2	3	0	3	0	5

$n = 6$

$m = 5$

2, 3, 4

3, 5, 4

3×1

Worst Case

0	0	0	0	0	0

m m m ― - - - m

m^n

no. of possibilities ?

$m \leq 100$

$n \leq 10^5$

1 2 1 | $\boxed{0}$

1 1 1 | $\boxed{0}$

1, 2

$n = 4$

$m = 3$

$\boxed{1\ 2\ 1}$ | 0 = 2

$\boxed{1\ 1\ 1}$ | 0

$\boxed{2\ 1\ 1}$ | 0

Can we bother only about a prefix?

$$\underline{\underline{2\ 3\ 0}}\ 3\ 0\ 5$$

$2\ 3\ \underline{\underline{0}} \leftarrow$ $\quad$ $2\ 3\ 0\ 3\ \underline{\underline{0}}\ 5$

$3, 4, 2$ $\quad$ $\cancel{2}, \cancel{3}, 4$

0	2	0	3	0	0	4

$m = 5$

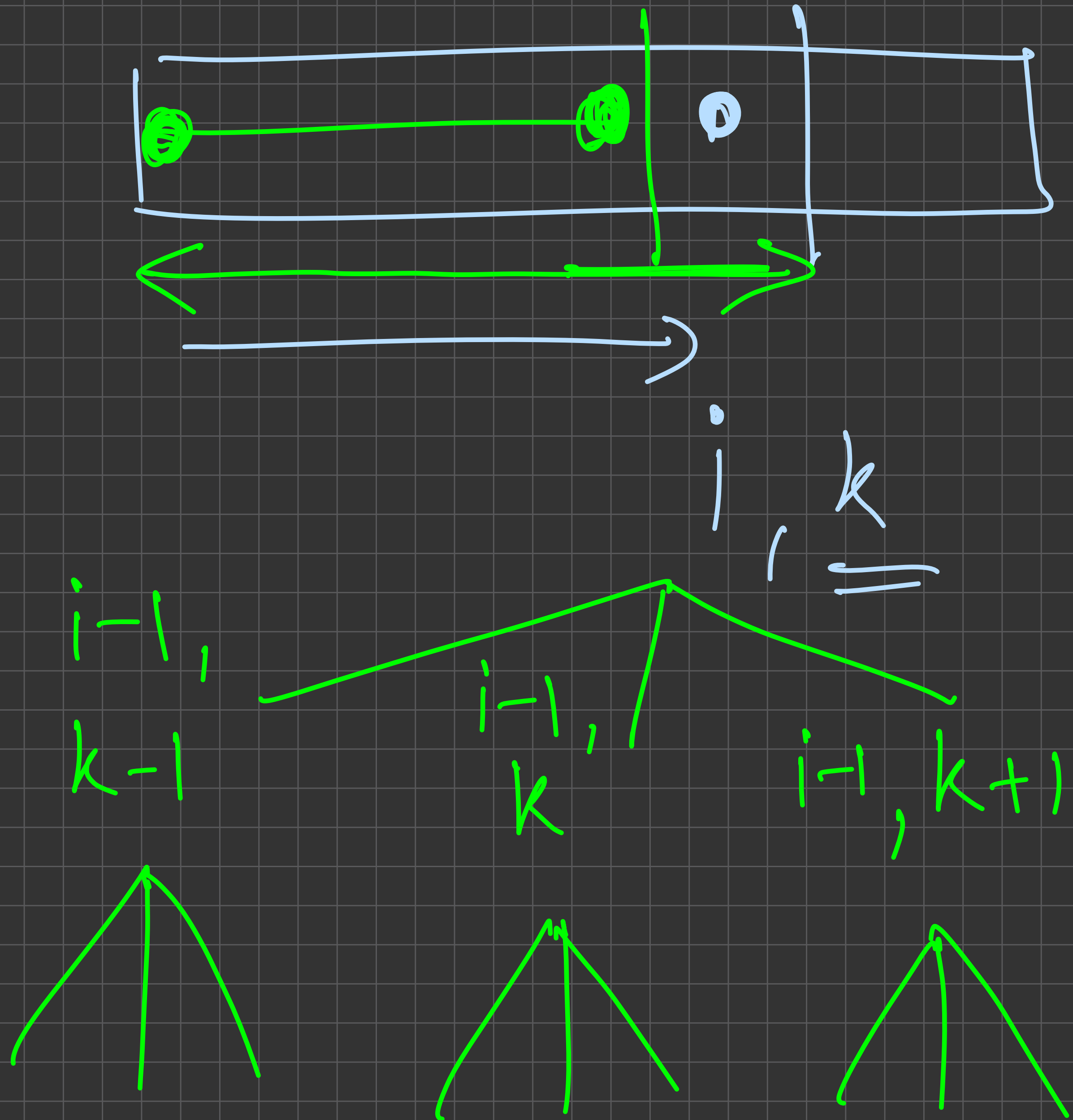
0 2 0 3 0 | 1   1, 2

0 2 0 3 0 | 2   1, 2, 3

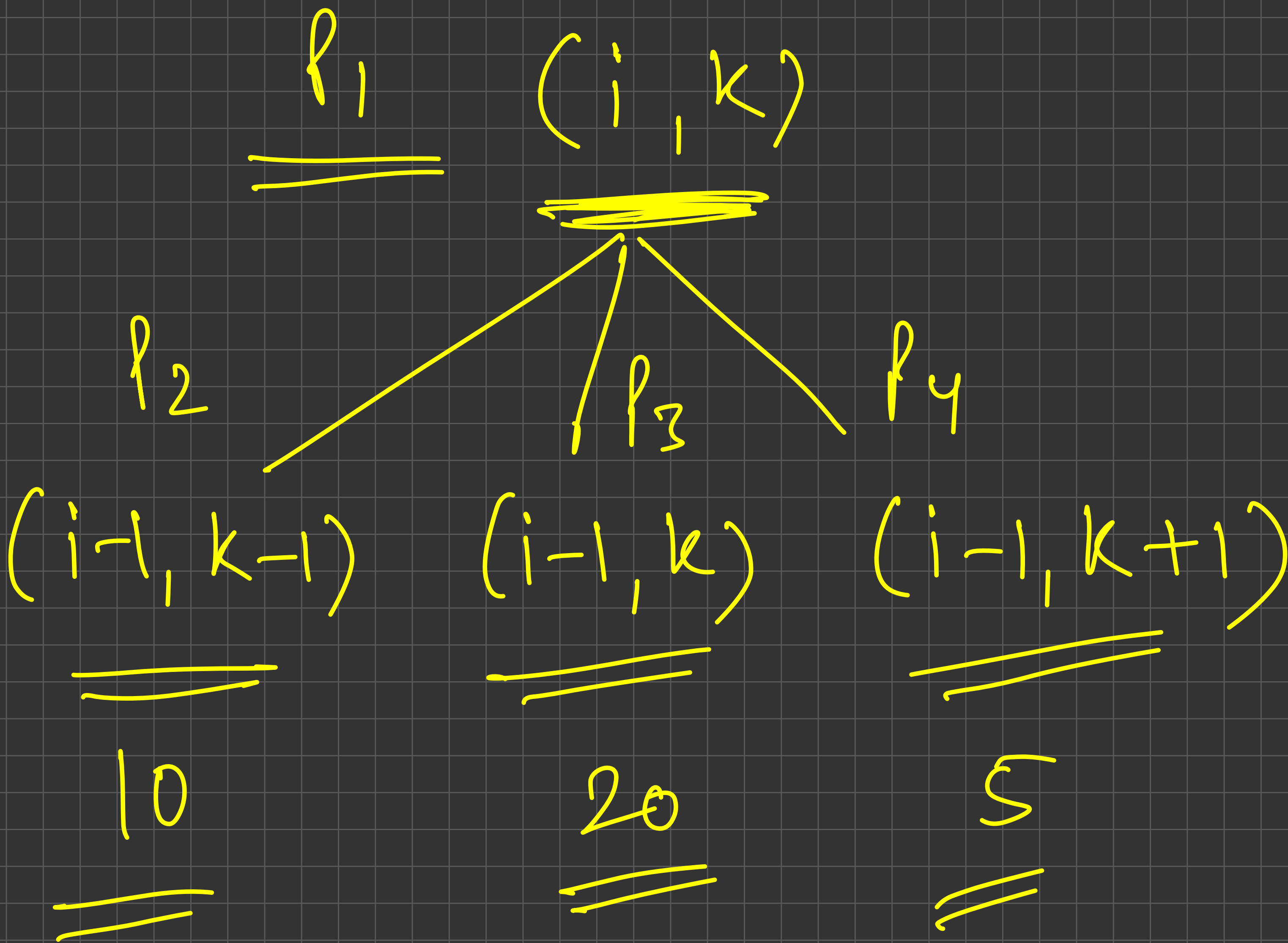
0 2 0 3 0 | 3   2, 3, 4

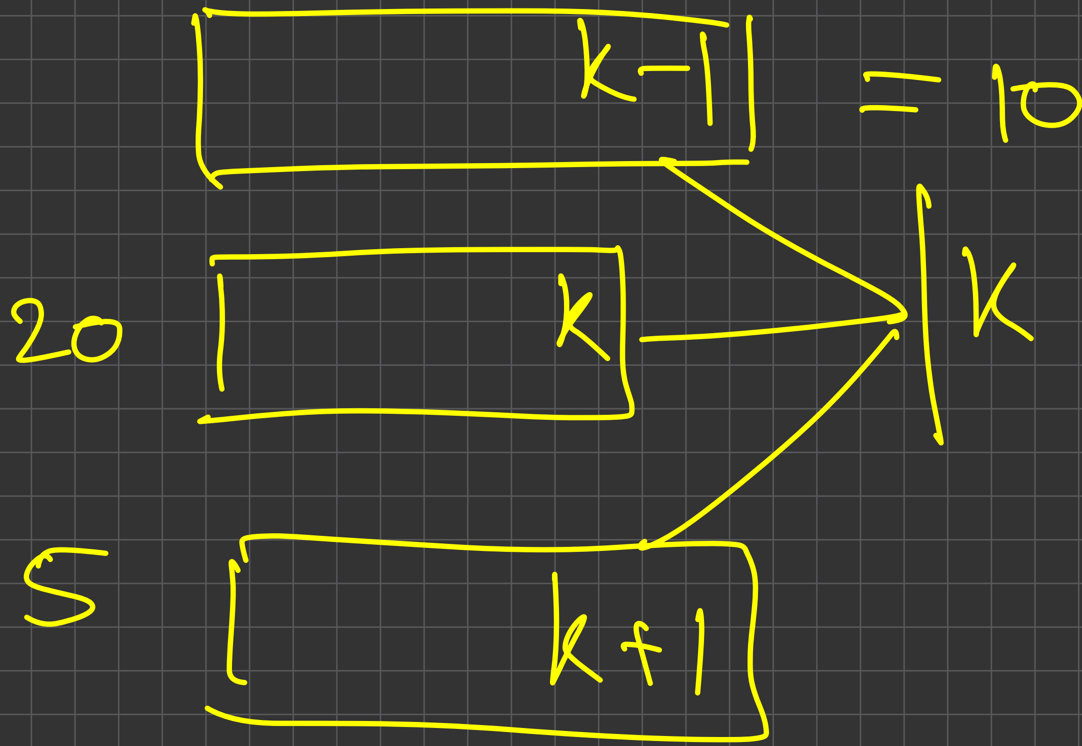
0 2 0 3 0 | 4   3, 4, 5

0 2 0 3 0 | 5   4, 5


i, k =
i-1, k-1
i-1, k
i-1, k+1

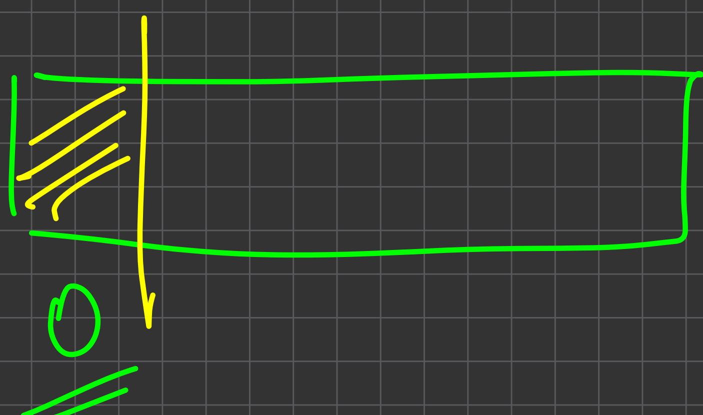
$dp[i][k]$ = no. of prefixes of length = i that can be formed such that the last element of the prefix = k


p_1
(i, k)
p_2
p_3
p_4
$(i-1, k-1)$
$(i-1, k)$
$(i-1, k+1)$
10
20
5


k-1
= 10
20
k
|k
5
k+1

$$dp[i][k] = dp[i-1][k-1] + dp[i-1][k] + dp[i-1][k+1]$$

Transition



$dp[i][k] = 1$ if $a[0] = k$ or

$a[0] = 0$

0

Base case

0

1

2

3

⋮

m

not 0

$= k$

final subproblem?

$$dp[n][1] + dp[n][2]$$

$$- \ldots\ldots \; dp[n][m]$$

$$\sum_{i=1}^{m} dp[n][i]$$