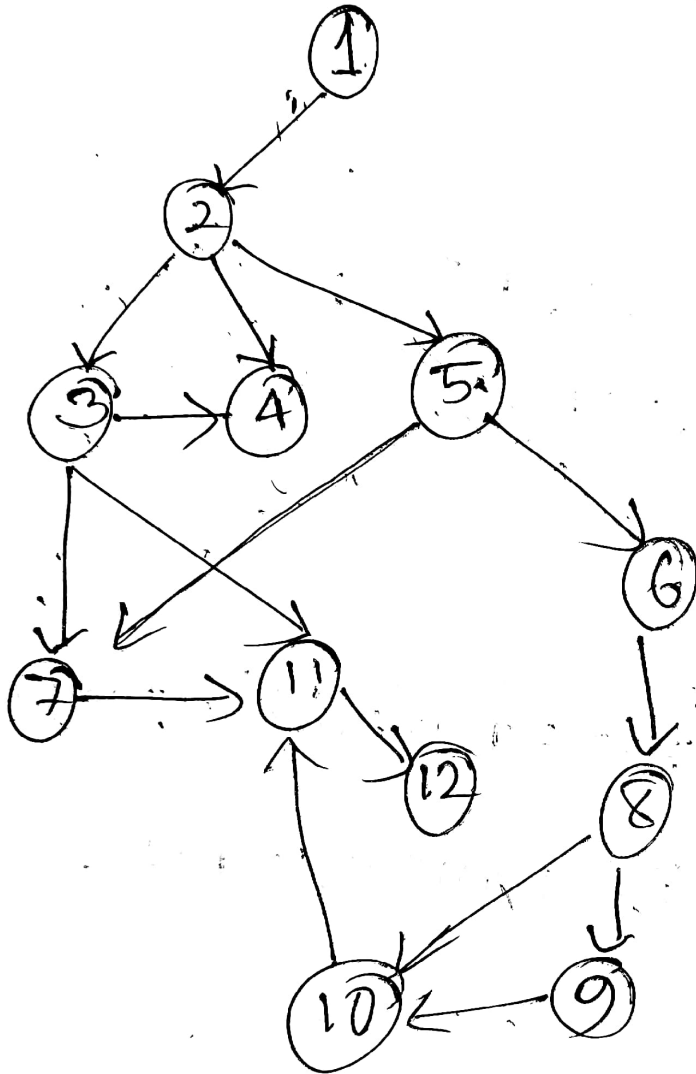


Ans! to the Que! 4

the graph!



BFS!

1 → 2 → 3 → 4 → 5 → 7 → 11 → 6 → 12

DFS!

1 → 2 → 3 → 4 → 7 → 11 → 12

For BFS algo,

there is a while loop and a do loop.

The worst case will be if the while loop have to go through every node which

is  $= O(n)$  ~~its~~  $(n=12)$

and do loop worst case will be if a node have to go through all edges.

1 - 1

2 - 3

3 - 3

4 - 0

5 - 2

6 - 1

7 - 1

8 - 2

9 - 1

10 - 1

11 - 1

12 - 0

So time complexity  $= O(n + e)$   
 $= O(12 + 16)$

$\Rightarrow 16 \Rightarrow$  all edges.

For DFS,

there is a recursion and on every recursion we get a loop which goes through all vertex/node edges (connected list)

time complexity  $\Rightarrow$  For one node

$$\Rightarrow O(1) + O(\text{all edges})$$

$$\Rightarrow O(1) + O(E)$$

as there are no repetitions,

$$\Rightarrow O(\text{all node}) + O(\text{all edges})$$

$$\Rightarrow O(n) + O(E)$$

$$\Rightarrow O(n+E)$$

Gary will win the victory road, As Gary and I choose two different approach BFS and DFS.

~~Gary have~~

Destination = 12

Gary's path  $\Rightarrow 1 \rightarrow 2 \rightarrow 3 \rightarrow 4 \rightarrow 7 \rightarrow 11 \rightarrow 12$

My Path  $\Rightarrow 1 \rightarrow 2 \rightarrow 3 \rightarrow 4 \rightarrow 5 \rightarrow 7 \rightarrow 11 \rightarrow 6 \rightarrow 12$

Gary have to go <sup>through</sup> 7 Node to reach destination  
I " " " 9 Node

to reach as Gary have to go through less amount Node, thus he will win. (as the edges are unweighted, assume all are same)