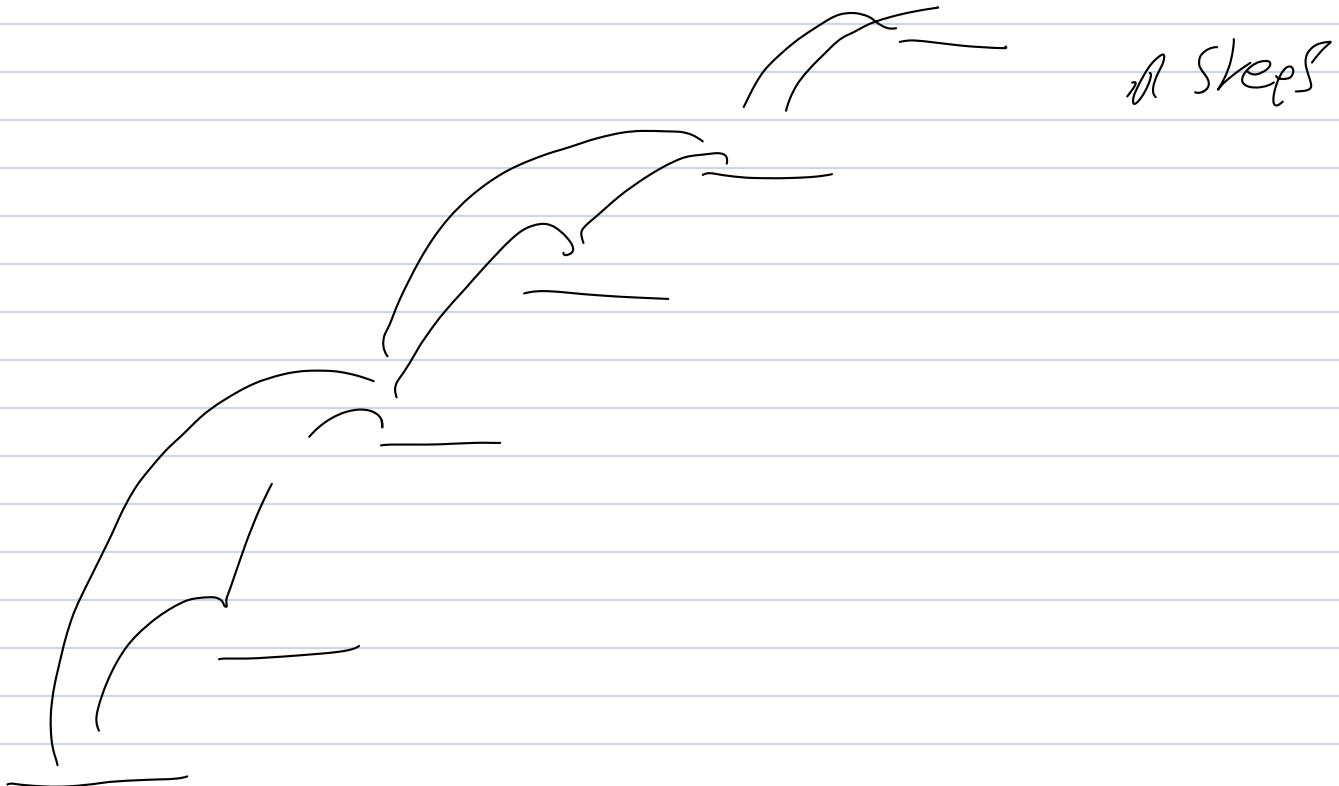


You are climbing the staircase, steps to reach the top

Each time you can either climb either 1 or 2 steps.

In how many distinct ways can you climb the top?



Example  $n = 2$

$\rightarrow 2 \text{ ways} \rightarrow 1 + 1$

2

Ex 2  $n = 3$

$\rightarrow 3 \text{ ways } 1+1+1$

$2+1$

$1+2$

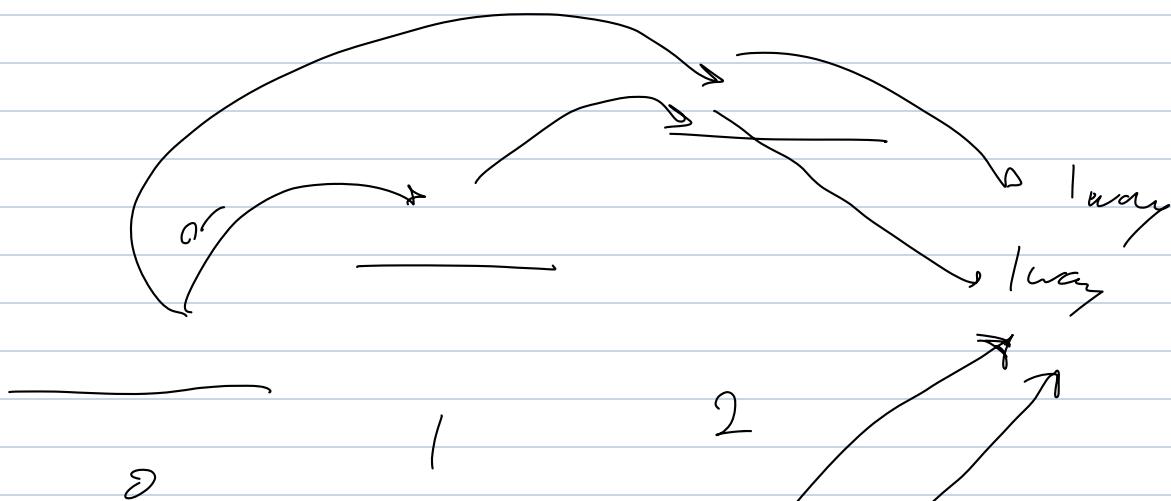
$n = 4$

$$x(1) + y(2) = 4$$

if  $x=0 \rightarrow y=2 \rightarrow 2+2$

if  $x=1 \rightarrow y=0 \rightarrow 1+1+1+1$   
 $y=2 \rightarrow \frac{2+1+1}{1+2+1}$   
 $\underline{1+1+2}$

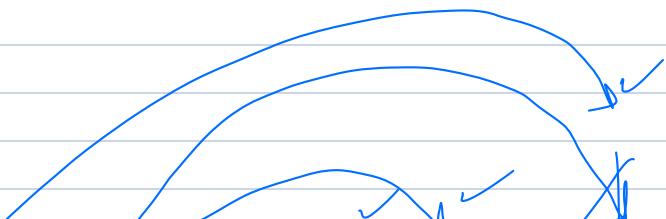
Next code  $\rightarrow$  Dynamic Programming, memoization

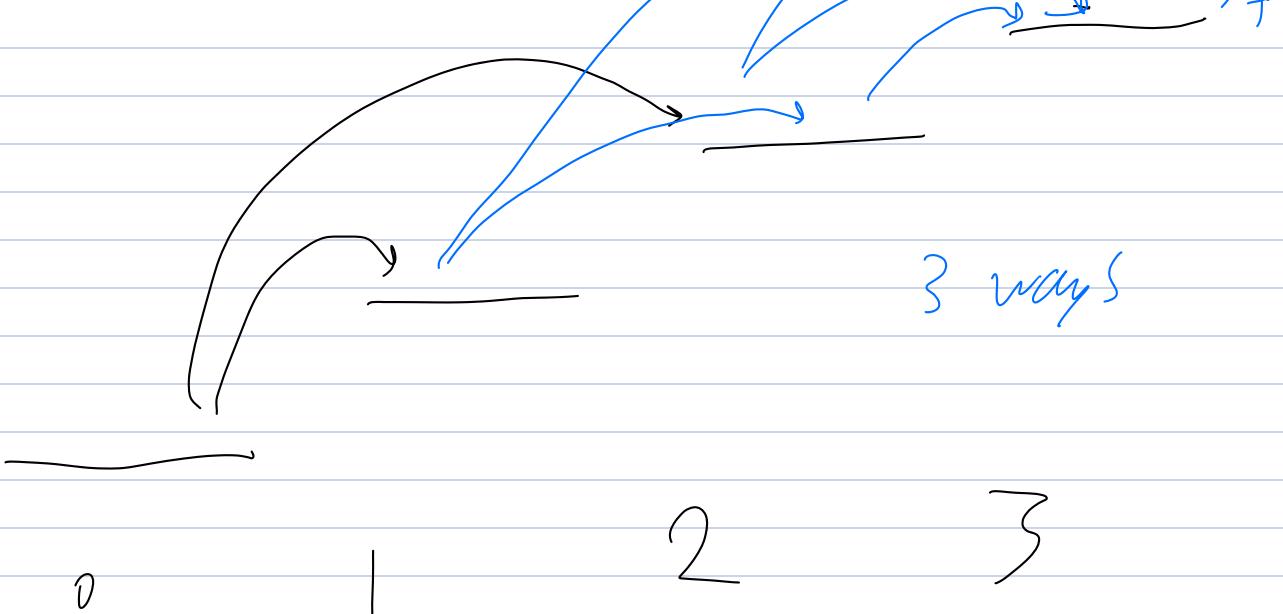


if 1 step  $\rightarrow$  another step

if 2 step

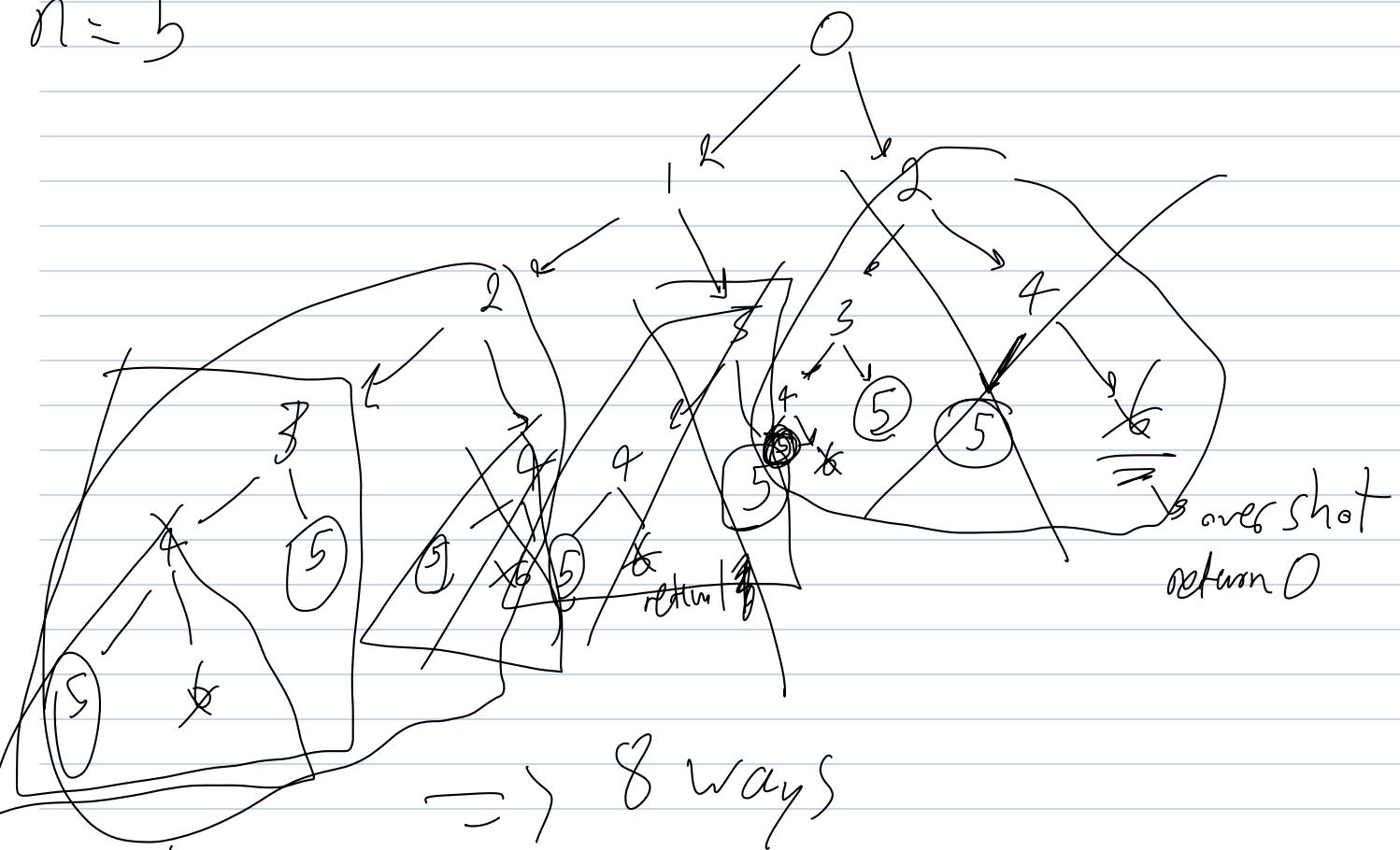
ex. 3





## Decision Tree

$n = 5$

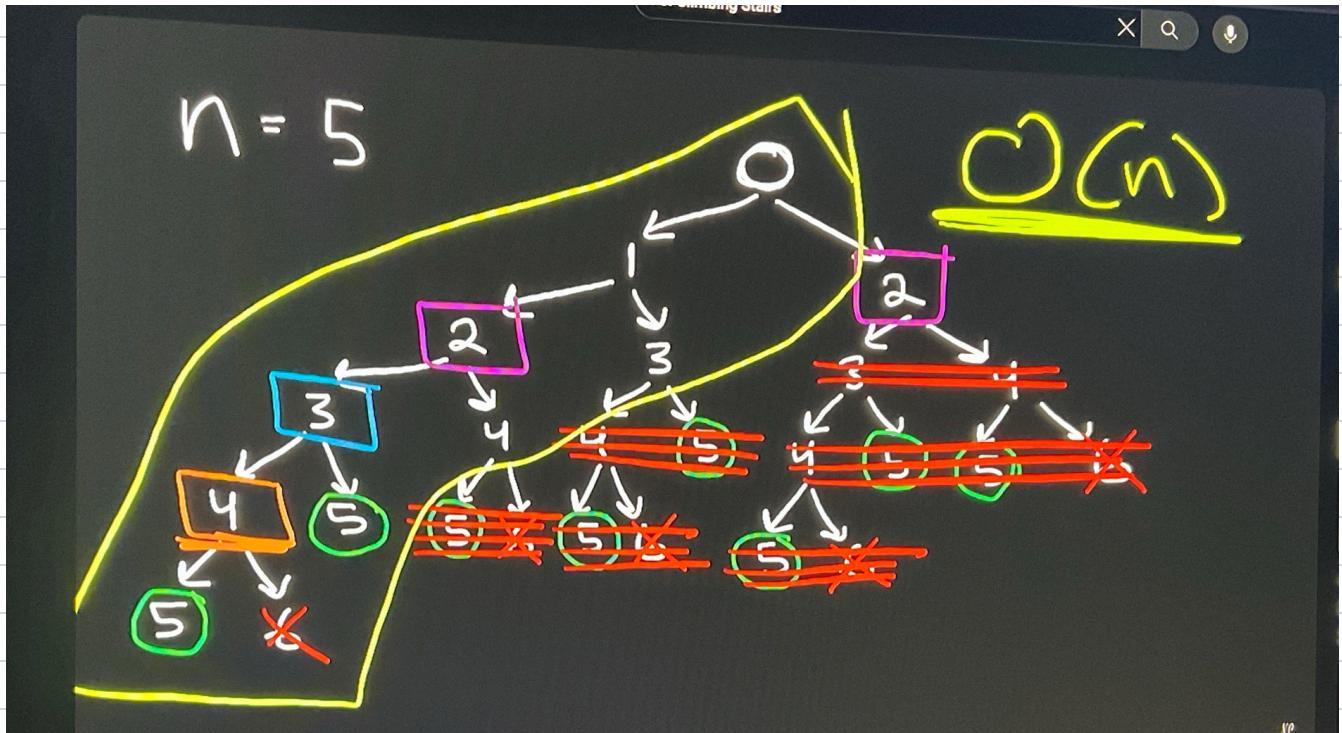


DFS

Exact Me Same

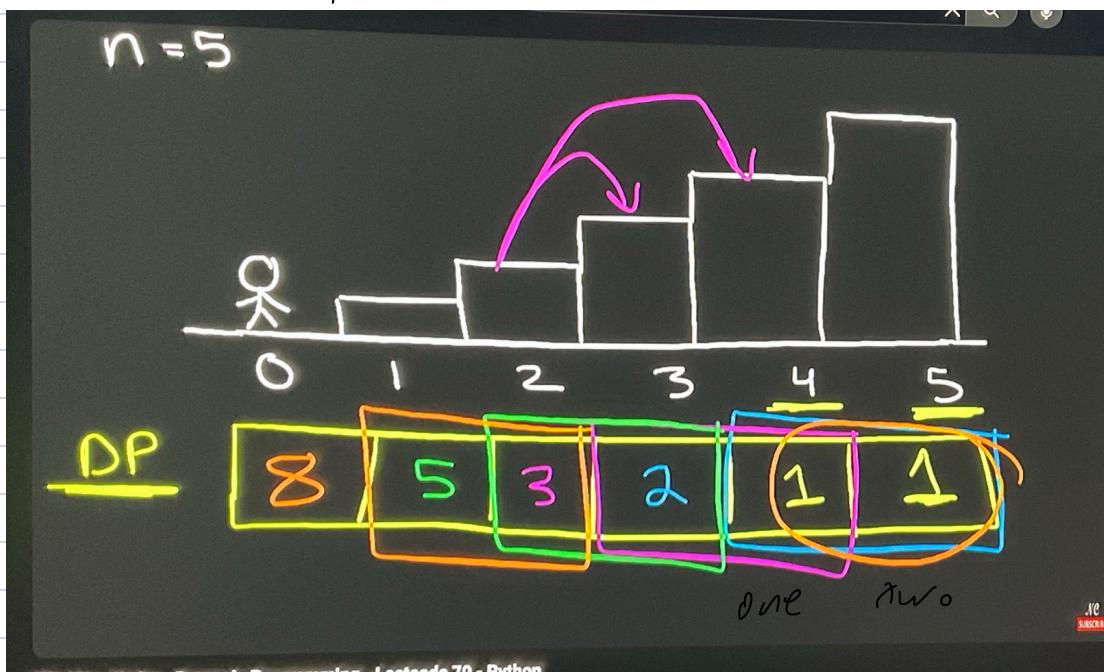
Store in DP

Cache



Cache the result → memoization

Bottom up - DP



Don't need entire array

Can store next two variables  
in

loop n-1 times