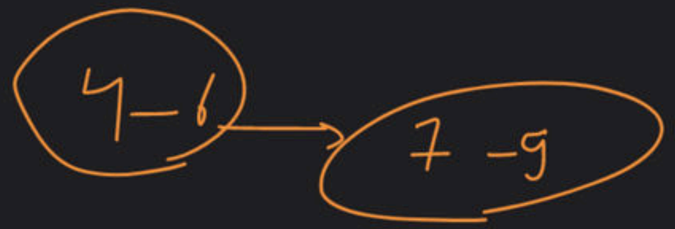
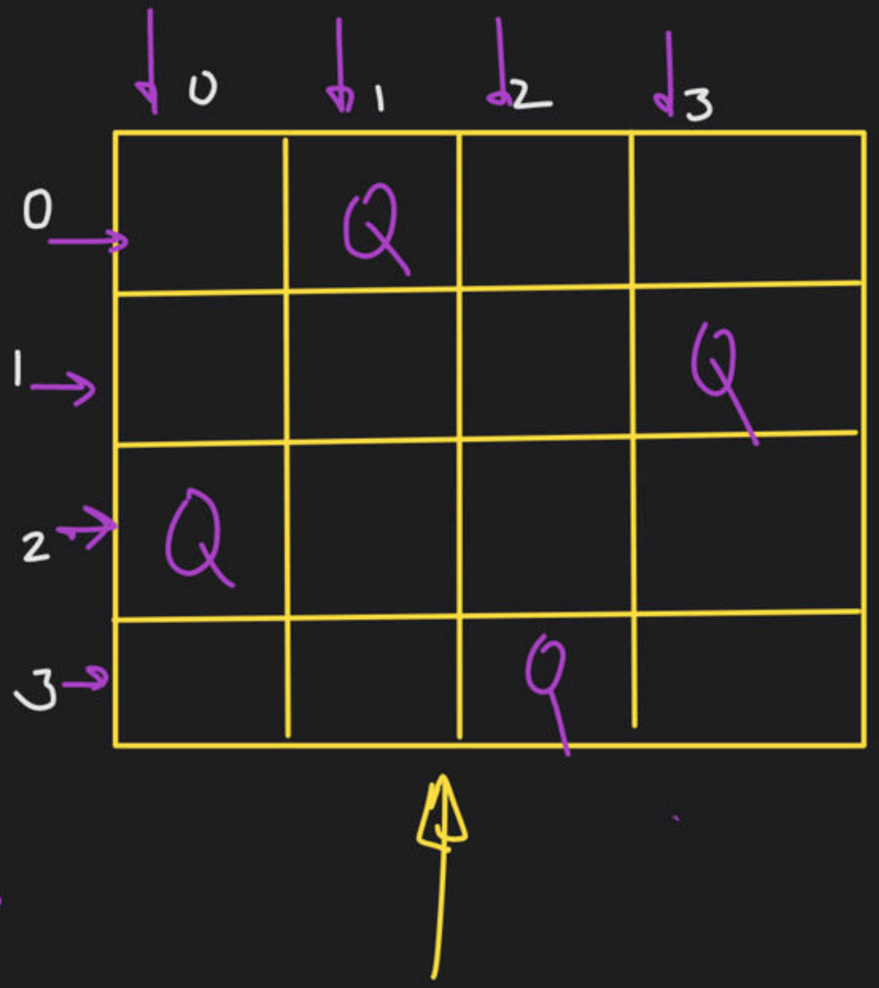


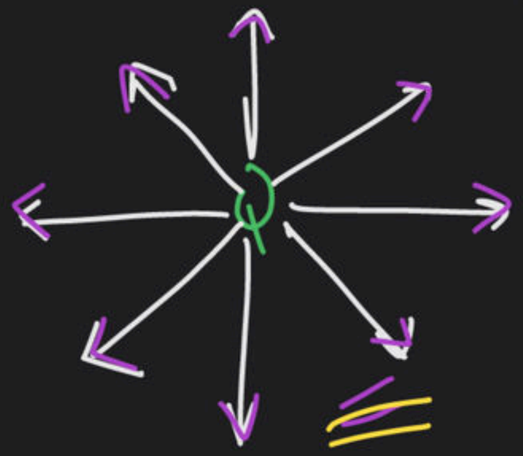
Solving Classical Problems using Backtracking - Level 2 & Doubt Clearing Session

Special class

Love Babbar • Oct 8, 2022

① N- Queen





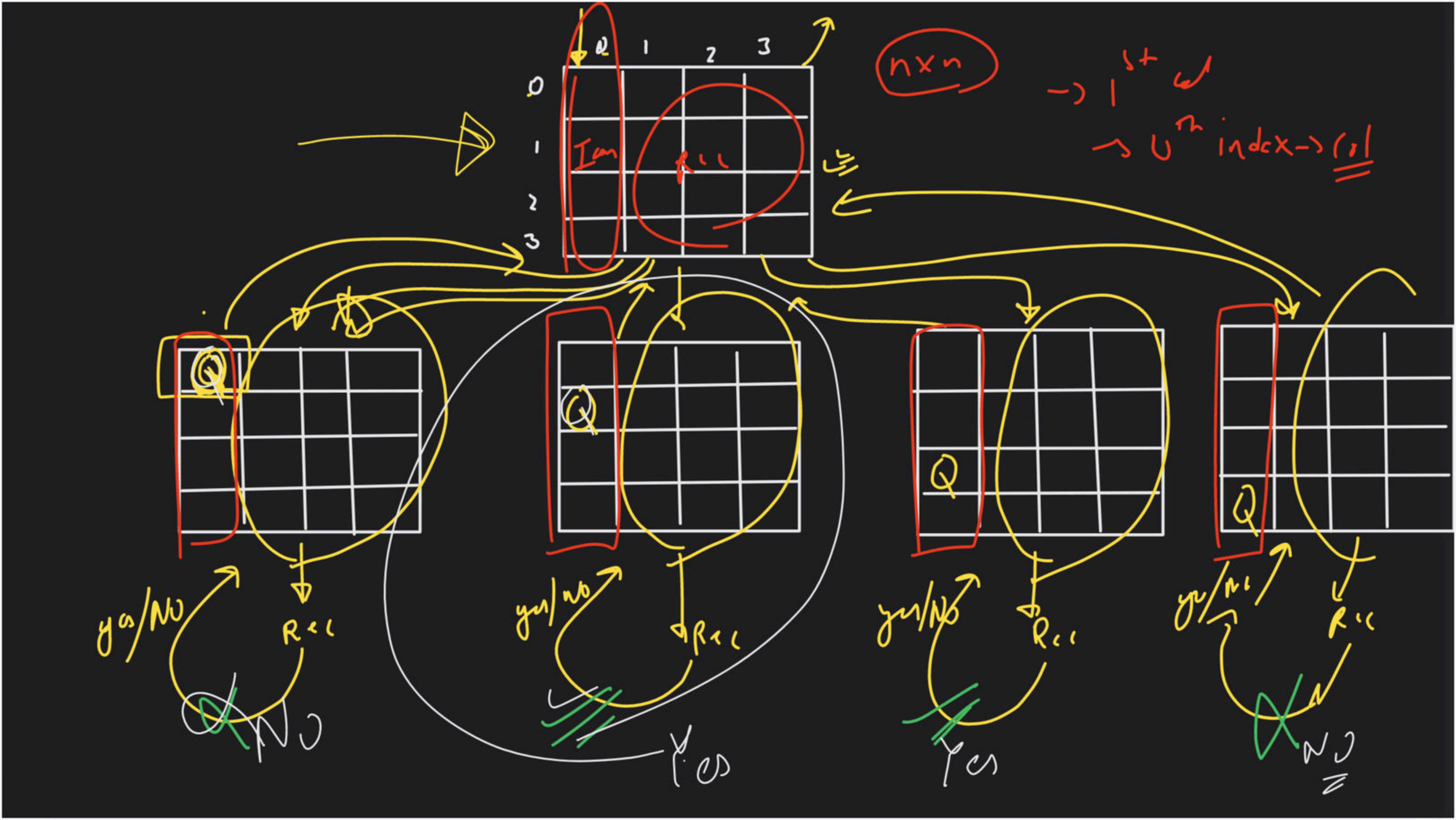
DP

6 Lectures

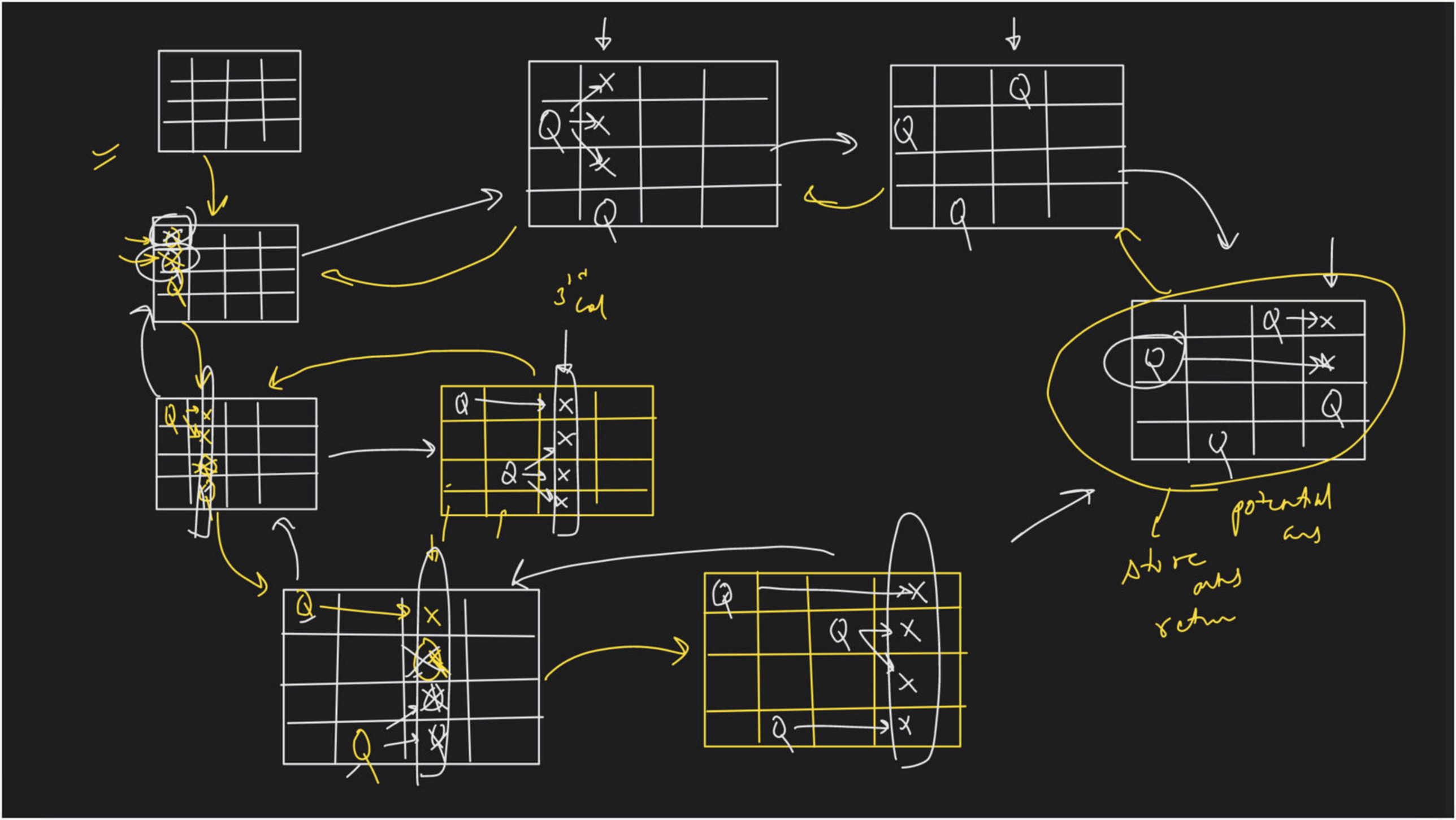
row → 1 Q ✓

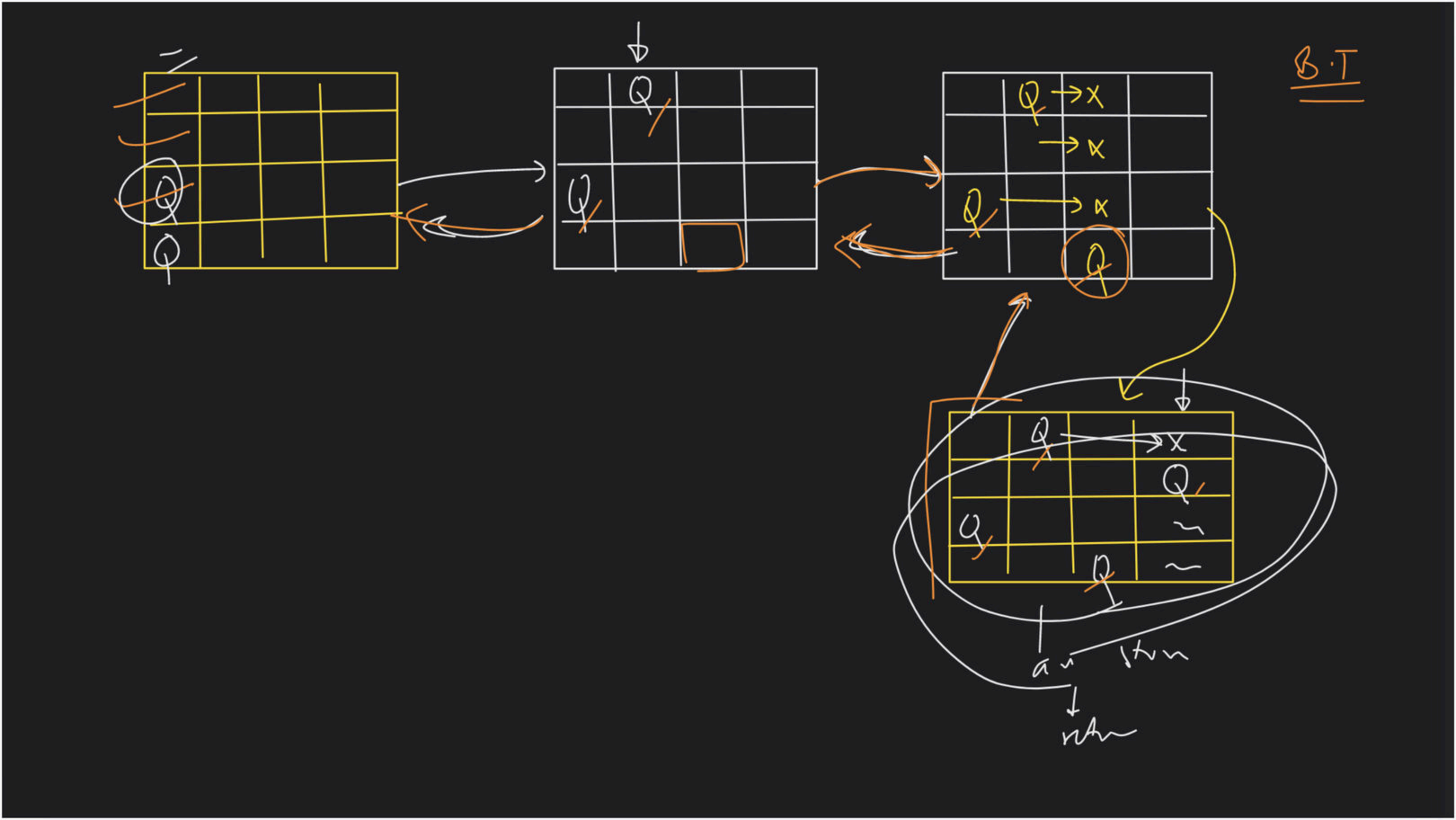
col → 1 Q ✓

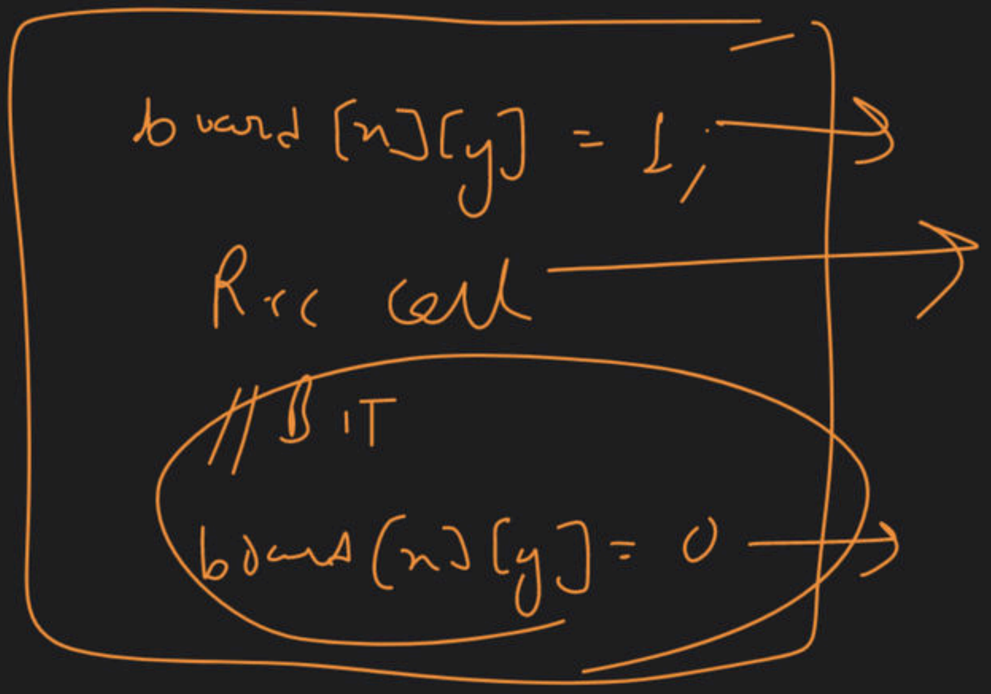
don't attack each other

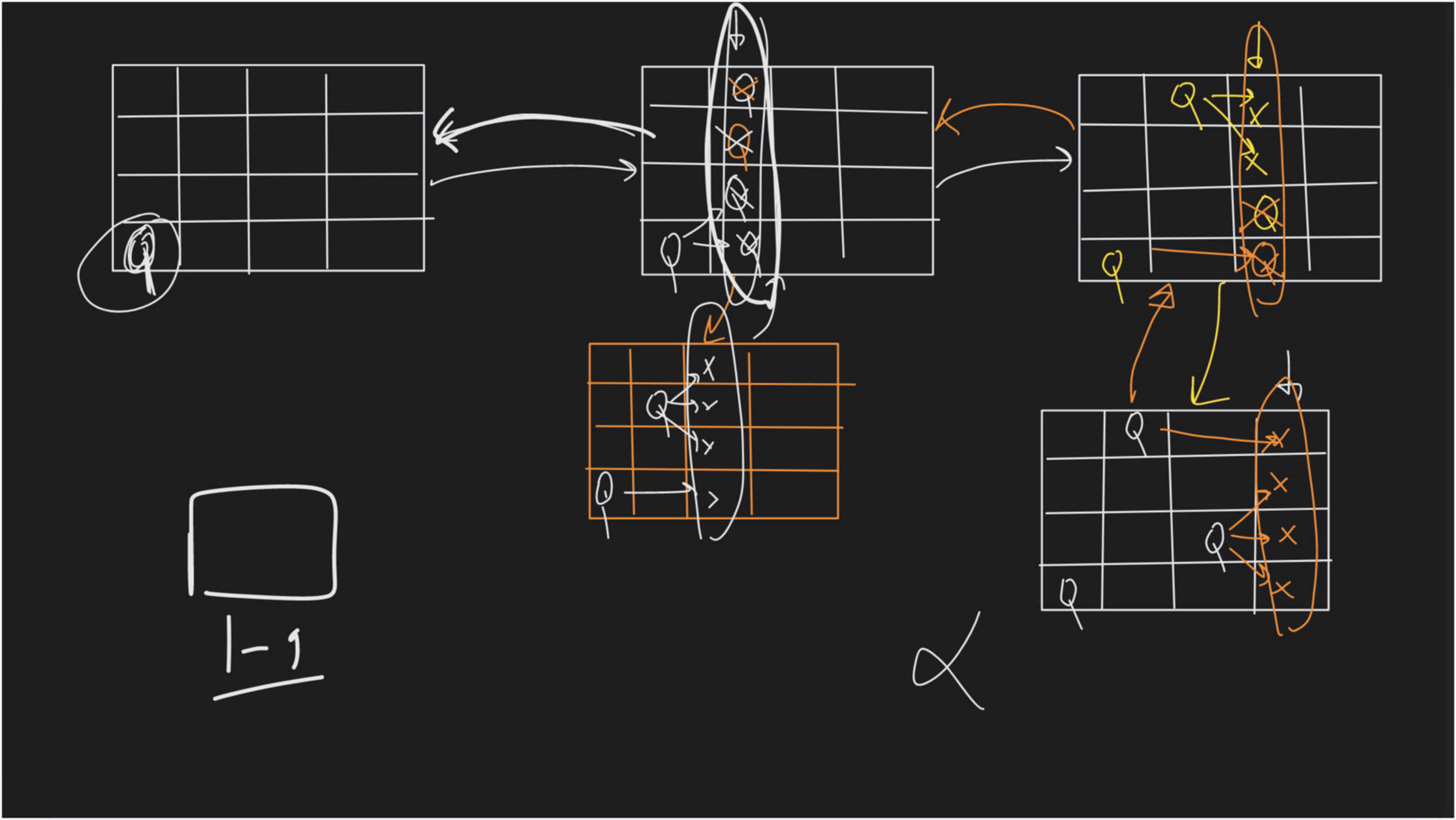


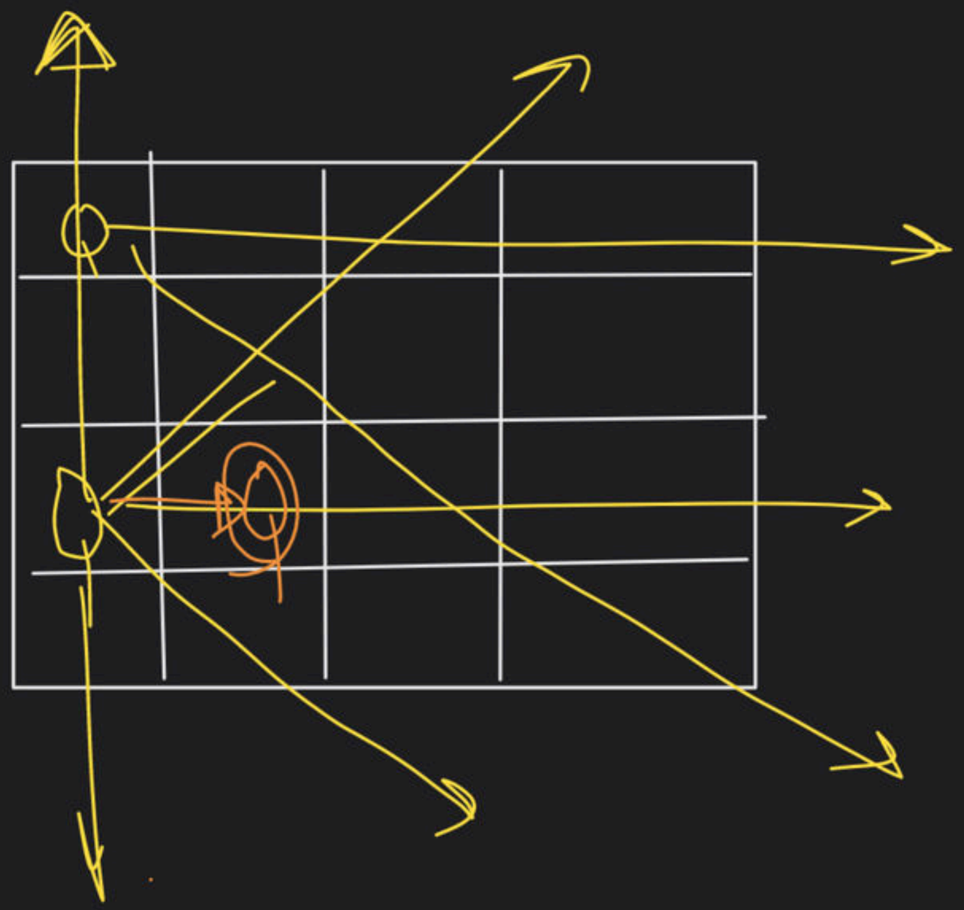
0 1 2 3
0
1
2
3
Ian
Rec
n x n
→ 1st col
→ 0th index → col
Q
Q
Q
Q
yes/No
Rec
No
yes/No
Rec
Yes
yes/No
Rec
Yes
yes/No
Rec
No

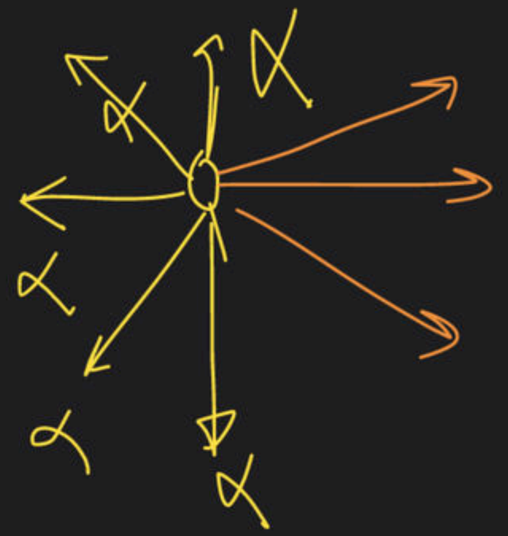

3rd col
potential ans
store ans & return

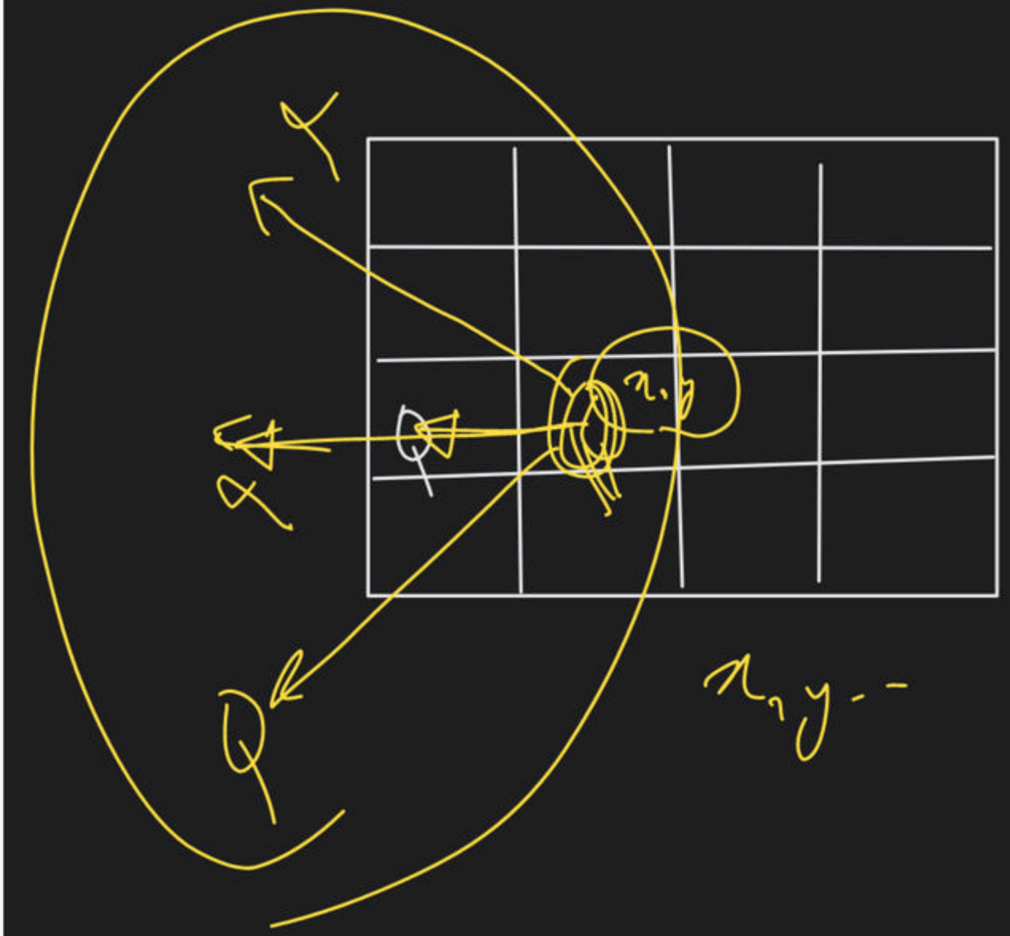

B·T

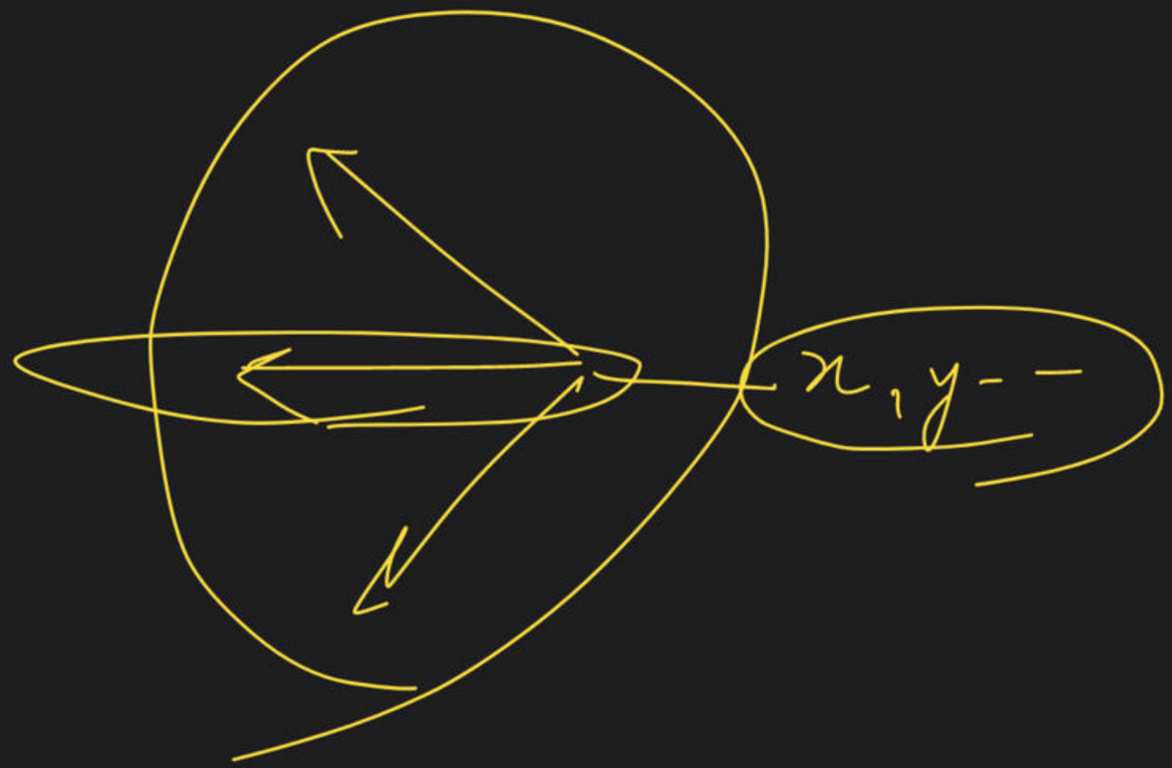

board[x][y] = 1;
Recall
// BIT
board[x][y] = 0

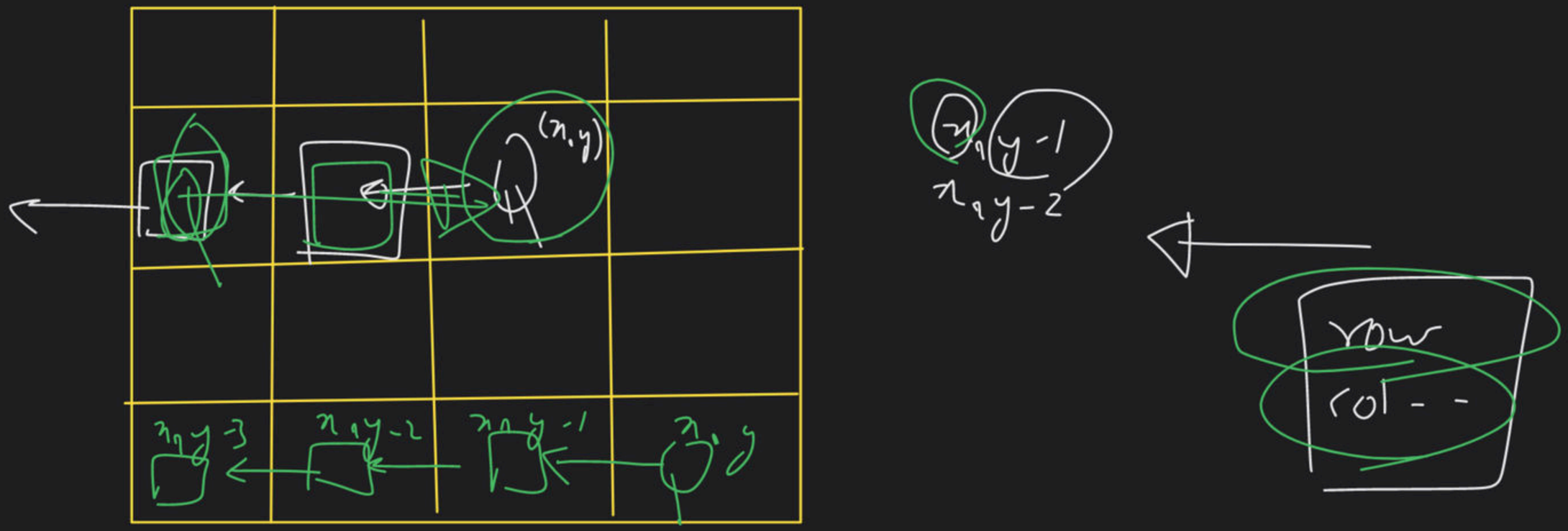

1-1

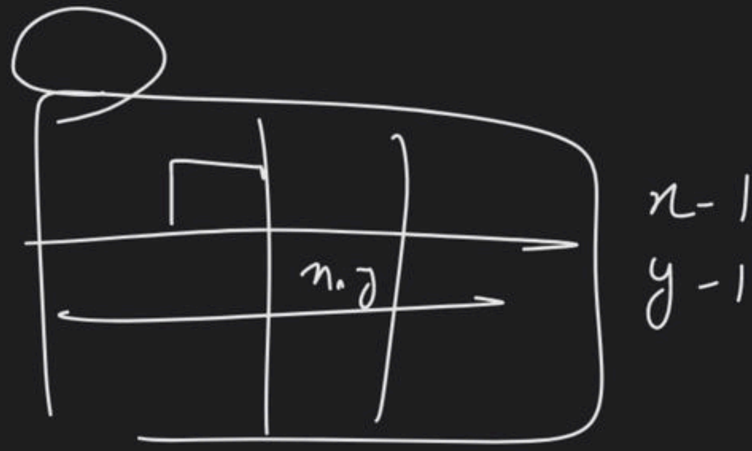


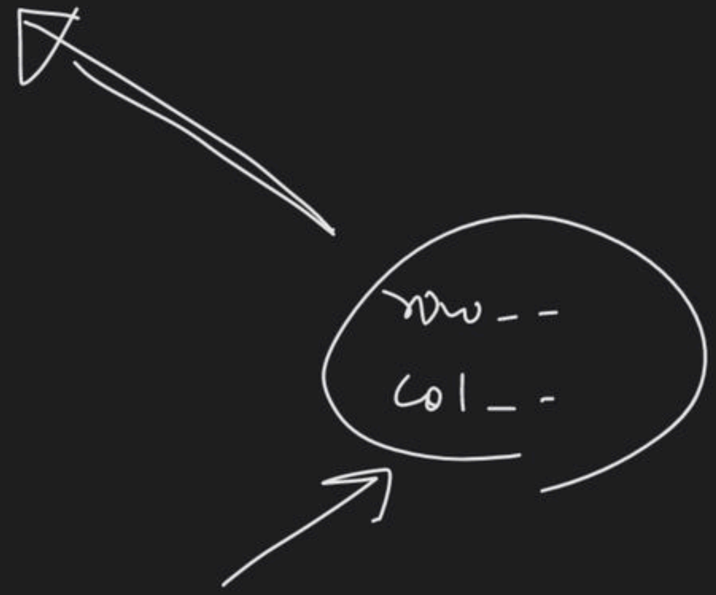


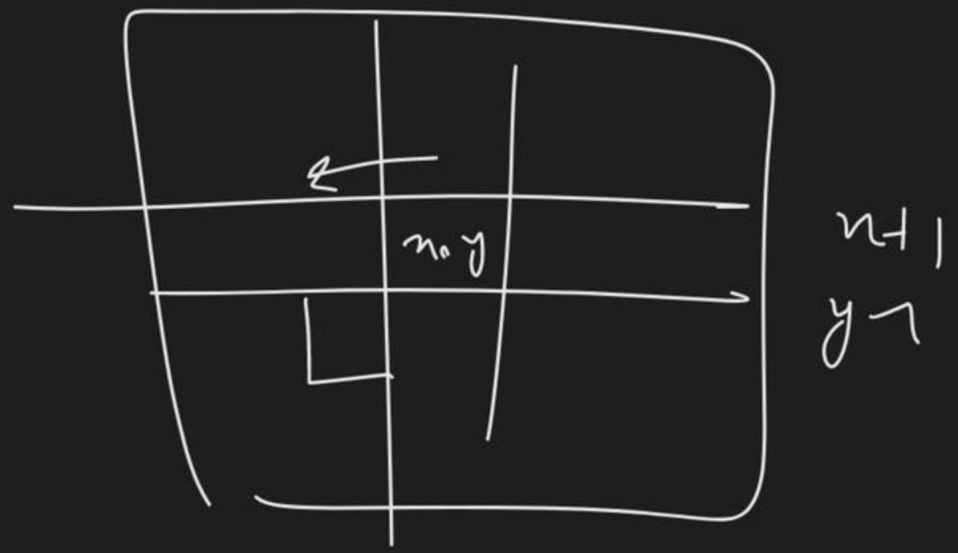

x, y
x, y - -

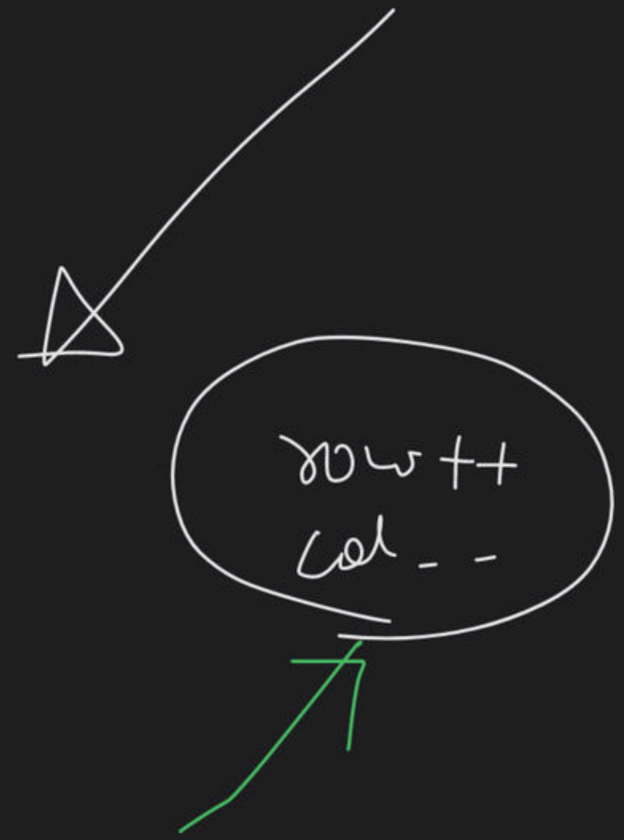

x, y - -

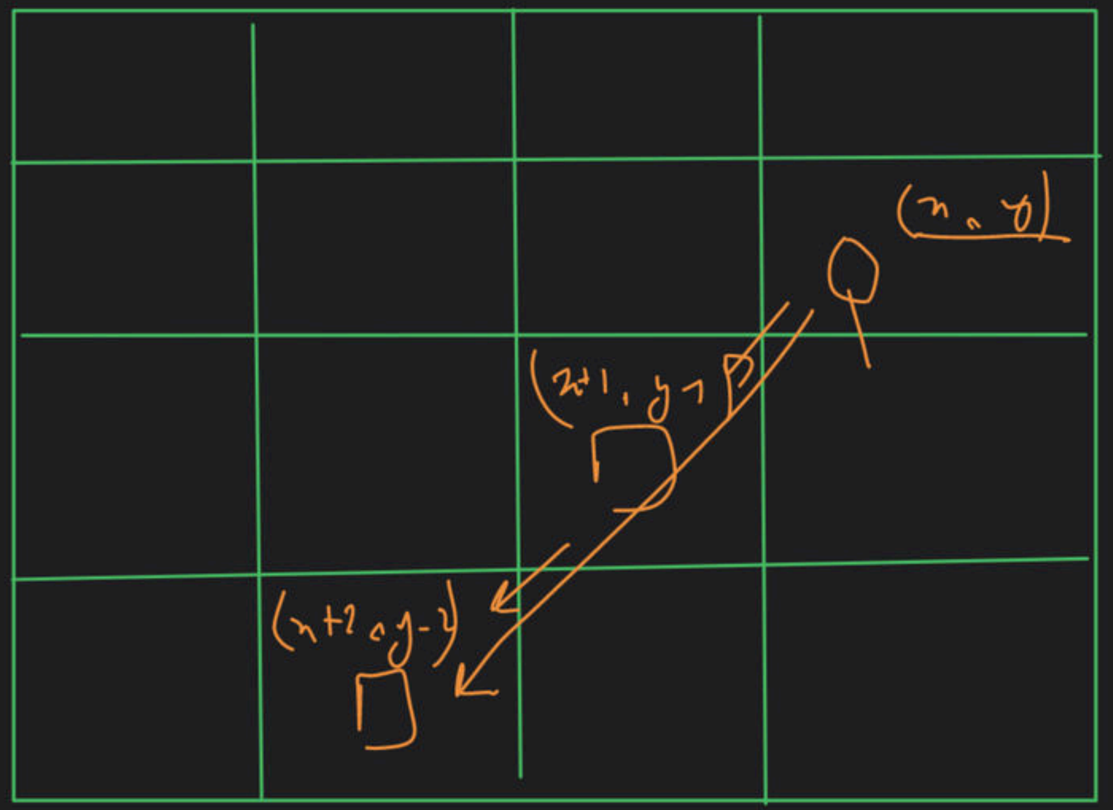

(x, y)
x, y-3
x, y-2
x, y-1
x, y
x, y-1
x, y-2
row
col - -


n-1
n.2
y-1


row--
col--


n, y
n+1
y


row++
col--



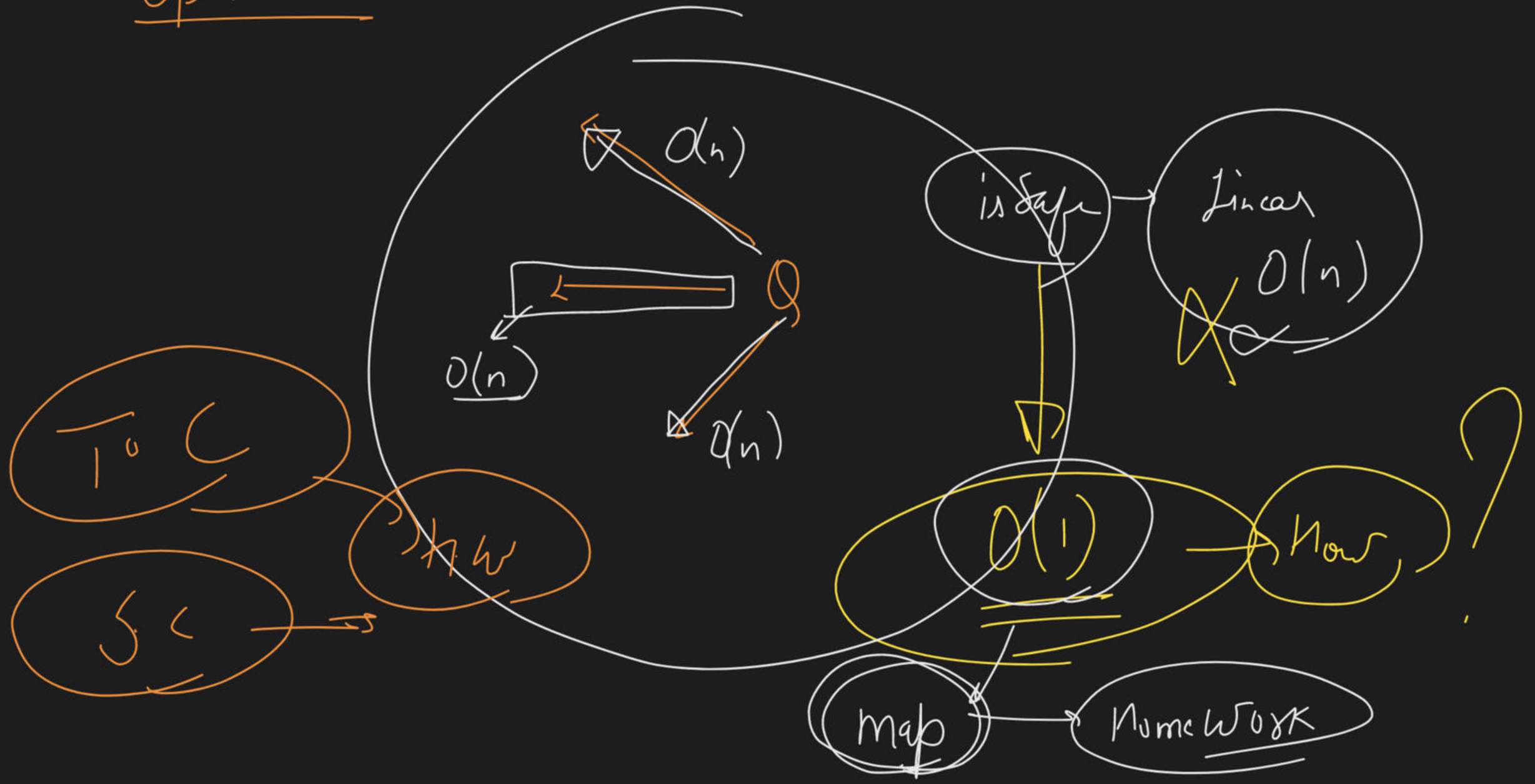
x + 1
y - -

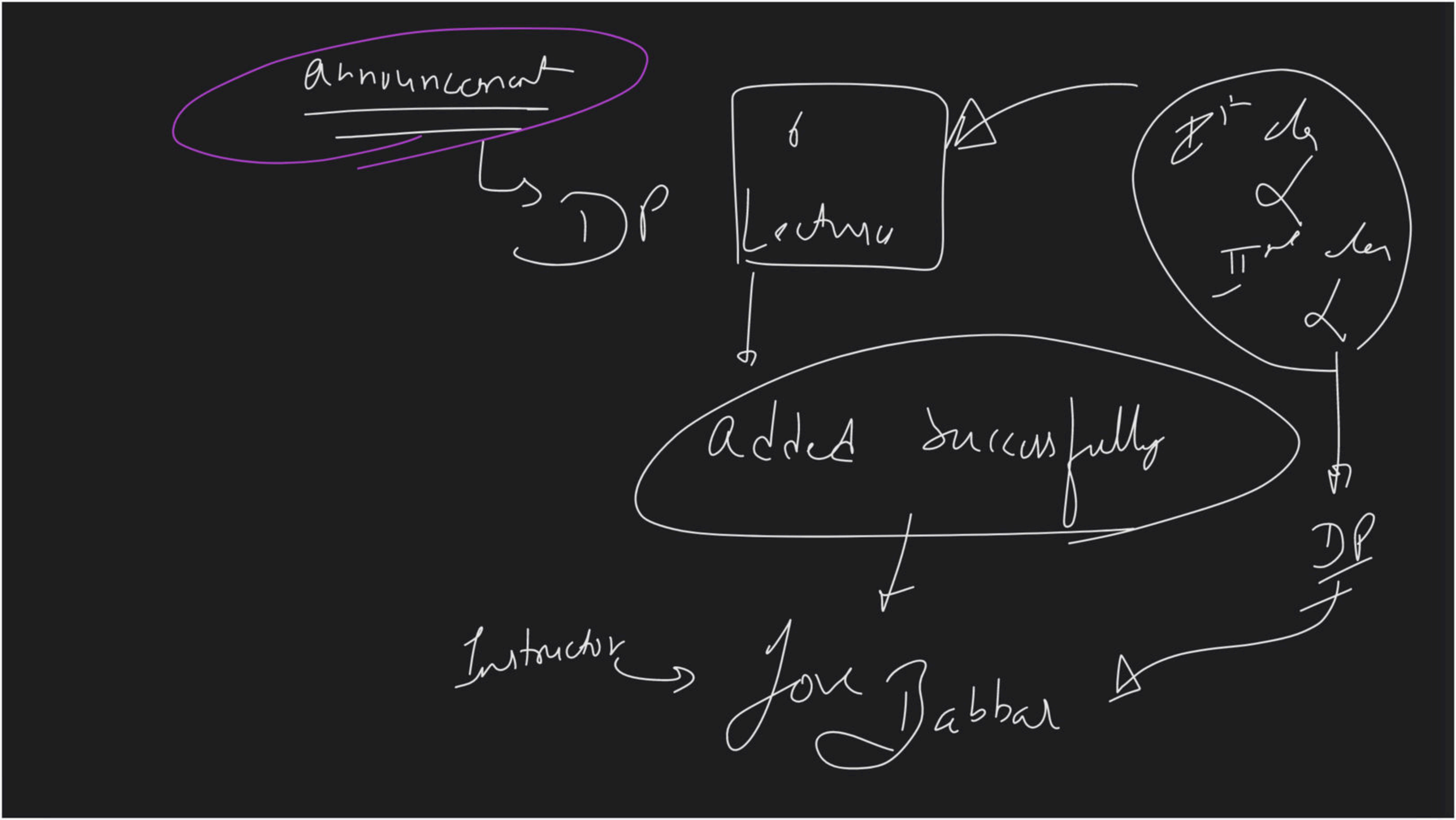
Vector<string> board

string

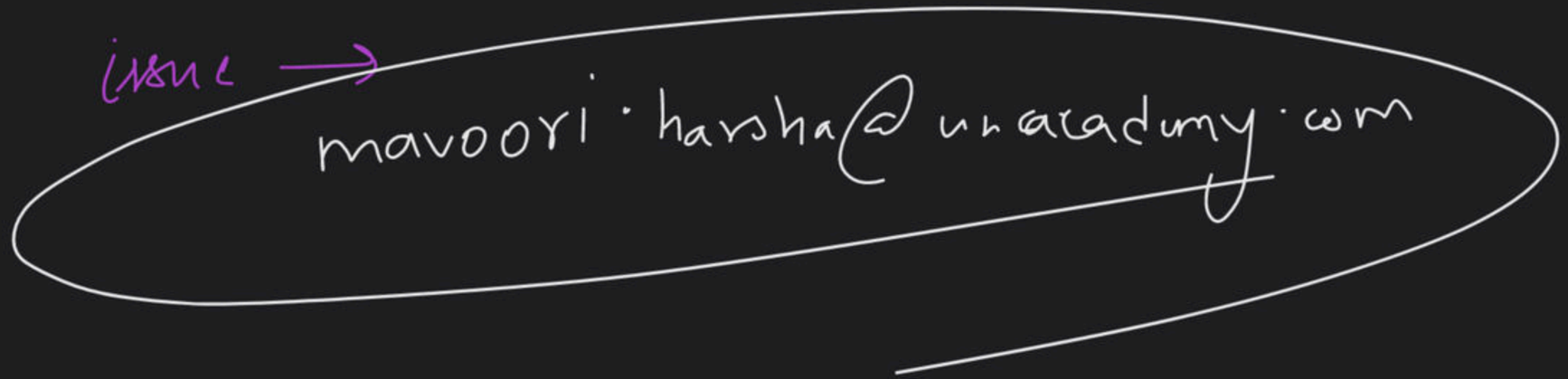
1D array

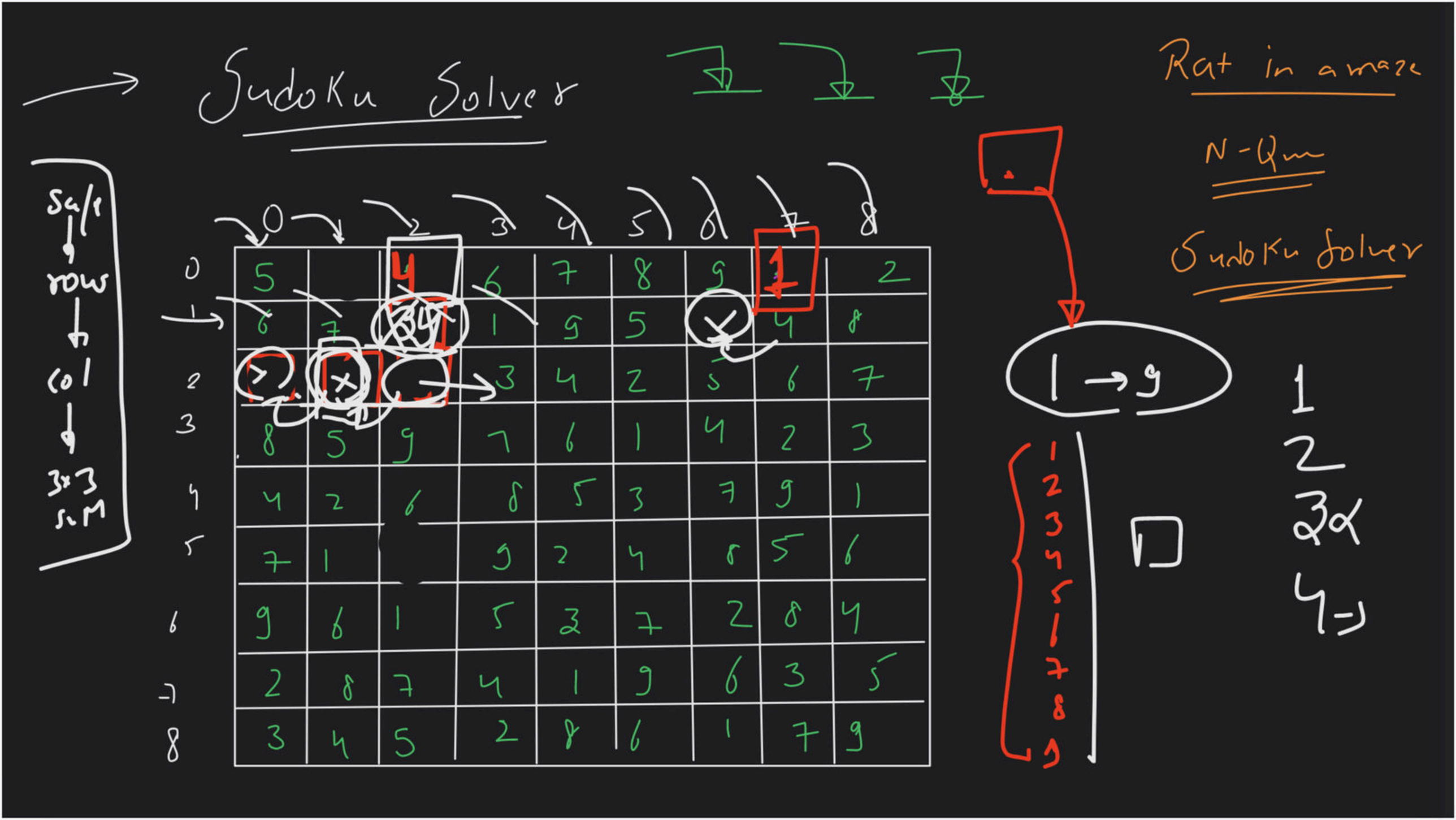
Optimisation: -




Announcement
DP
Lecture
addedA successfully
DP
Instructor
Jon Babbar

for any tech-related issue →





Sudoku Solver

Rat in a maze

N-Qm

Sudoku Solver

Safe → row → col → 3×3 SoM

	0	1	2	3	4	5	6	7	8
0	5		4	6	7	8	9	1	2
1	6	7	3 4	1	9	5	×	4	8
2	×	×		3	4	2	5	6	7
3	8	5	9	7	6	1	4	2	3
4	4	2	6	8	5	3	7	9	1
5	7	1		9	2	4	8	5	6
6	9	6	1	5	3	7	2	8	4
7	2	8	7	4	1	9	6	3	5
8	3	4	5	2	8	6	1	7	9

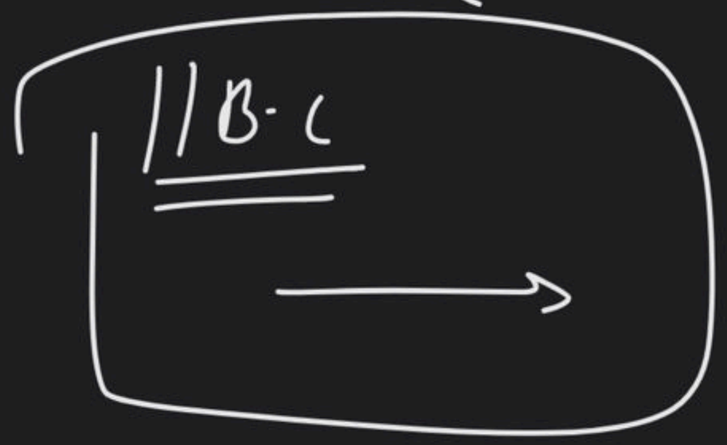
1 → 9

1
2
3
4
5
6
7
8
9

1
2
3 4
4 →

bool solve (Vector <vector <int> & board)

{



for (int row → 0 → 9)

{ for (int col → 0 → 9)

{ //□ → cell

if (board (row)[col] == 0)

{

for →

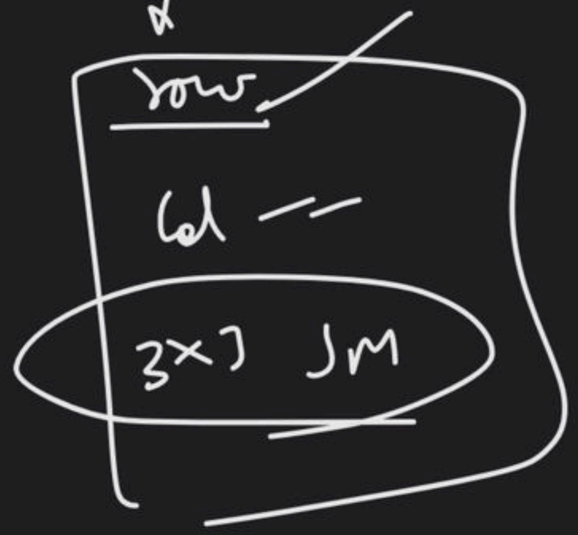
```
for (int K → 1 ⟶ 9)
{
    if (isSafe ( K, row, col, board))
    {
        board [row][col] = K;

        bool recAns = solve ( ____ )

        if (recAns == true)
            return true;
        else
        {
            board [row] [col] = 0;
        }
    }
return false
```

K

row check

```
for (int j -> 0 -> 9)
{ if (board[row][j] == K)
        return false
}
}
```

isSafe() row, col, K



```
for(int i -> 0 -> 9)
{ if (b[i][col] == K)
        return false
```

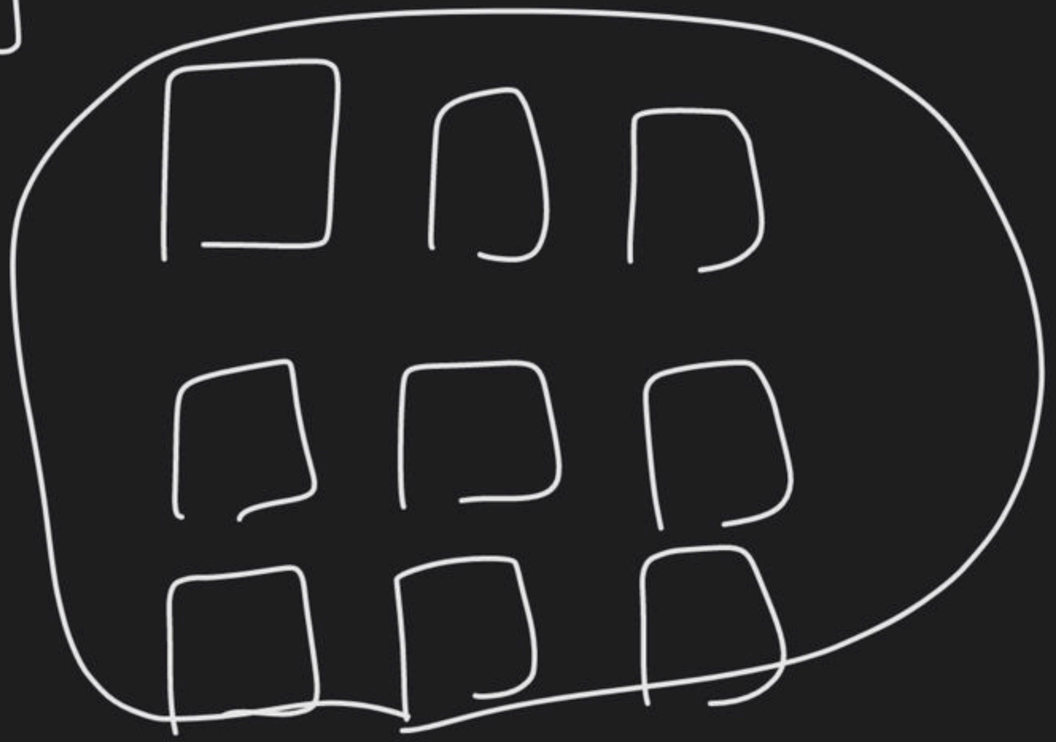
// check 3×3 SM

samajh nahi aaya

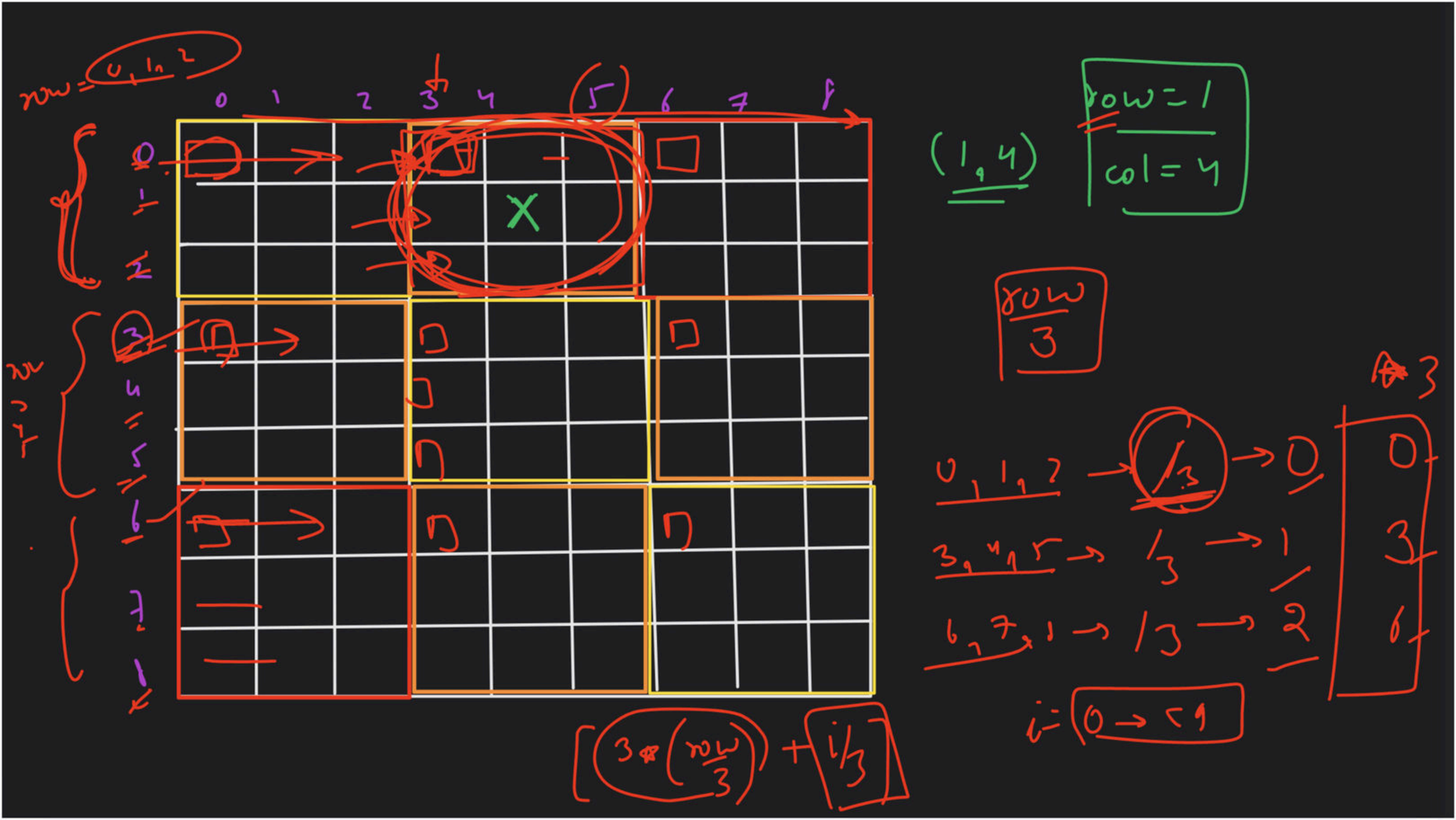
board [3 * (row / 3) + i / 3] [3 * (col / 3) + i % 3]

i = 0 → <9

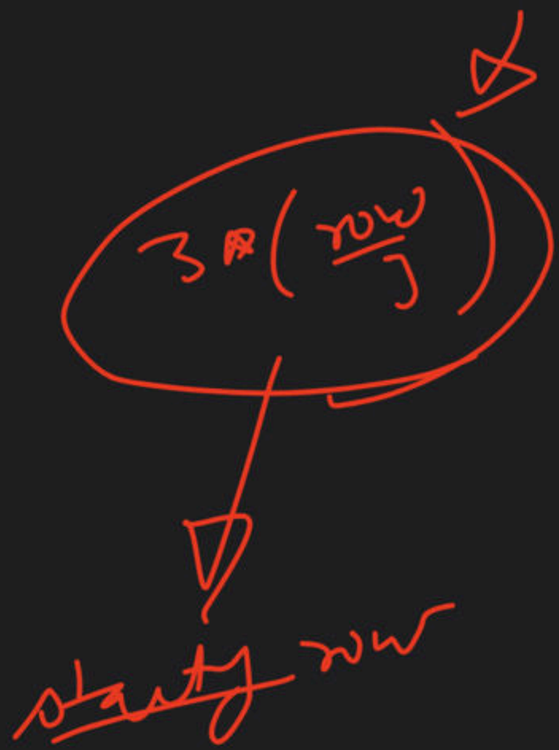
DRY RUN



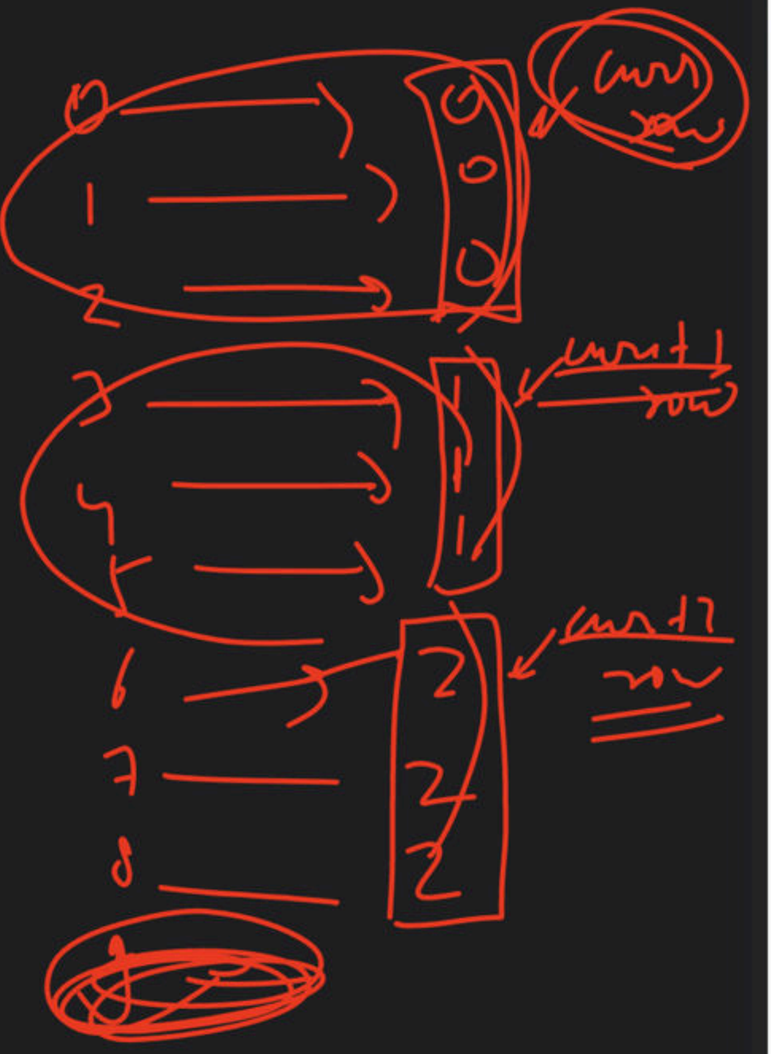
→ formula Kaise aaya ?

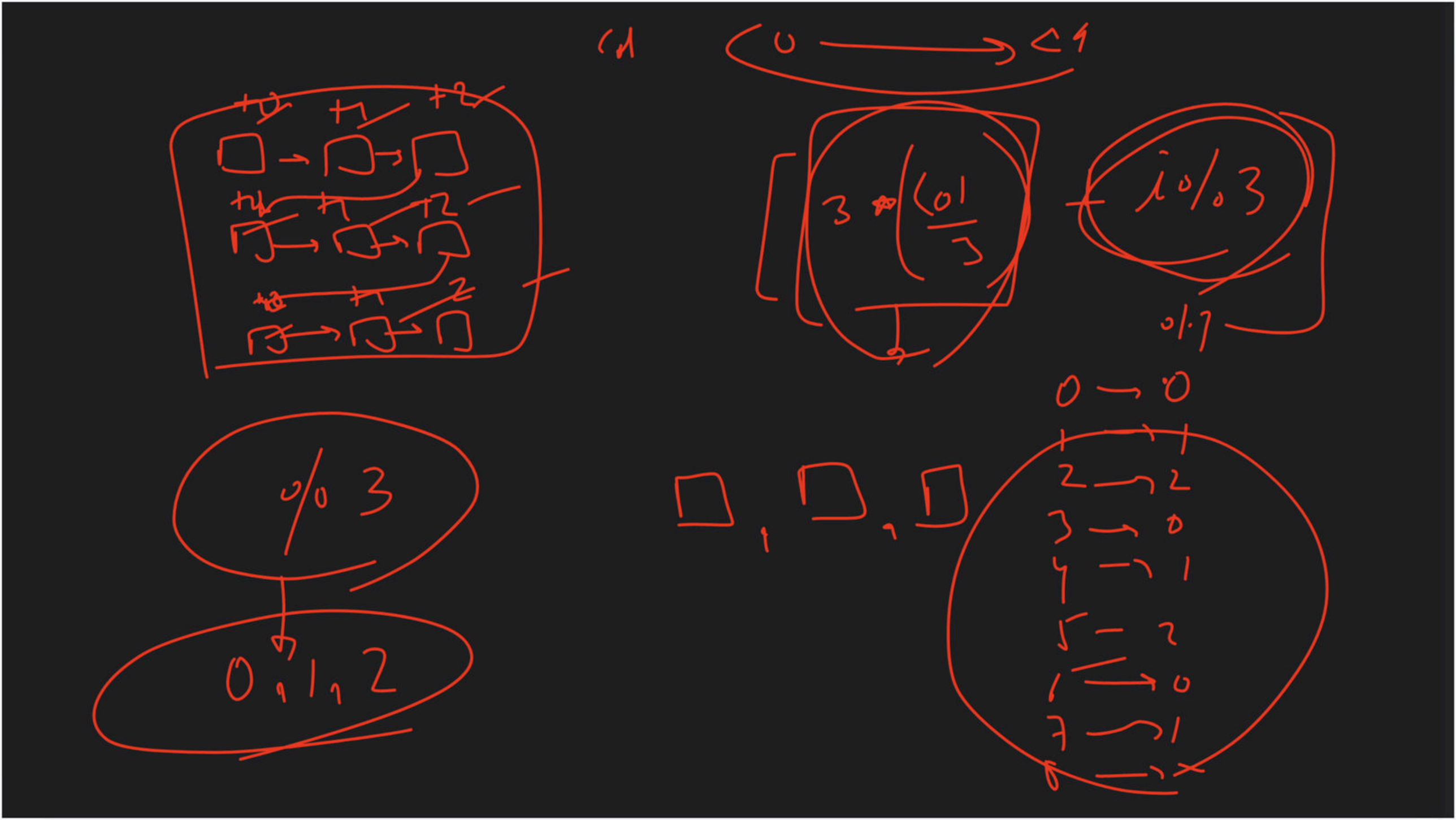

row = 0, 1, 2
0 1 2 3 4 5 6 7 8
0 1 2 3 4 5 6 7 8
row = 1
col = 4
(1, 4)
row / 3
0, 1, 2 → 1/3 → 0
3, 4, 5 → 1/3 → 1
6, 7, 8 → 1/3 → 2
0 3 6
i = 0 → < 9
[3 * (row/3) + i/3]

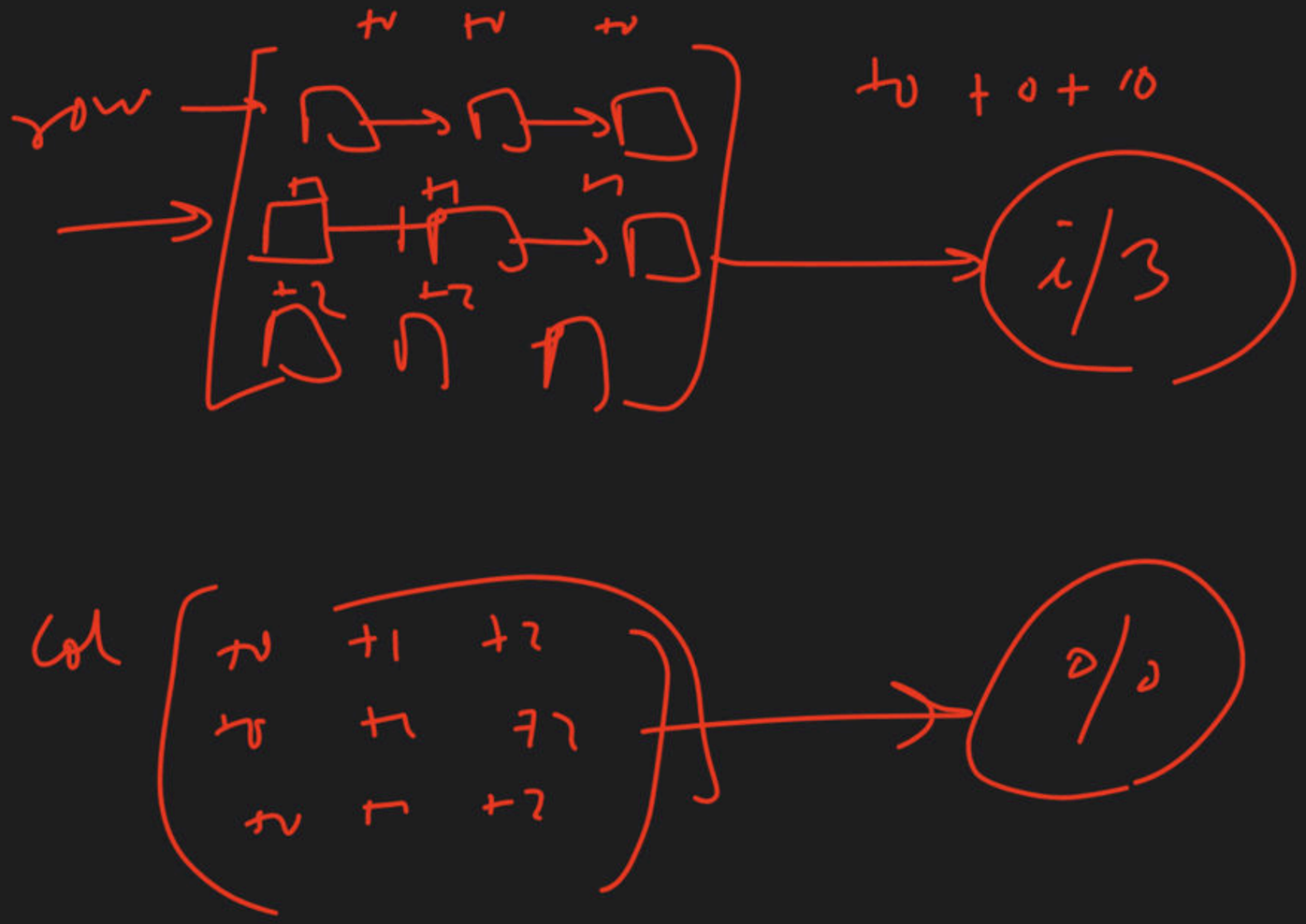
$3 * \left(\frac{row}{3}\right) + i/3$



$$\left[\frac{3 * (row)}{3} + i/3\right]$$




0 → 0
2 → 2
3 → 0
4 → 1
5 → 2
6 → 0
7 → 1
0 1 2
0 1 2
0 1 2

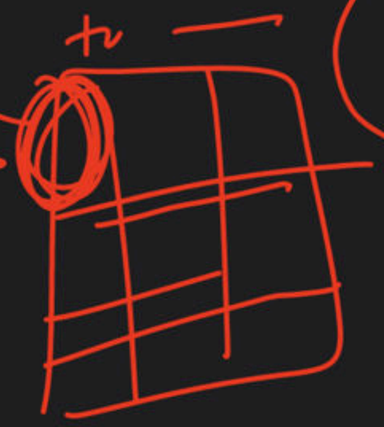


$$\text{board}\left[3*\left(\frac{row}{3}\right)+i/3\right]\left[3*\left(\frac{col}{3}\right)+i\%3\right]$$

↳ DRY RUN

index

3 rd row



$\boxed{5, 4}$

$$3\times\left(\frac{5}{3}\right)=\frac{3\times 1}{2}=3$$

H.W → S.S

T.C

S.C

Announcement

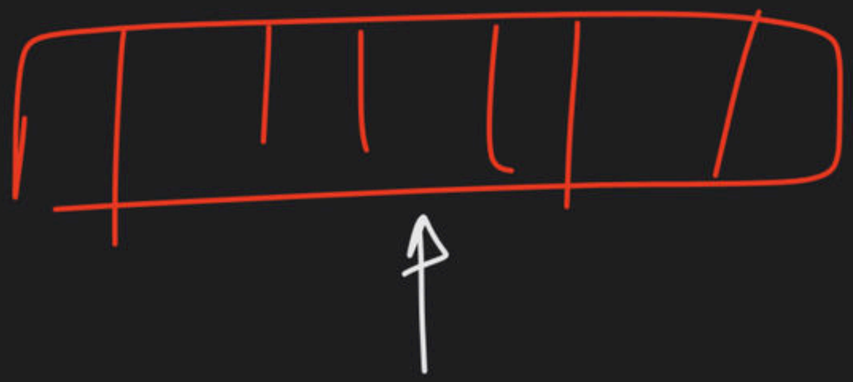
4-1

7 - 9 pm

Update

Discord

Telegram



Palindromic

Partitioning