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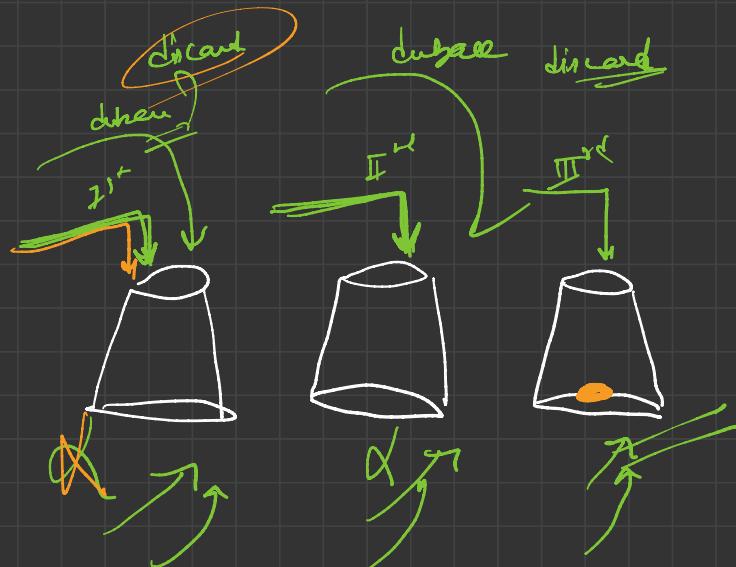
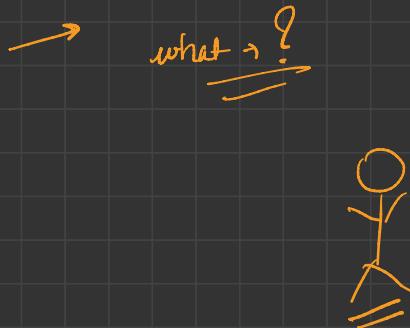
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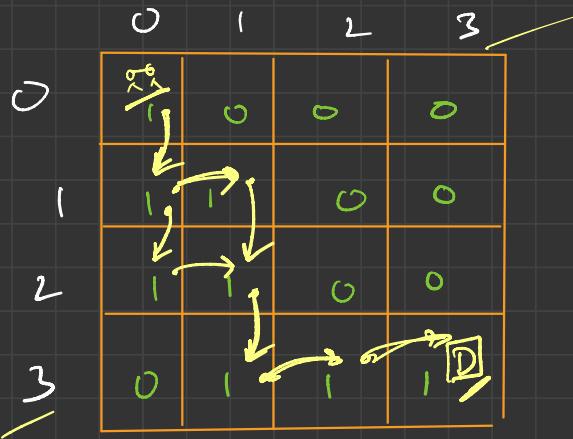


# Backtracking



Day 1

# → Rat in a maze Problem



src →  $(0, 0)$

dst →  $(n-1, n-1) \rightarrow (3, 3)$

$U, D, L, R \leftarrow$  movement

1 → open path

0 → closed

safe

safe

D D R D R R

possible solution

D R D D R R

→ lexicographical →

U L D R

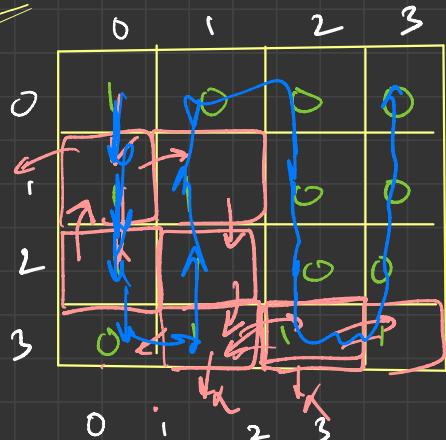
D L R U

→  
 $\text{arr}[\text{newx}][\text{newy}] == 1$   
 $\rightarrow \text{visited}[\text{newx}][\text{newy}]$   
 $!= 1$   
 $\rightarrow \text{newx} \geq 0, < n$   
 $\text{newy} \geq 0, < n$

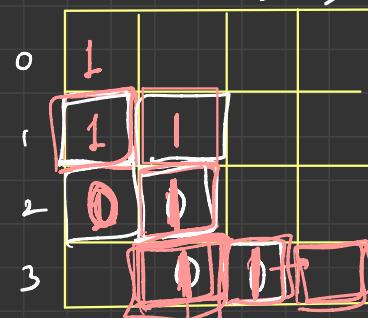
Approach:-

arr

$\alpha$



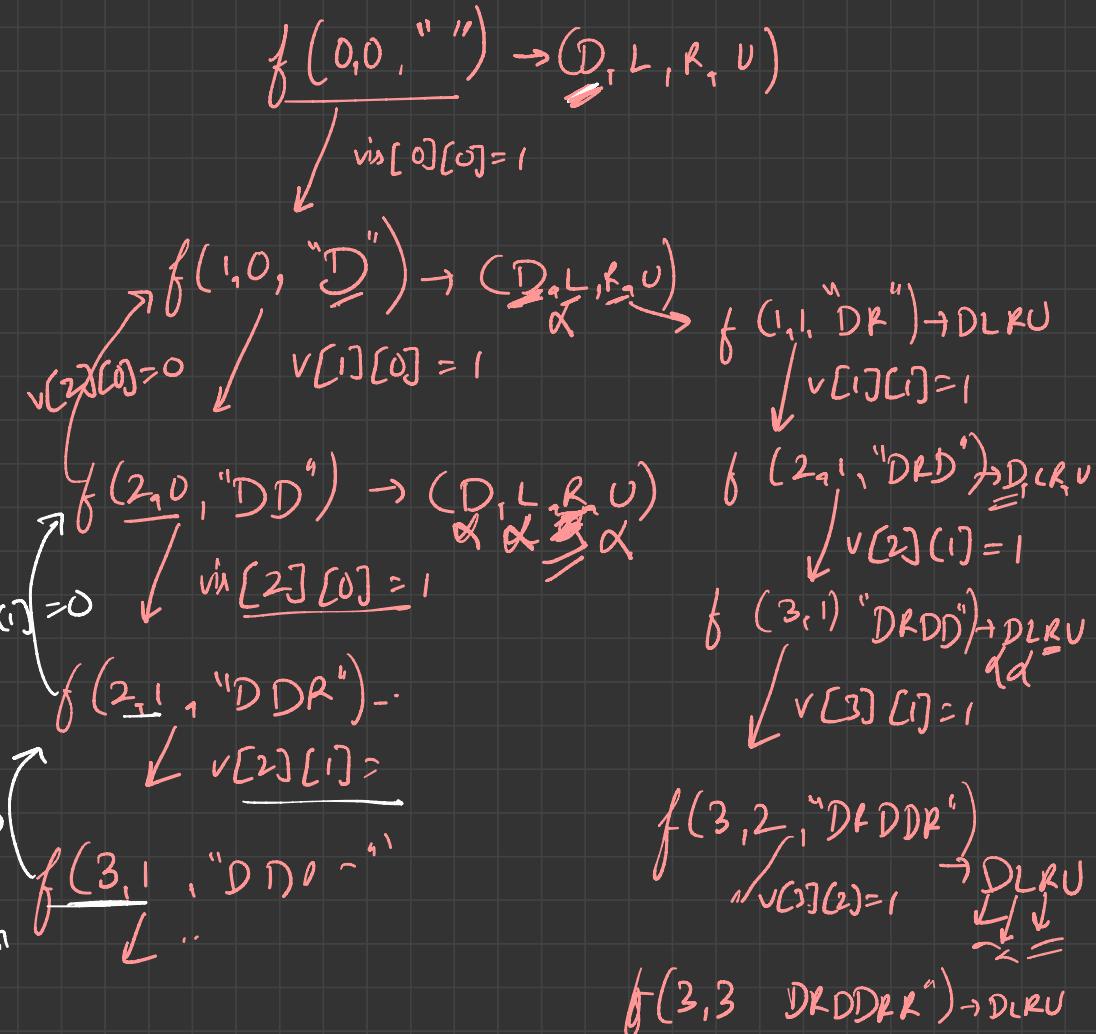
visit[ $i,j$ ]



$v[2][2] = 0$

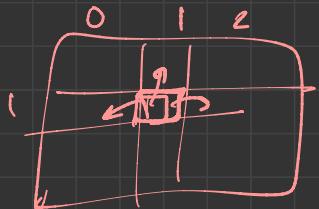
$v[2][1] = 0$

$v[2][0] = 0$



$f(3, 2, \dots)$   
 $f(3)$   
 dist reached  
 $\hookrightarrow$  ans store

DL DR DL

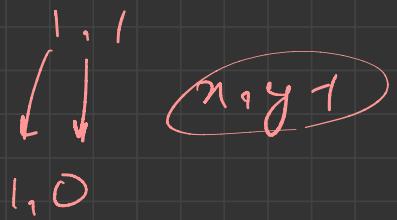
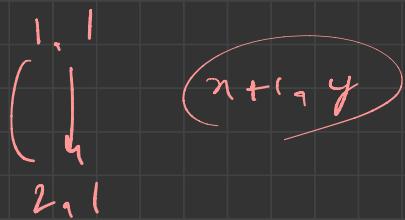
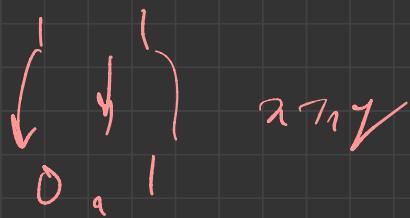
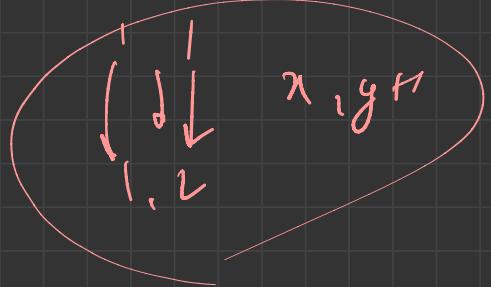


$0 \downarrow$   
 $1 \downarrow$   
 $2 \downarrow$   
 $1, 0$

$1 \downarrow$   
 $1 \downarrow$   
 $1 \downarrow$   
 $1, 0$

$x+1, y$

$x, y-1$   
 $\leftarrow$  left

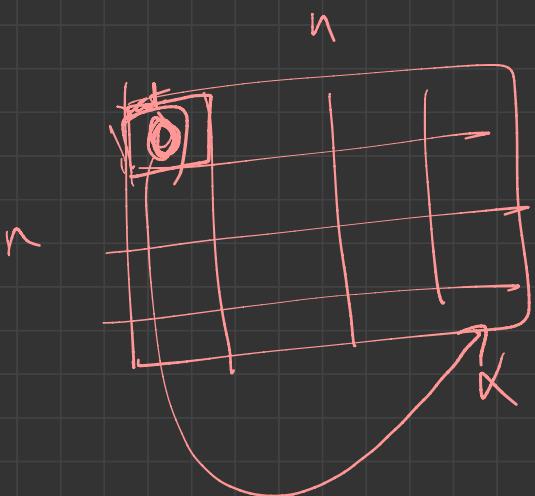


$i$   
 $j$   
 $x_{i,j}$

$i$   
 $j$   
 $y_{i,j}$   
 $i, j$

$x_i$   
 $i$   
 $y_i$   
 $i = 0, 1, \dots, n-1$

$i$   
 $j$   
 $x_i$   
 $i, j$   
 $y_j$



$$T.C \rightarrow \underbrace{I^{(n \times n)}}_{S.C} \xrightarrow{\quad} \underbrace{y^{(n^2)}}_{O(n \times m)} \xrightarrow{\quad} T.C$$



























