

Day - 204Graph - 8* Covid Spread!

2	②	1	1	0	1
1	1	0	1	1	②
0	1	0	②	1	1
1	1	0	1	0	1
1	0	1	②	0	1

⇒ we have to find time that the covid spread to all the patients.

⇒ Here 0 → Empty,
 1 → Patient,
 2 → Covid Patient.

⇒ So, 2 can spread corona to only their left, right, top and down patient.

⇒ This will take 1 unit of time.

2	2	2	1	0	2
1	2	0	2	2	2
0	1	0	2	2	2
1	1	0	2	0	1
1	0	2	2	0	1

⇒ This will take total 5 unit of time.

- ⇒ So, for solving this question, we will use the BFS.
- ⇒ So, we will take a queue and push ~~a~~ coordinates of ~~first~~ the 2's.
- ⇒ After that, when we pop the element from the queue and check for 1, convert it into 2 and push ~~it~~ their coordinate into queue.
- ⇒ In the end, traverse the whole matrix, if you get any 1 that means some patient left, return -1 otherwise return the time.

* Find the no. of Island:

1	1	1	0	1	1
0	1	1	0	0	1
1	0	0	0	0	0
1	0	1	0	1	1
1	1	0	0	1	1

- ⇒ 0 → water, 1 - Land
- ⇒ A Island can only be covered by water on boundary of the matrix.
- ⇒ Island can be connected in any direction even diagonally too.
- ⇒ So, there are three island in the above question.

- ⇒ So, we will connect all the 1.
- ⇒ First we will start from 1 & count increase by 1 then we will find all the neighbouring 1's. and add it to the queue.
- ⇒ Also, we will make a visited matrix and mark all the visited 1's.
- ⇒ When our queue becomes empty & then when we get any unvisited one - we found a new island.
- ⇒ We can also this question without using visited matrix.
- ⇒ we will make the visited 1 to 0 & then add it to the queue.

* Replace 0's with X's:

X	X	X	X
X	0	X	X
X	0	0	X
X	0	X	X
X	X	0	0

- ⇒ So, converting 0 → X, we have to check that 0 should be surrounded by X.

⇒ If it is not then we can also make a set of 0 then check for the same condition.

⇒ Also, if any 0 is on the boundary then it will never change to X.

⇒ So we will start traversing from ~~from~~ boundary and check for 0.

⇒ If we get any 0 then find a set of 0 and mark that visited. Also, they can't convert to X.

⇒ we can also solve this question without using visited matrix. We just have to change 0 to any other char i.e. T.