

Algo (BFS)

Tuesday, June 2, 2020 12:08 PM

Breadth First Search (Graph Traversal Algo) a.k.a. **Level Order Traversal**

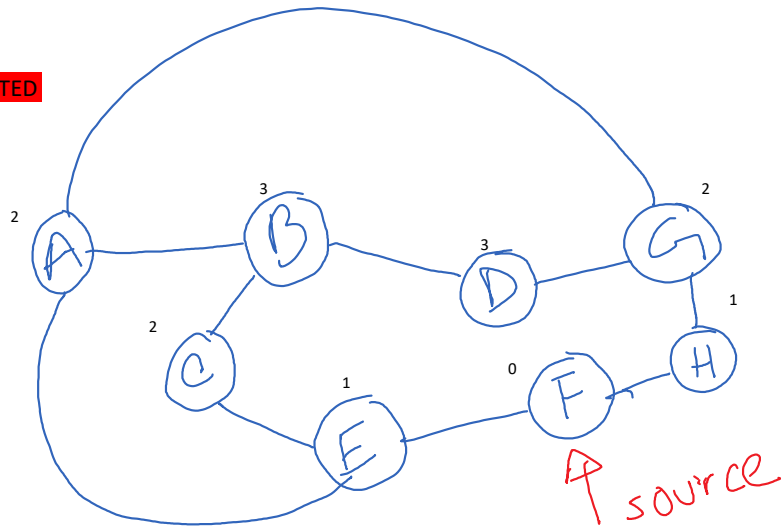
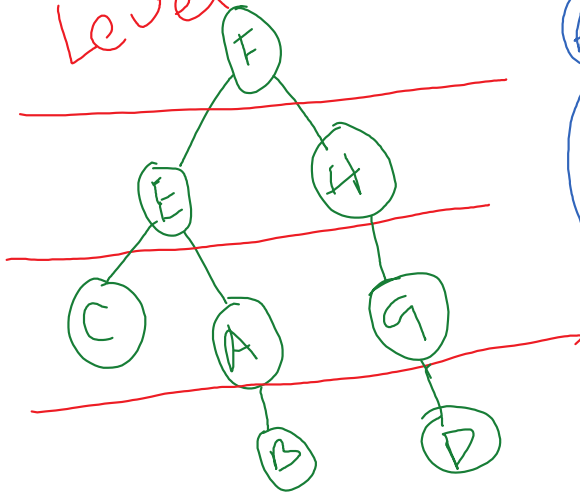
****BFS provides the shortest path from the source node in case of UNWEIGHTED Graphs****

-> Queue used for BFS (Main concept of Queue => FIFO)

Queue: Null

F
F
E, H
F, E, E
H, A, C
A, C, G
C, G, B
G, B
B, D
D

Level 0



Undirected Graph, Unweighted Graph

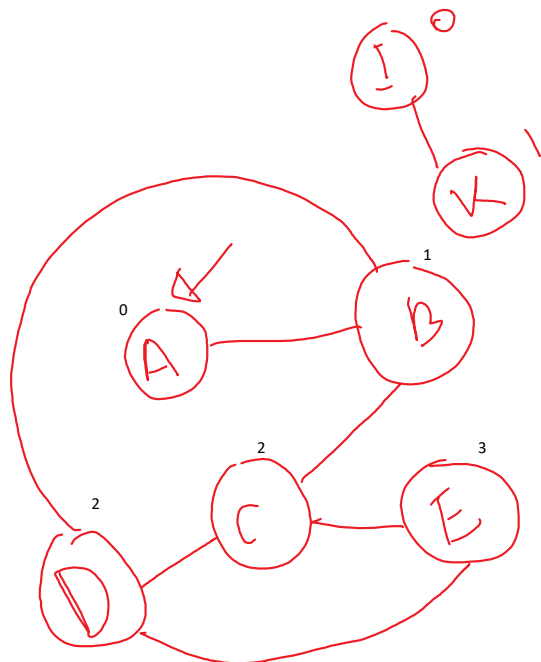
Null/empty

A node can be either **undiscovered, discovered, processed.**

Pseudo Code:

```
BFS(G,S){
  For each v that belongs to v[G]{
    Level[v] = -1
    Parent[v] = Null
  }
  Level[S] = 0

  Q <= enqueue (S)
  While(Q != empty){
    U = Dequeue(Q)
    Level[u] = Level[Parent[u]]+1
    For each v belongs to Adj[u]{
      If(level[v] == -1 || v is not on the queue){
        Parent[v] = u
        Enqueue(v)
      }
    }
  }
}
```



Simulate BFS of on the following graph and consider A as the source node.

Queue: Null

Output: A, B, D, C, E

A
B
D, C
C, E

E

null