# Graph Concepts & Qns

video-47 ✓

∞ → codestorywithmik

X → CSwithMIK

→ codestorywithMIK

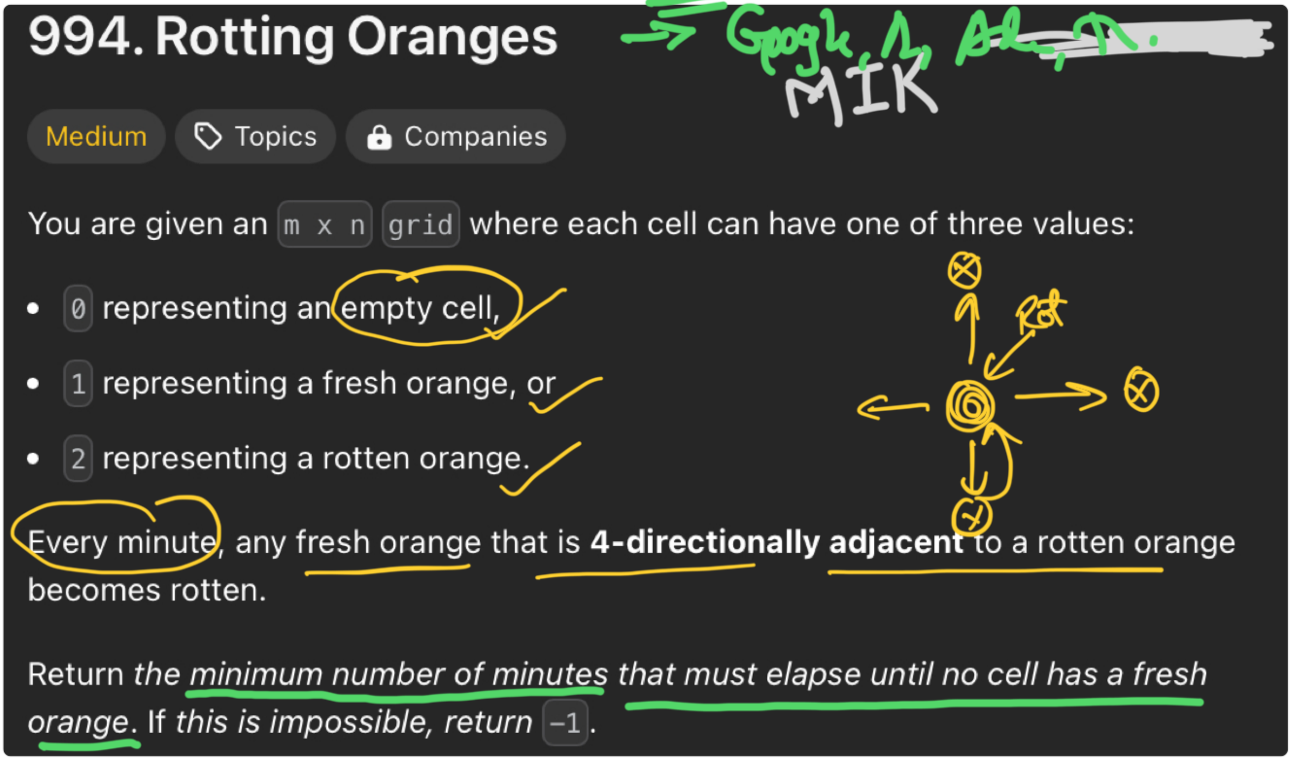
Motivation :-

Every single day, you waste wishing things were easier, someone else is grinding to take

MIK...

what you're dreaming of. Success doesn't wait for anyone. Either you step up now, or you'll be left behind forever.

MSB



# 994. Rotting Oranges

→ Google, M, A[redacted]

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You are given an `m x n` `grid` where each cell can have one of three values:

- `0` representing an empty cell,
- `1` representing a fresh orange, or
- `2` representing a rotten orange.

Every minute, any fresh orange that is **4-directionally adjacent** to a rotten orange becomes rotten.

Return *the minimum number of minutes that must elapse until no cell has a fresh orange*. If *this is impossible, return* `-1`.

Example :-

grid =

| | | |
|---|---|---|
| 2 | 1 | 1 |
| 1 | 1 | 0 |
| 0 | 1 | 1 |

minutes = 1 + 1 + 1 + 1

2 - Rotten

1 - Fresh

0 - Empty

Output : 4

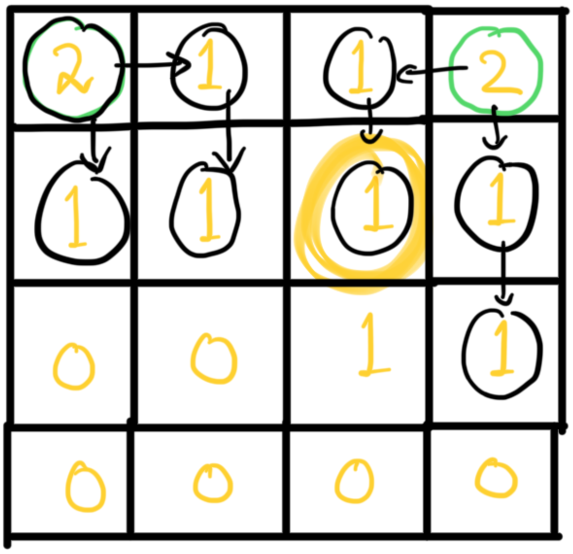
grid =

| | | |
|---|---|---|
| 2 | 1 | 1 |
| 0 | 1 | 1 |

|  |  |  |
|---|---|---|
| 1 | 0 | 1 |

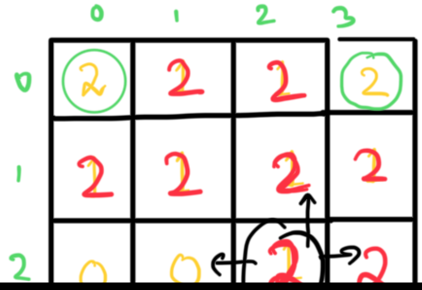
Output : -1

# Thought Process

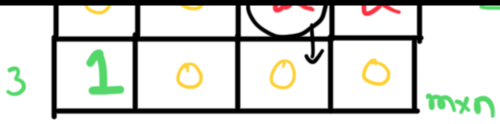


|  |  |  |  |
|---|---|---|---|
| 2 | 1 | 1 | 2 |
| 1 | 1 | 1 | 1 |
| 0 | 0 | 1 | 1 |
| 0 | 0 | 0 | 0 |

Multi-Source BFS.



|  | 0 | 1 | 2 | 3 |
|---|---|---|---|---|
| 0 | 2 | 2 | 2 | 2 |
| 1 | 2 | 2 | 2 | 2 |
| 2 | 0 | 0 | 2 | 2 |



|  |  |  |  |  |
|---|---|---|---|---|
| 3 | 1 | 0 | 0 | 0 |

(grid[i][j] = =2)

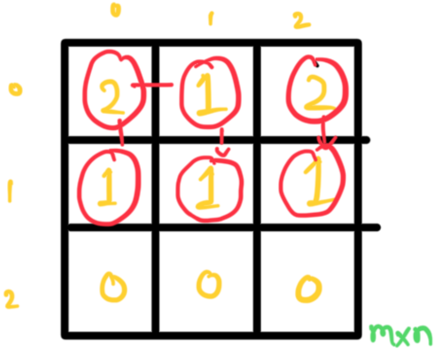
FreshOranges = 9 -1-1-1-1-1 · · -= 1

minute = (1+1+1) → 3

```
if (freshOranges ==0)
        return minutes;

return -1 ;
```

# One important Note :-



|  | 0 | 1 | 2 |
|---|---|---|---|
| 0 | 2 | 1 | 2 |
| 1 | 1 | 1 | 1 |
| 2 | 0 | 0 | 0 |

FreshCount = 4 -1-1-1-1

```
while (!que.ety) {
```

```
while(!q.·)
    tem = q.f
```

minute = 1+1+1

```
int n = q.size();
while(n--) {

}
```

```
q.pop.
;

}
```

```
}
```

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

        int n = que.size();

        while (n--) {

        }

        minute++;
    }
}
```

```
if (freshCount ==0) return (minute-1);

else
        return -1;
```