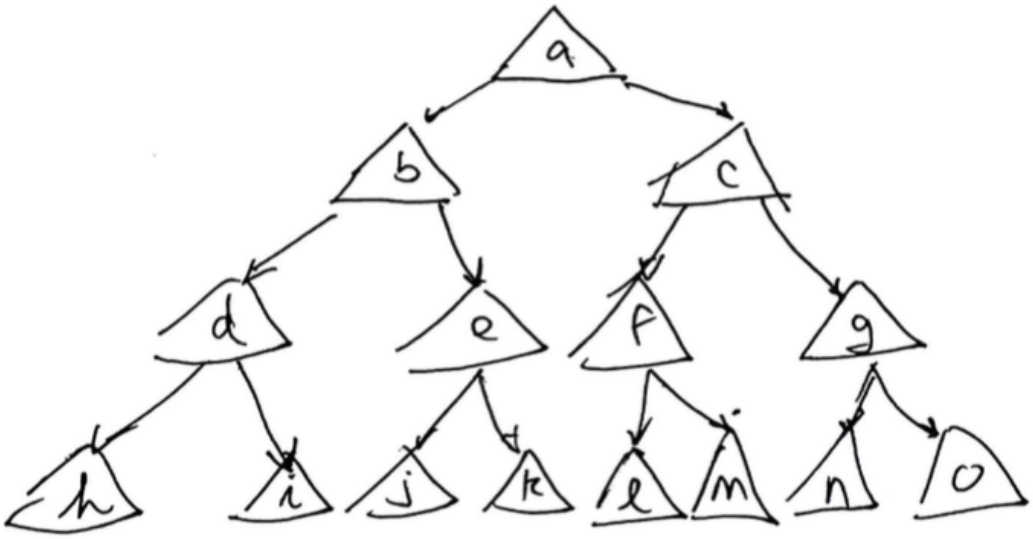
COMP4200/5430 Artificial Intelligence
TREE SEARCH ALGORITHM.

We will carry out the tree search algorithm. This is applicable to searches where there is no worry about re-visiting prior states. It is simpler than graph-search because there is no need to maintain the closed set (of previously visited states).

Breadth-first search using FIFO queue



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Frontier (fill from L–R):

Using the tree search algorithm, perform the search for **goal state *o*** starting from initial state *a*.

Expand new state/action pairs from left to right. Draw nodes in the Fringe as they are expanded. When they get removed for goal-testing, cross them out.

Draw nodes as a circle with a letter inside. This is to visually distinguish them from states (triangles).

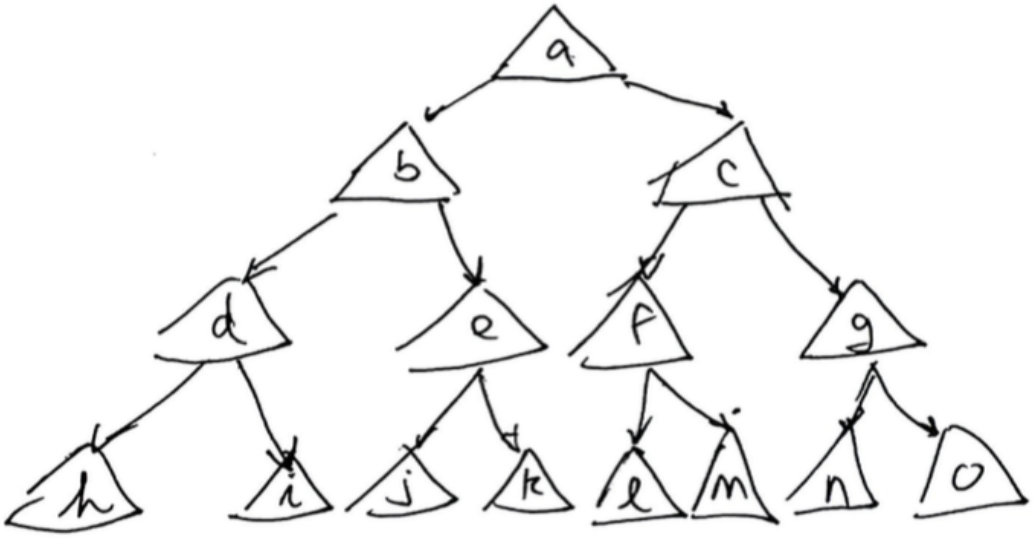
Treat the Fringe as a FIFO queue. This should produce breadth-first search.

a. What goal node is returned by the algorithm?

b. How many states were expanded in total?

c. At most, how many nodes were actively in the fringe at one time during the algorithm?

COMP4200/5430 Artificial Intelligence
Depth-first search using LIFO stack



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Frontier (fill from L–R):

Using the tree search algorithm, perform the search for **goal state *h*** starting from initial state *a*.

Expand new state/action pairs from left to right. Draw nodes in the Fringe as they are expanded. When they get removed for goal-testing, cross them out.

Draw nodes as a circle with a letter inside. This is to visually distinguish them from states (triangles).

Treat the Fringe as a LIFO stack. This should produce depth-first search.

When done:

a. What goal node is returned by the algorithm?

b. How many states were expanded in total?

c. At most, how many nodes were actively in the fringe at one time during the algorithm?