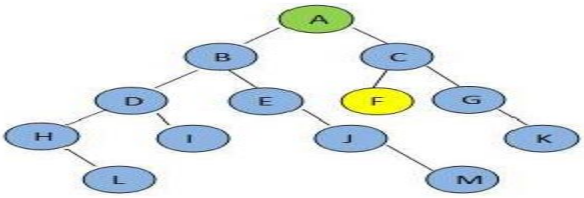
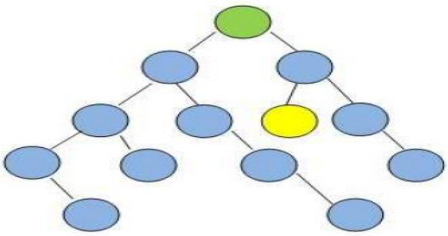
Sheet- 4 Int to AI

Q1: list the sequence of the visiting node in BFS, DFS



Q2:

- In the following graphs, assume that if there is ever a choice amongst multiple nodes, both the BFS and DFS algorithms will choose the left-most node first.

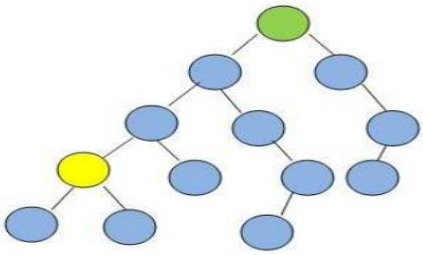


Starting from the green node at the top, which algorithm will visit the least number of nodes before visiting the yellow goal node?

- A: BFS
- B: DFS
- C: Neither BFS nor DFS will ever encounter the goal node in this graph.
- D: BFS and DFS encounter same number of nodes before encounter the goal node

Q3:

- In the following graphs, assume that if there is ever a choice amongst multiple nodes, both the BFS and DFS algorithms will choose the left-most node first.



Starting from the green node at the top, which algorithm will visit the least number of nodes before visiting the yellow goal node?

- A: BFS
- B: DFS
- C: Neither BFS nor DFS will ever encounter the goal node in this graph.
- D: BFS and DFS encounter same number of nodes before encounter the goal node

Q4 :

1) Suppose you are searching for a girl's name written using only the letters D, N and A. You have the letters ordered alphabetically (A, D, N) and you start writing down possibilities:

A, D, N, AA, AD, AN, DA, DD, DN, NA, ND, NN, ...

1a) How many strings of four or fewer letters are there where the letters are D, N or A?
1b) In the above possibilities, are you searching in a depth first or breadth first way?
1c) What are the next three possible names you would write down?
1d) How many possibilities will you write down before getting to the name ANNA? [difficult]
1e) Are you guaranteed to find all girls names with letters D, N and A in this manner?

Q5:

- Consider the following graph. If there is ever a decision between multiple neighbor nodes in the BFS or DFS algorithms, assume we always choose the letter closest to the beginning of the alphabet first.