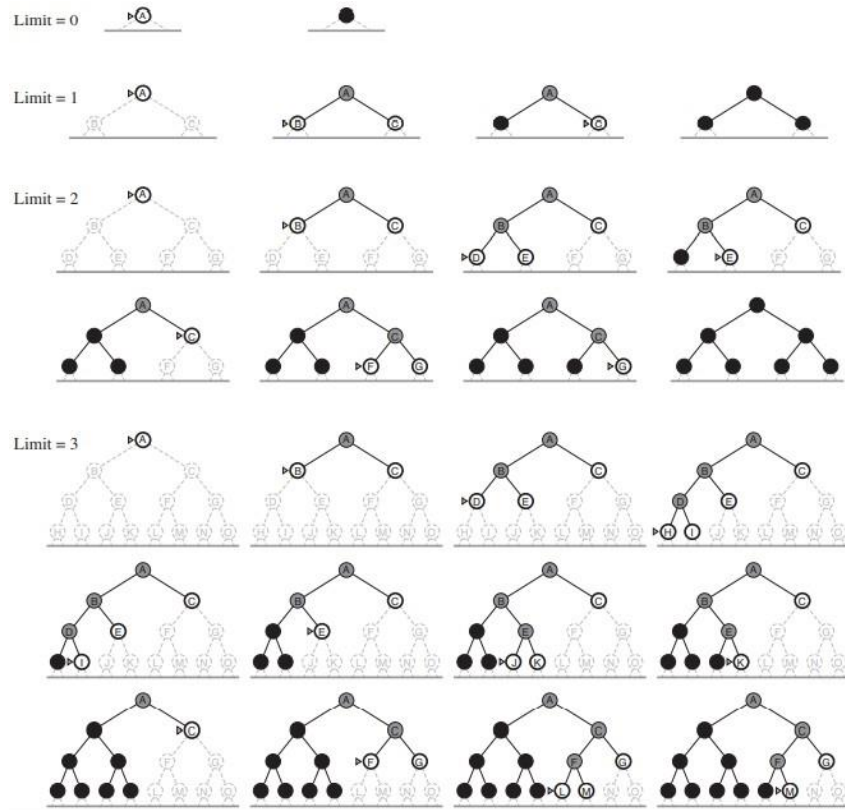## C. Describe what is Iterative Deepening Search.

Iterative deepening search uses depth first search and finds the best depth limit. It does this by gradually increasing the depth limit until the goal is reached. It terminates when a solution is found or if no solution is found.

As we can observe from above example, nodes at deep-est level are generated only once, therefore, In an iterative deepening search, the nodes on the bottom level (depth d) are generated once, those on the next-to-bottom level are generated twice, and so on, up to the children of the root, which are generated d times. The total number of nodes generated in the worst case is $N(IDS) = (d)b + (d-1)b^2 + \cdots + (1)b^d$