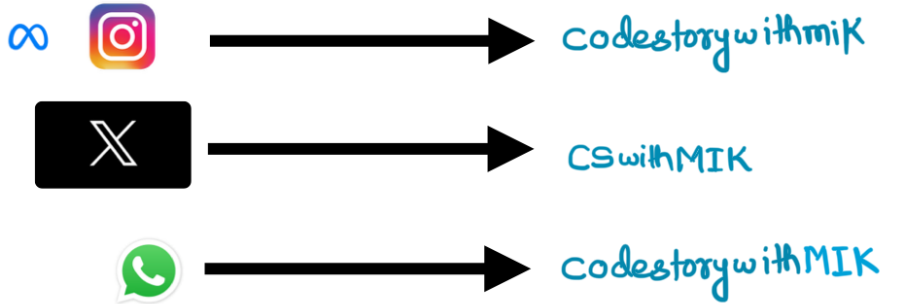


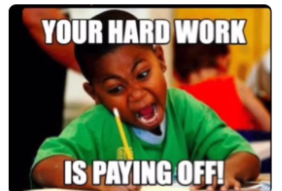
Graph Concepts & Qns

video-46



Motivation:-

Motivation may fade,
but discipline and obsession are
the fuels that never run out.
Stay consistent, even on tough days.

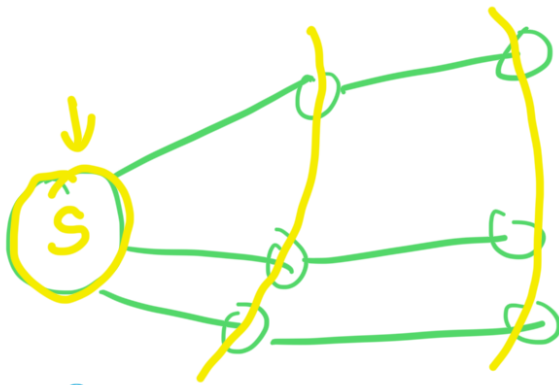


MIK...

and you'll see progress.

Success comes to those who keep going, no matter what

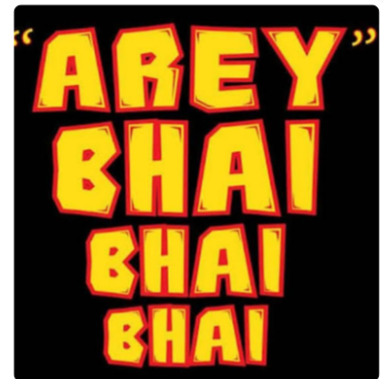
“जिंदगी”



Multi-Source BFS ???

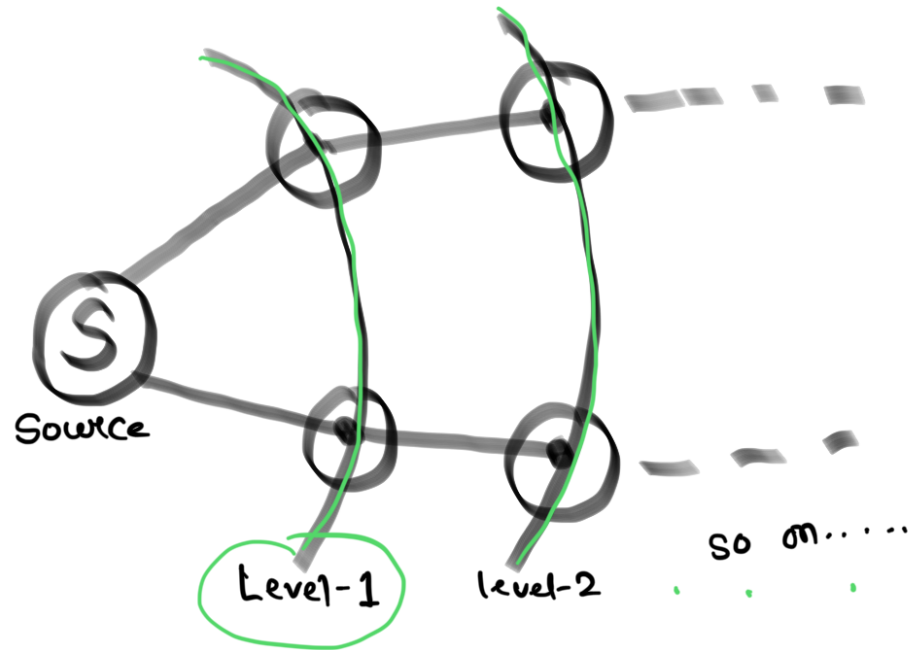
BFS

(Starts from a source S)



- ① Explores all neighbors of a node before moving to their neighbors.
- ② Typically used to find shortest path in Graphs/2D Grid.

③ Layer By layer / Level By level traverse.



Multi-Source BFS (Starts from multiple Sources)

```
que.push(s1);  
que.push(s2);
```


```
while(!que.empty())  
{  
    // ...  
}
```

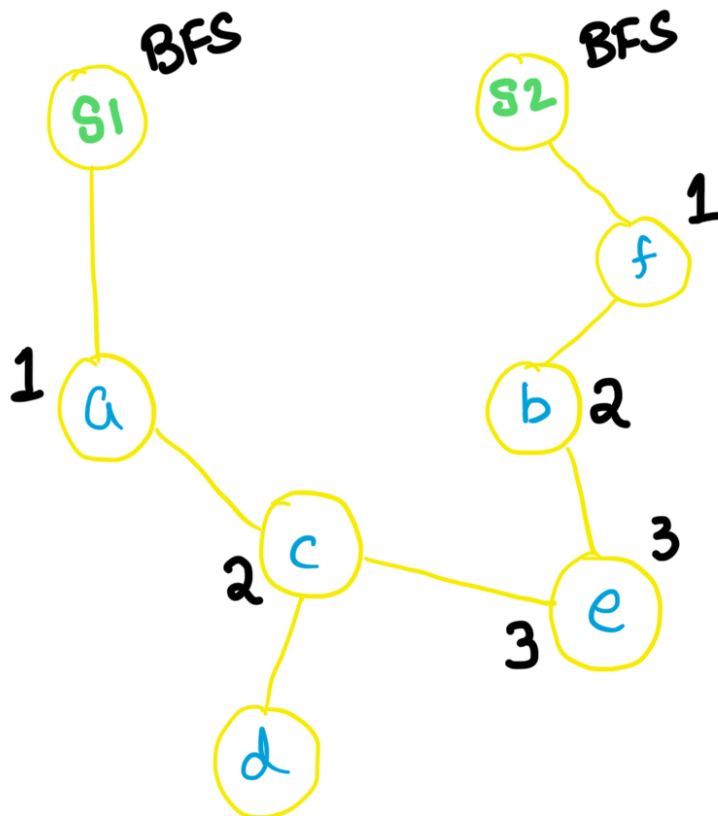
- ① Starts simultaneously from multiple Source/nodes
- ② Useful when you want to spread out from multiple source/nodes at once.

Why is Multi-Source BFS useful ???

(shortest distance)

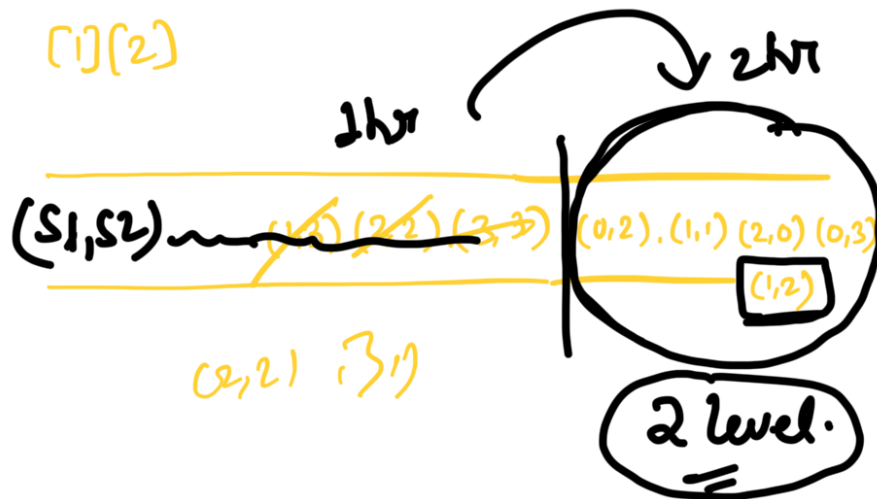
When you need to compute shortest distance / minimum cost / minimum time from multiple starting points to other points in graph/grid.

Note :-  Multi-Source BFS ensures that all nodes are reached with the minimal distance/time from nearest source.



Graph =

	0	1	2	3
0	S	✓	✓	
1	✓	✓	😊	✓
2	✓		✓	S
3			✓	✓



Why am I not using DFS
for visiting nodes ???

DFS

“ It doesn't guarantee to visit nodes in
shortest time/distance ”

	0	1	2	3
0	S			S
1				
2			☆	
3				

There are several
Applications of
Multi-Source BFS.

"See you in the next video"
😊

