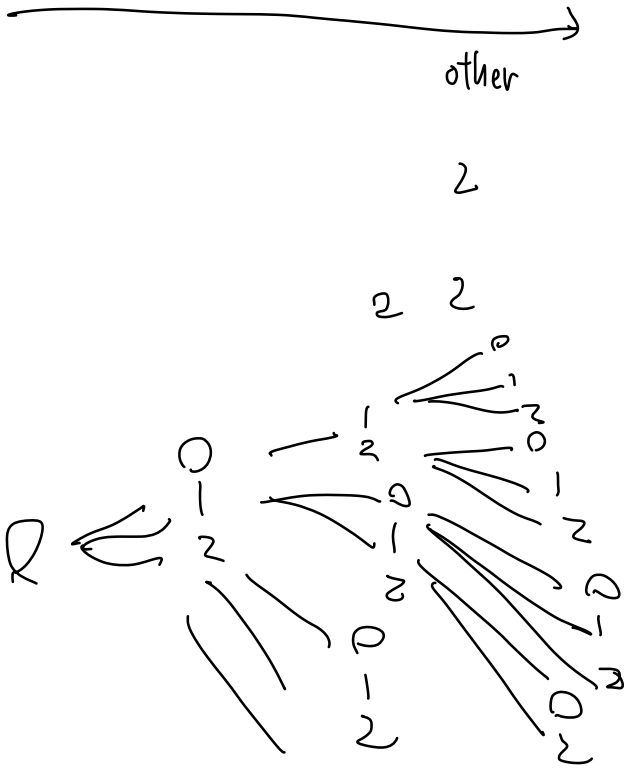
posts

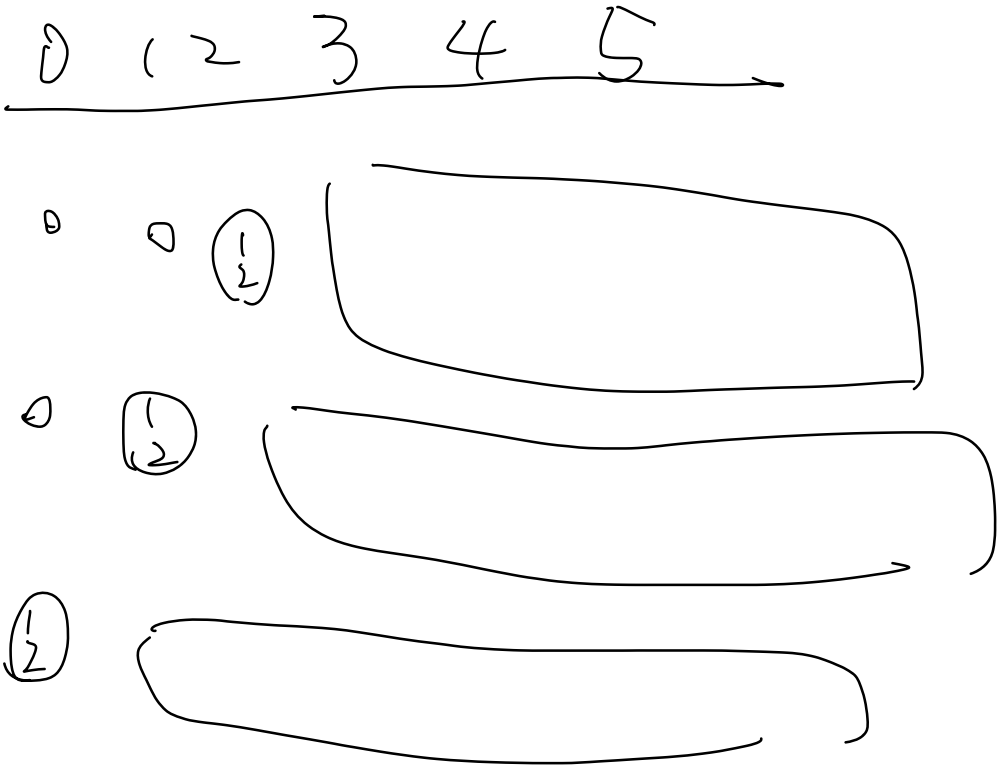
0 1 2 3 4 5

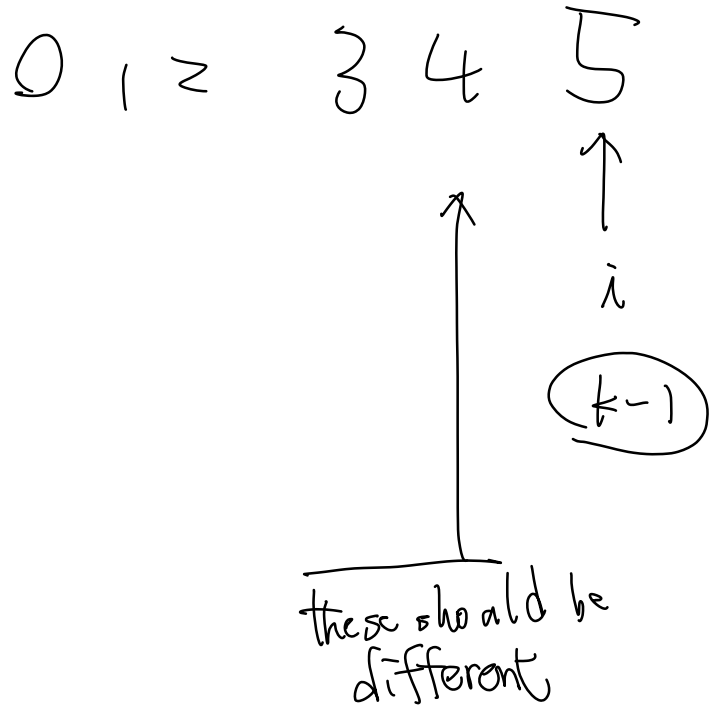
color

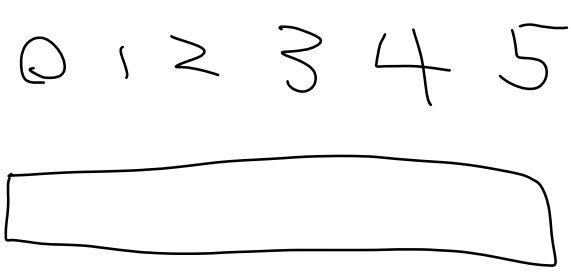
0 1 2



$O(k^n)$


0 1 2 3 4 5
1
2
1
2
1
2


0 1 2 3 4 5
i
k-1
these should be different



① choose different

② choose same

① ↑

whatever the last number is, we choose it differently

$dp[i] = dp[i-1] \cdot (k-1) + ②$

↑ the hard part

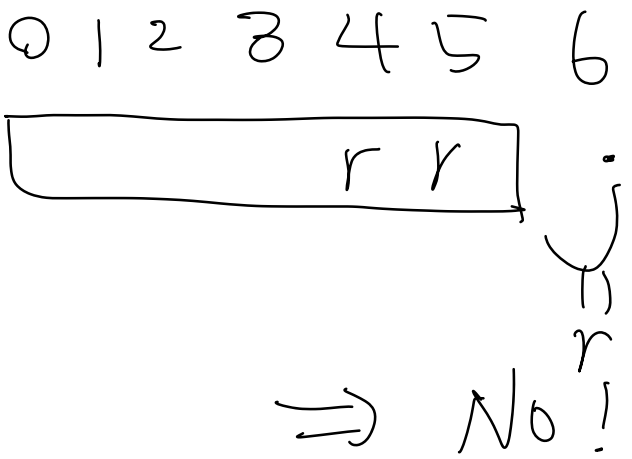
②

j

↑

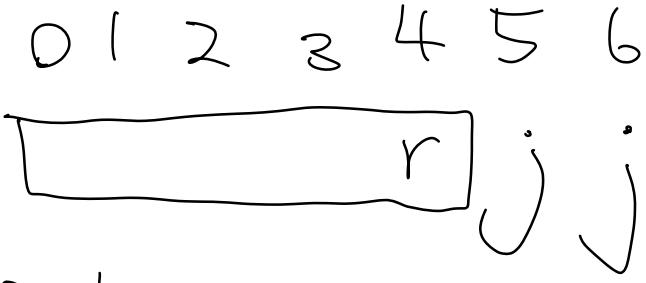
can I just see what r is, and directly set j = r

⇒ No! because it may look like



⇒ No!

This prompt us to look one more step



We find out as long as $j \neq r$, this is a valid one.

⇒ $dp[i-2] \times (k-1)$

In summary:

$$dp[i] = dp[i-1] \cdot (k-1) + dp[i-2] \cdot (k-2)$$