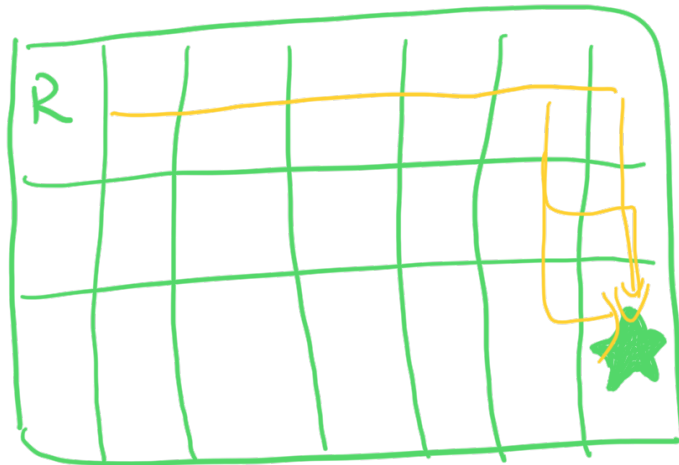


62. Unique Path

- Robot on $m \times n$ grid
- $\begin{cases} \text{Robot: grid}[0][0] \\ \text{Star: grid}[m-1][n-1] \end{cases}$

Example : $m=3$, $n=7$



Analyse:

Using Dynamic Programming

How to arrive current place ?

$$f(i, j) = f(i-1, j) + f(i, j-1)$$

↓
current position

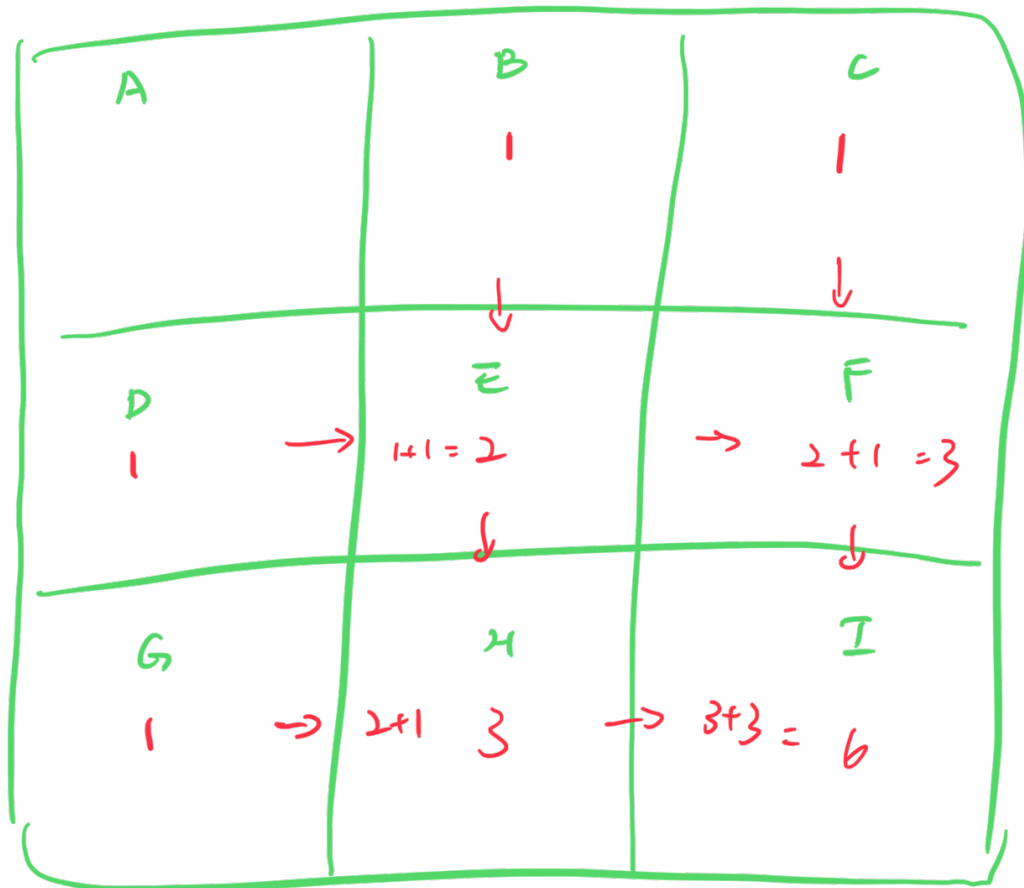


↓
ways come
from to

ways come from
left

Graph Explain:

(Remember we only allow move right / down)



① How many ways move

from A to B : 1

C : 1

② How many ways move

from A to D : 1

G : 1

③ How many ways move

from A to E : 2

F : 3

④ How

A to H : 3

I : 6

See, you find the pattern.

Back to the example :

R	1	1	1	1	1	1
1	2	3	4	5	6	7
1	3	6	10	15	21	28 → <u>28</u>

cool. Let's write the pseudo code :

Given m, n .

Basically, we need to create an $m \times n$ matrix. But, we have some additional information, which is the top and left ones.

So .

new matrix $a[m, n]$

for i in m :

$a[i, 0] = 1$

for j in n :

$a[0, j] = 1$

for $i=1$ in m :

for $j=1$ in n :

$a[i][j] = a[i-1][j] + a[i][j-1]$

return $a[m-1][n-1]$