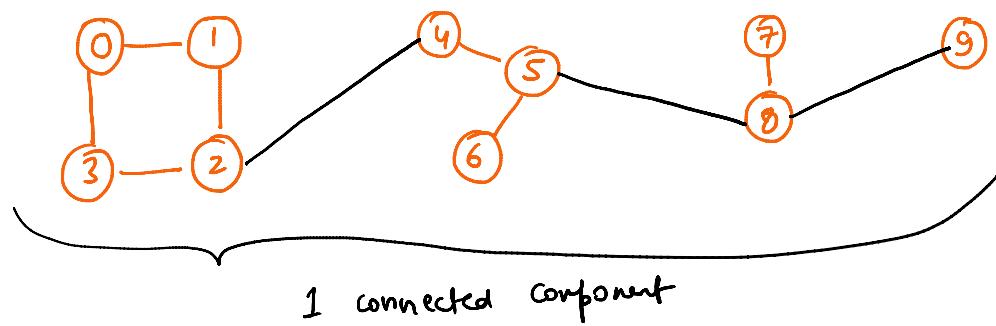
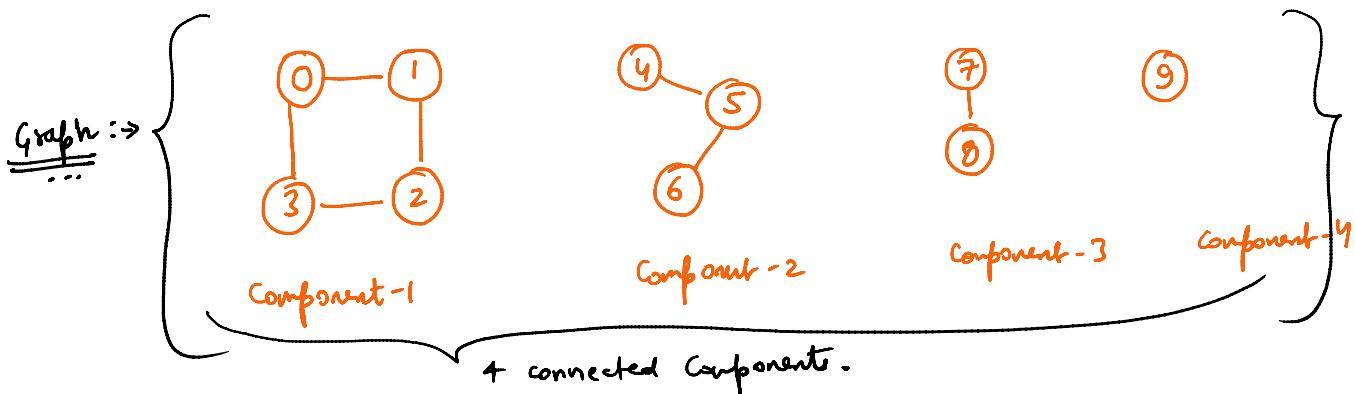


G-04 Connected Components In a Graph - BFS - DFS

02 April 2023 08:03 PM

Connected Component :- A connected component is the portion of a graph in which there is a path from each vertex to another vertex.



why I should know this ??

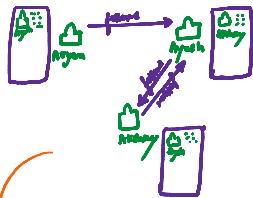
one of THE MOST IMPORTANT THING
IN GRAPHS.

Don't Use Case

Reel Use Case

Real life use case

Q2. Social Networking sites



→ Grab Mutual Friends of a person.
[suggestions - Recommendations]

Real life use case

• Find Biggest Island

• Find 2 Island are connected or not

• No. of different Island

⋮

so on...

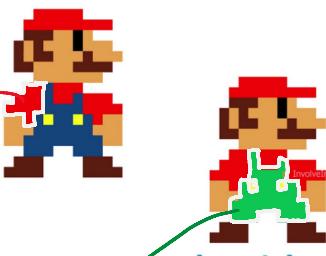
Q6. Paint Bucket Tool

V = Vertices is each Pixel

E = Connection b/w these pixels

until a black line comes.

Painting red colour
in this area
by 1 click.
↓
by Graphs
[Paint Fill]



Some colour filled in one Connected Component :)

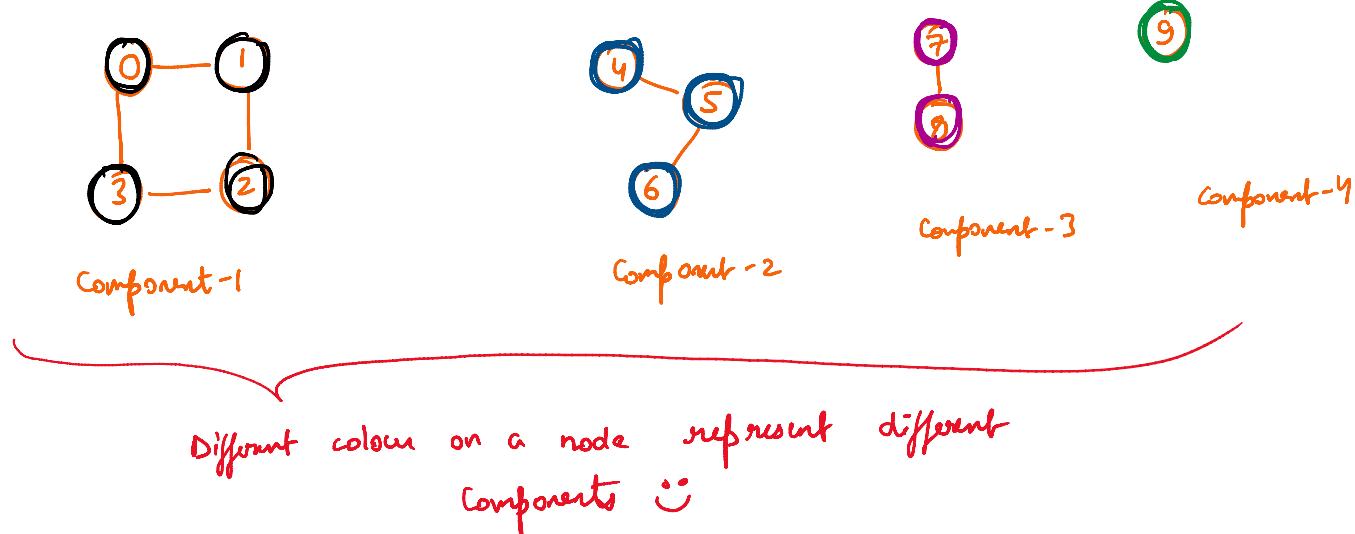
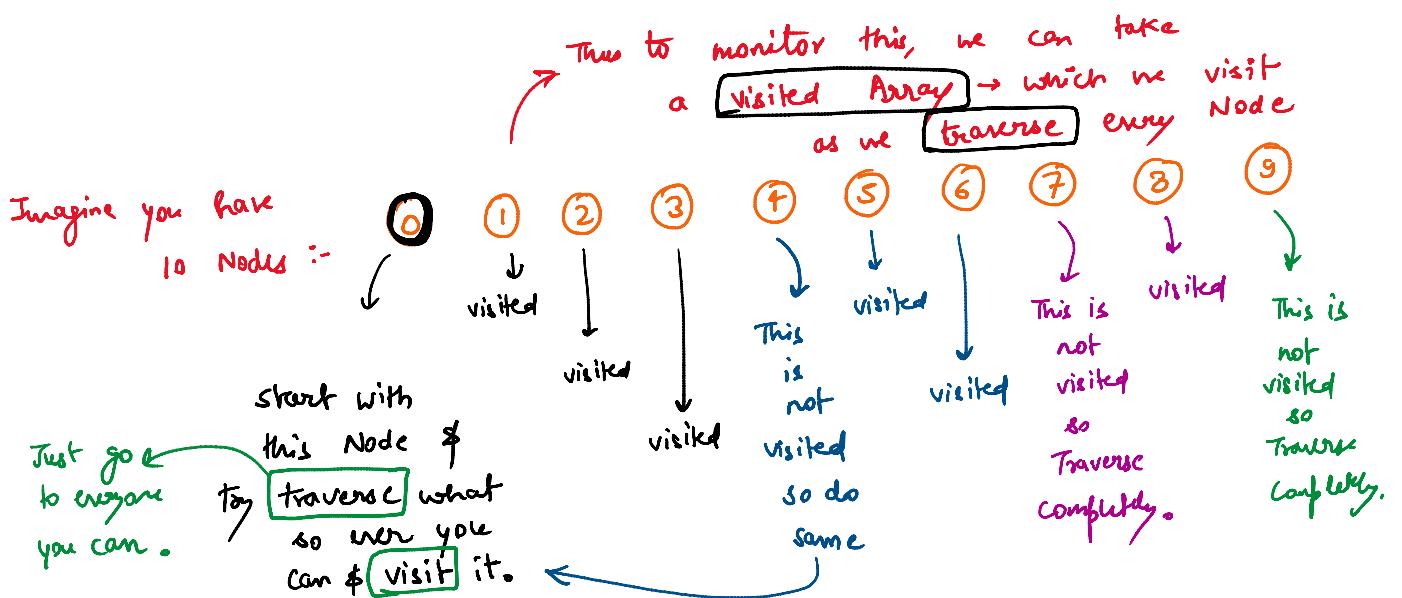
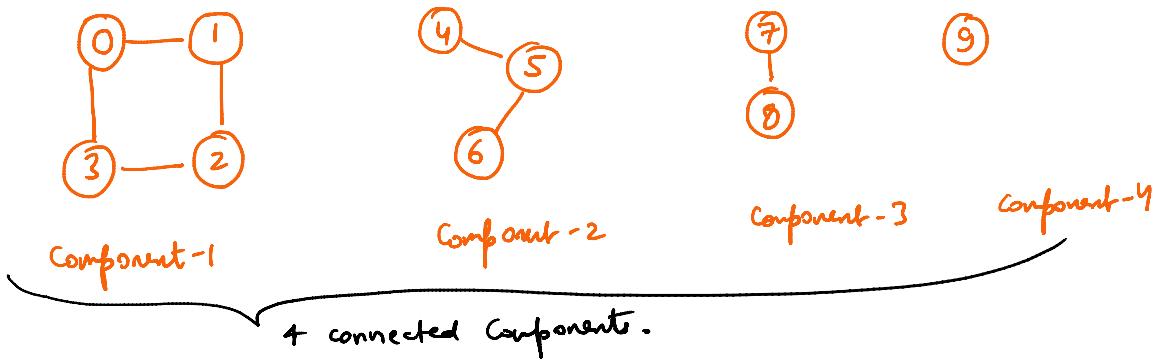
How to find

THE CONNECTED COMPONENTS

No. of
connected
components?

To which
connected component
node belongs too?

Graph is
connected
or disconnected?



Converting Idea to Code :-

```
for ( int i=0 ; i < n ; i++ ) {  
    going on to every node  
    for Traversal.  
    }  
    if ( vis[ i ] == 0 ) {  
        "dfs" or "bfs"  
        check if that  
        node is already  
        visited by earlier  
        Traversal or not  
    }  
}
```

this is a
TRAVERSAL
technique
we will see it
later =

Time Complexity :- $O(n)$

Going on to every node exactly once → As we don't go to a Node that is visited.

Space Complexity :- $O(n)$

Having visited array.

we will see more
when we see
Traversal techniques ...