Dynamic Programming

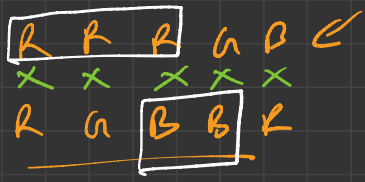
→ i/p → "n" post , "k" color

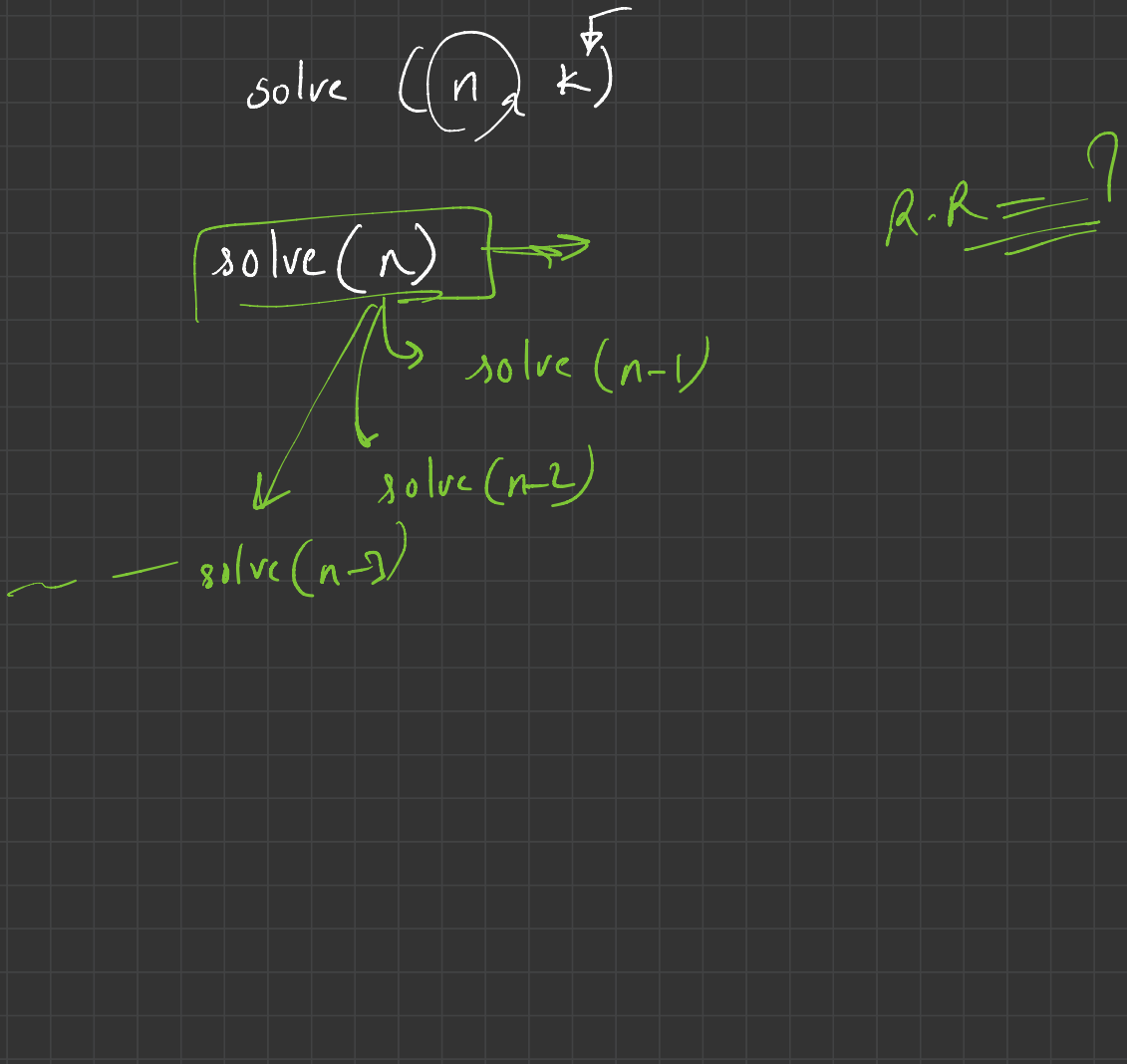
Condⁿ → not more than adjacent post has same color

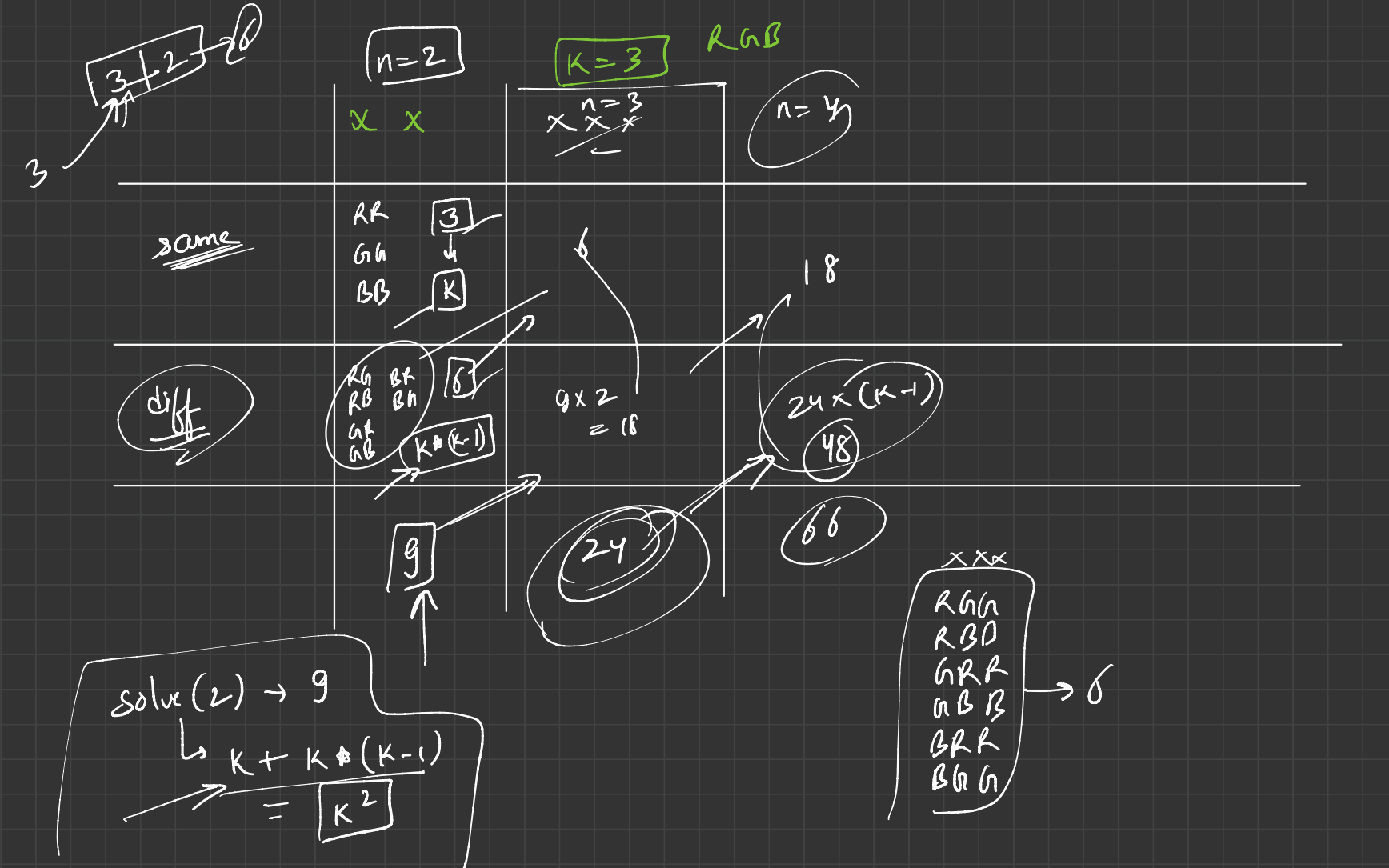
K=3

R G B

5 post




solve (n, k)
R.R. ==== ?
solve(n)
solve (n-1)
solve (n-2)
solve (n-3)


3+2
n=2
K=3
RGB
n=y
same
RR
GG
BB
3
4
K
diff
RG BR
RB BG
GR GB
6
K*(K-1)
9x2
=18
6
18
24x(K-1)
48
24
9
66
solve(2) → 9
↳ K+K*(K-1)
= K²
RGG
RBB
GRR
GBB
BRR
BGG
6

R G B

K

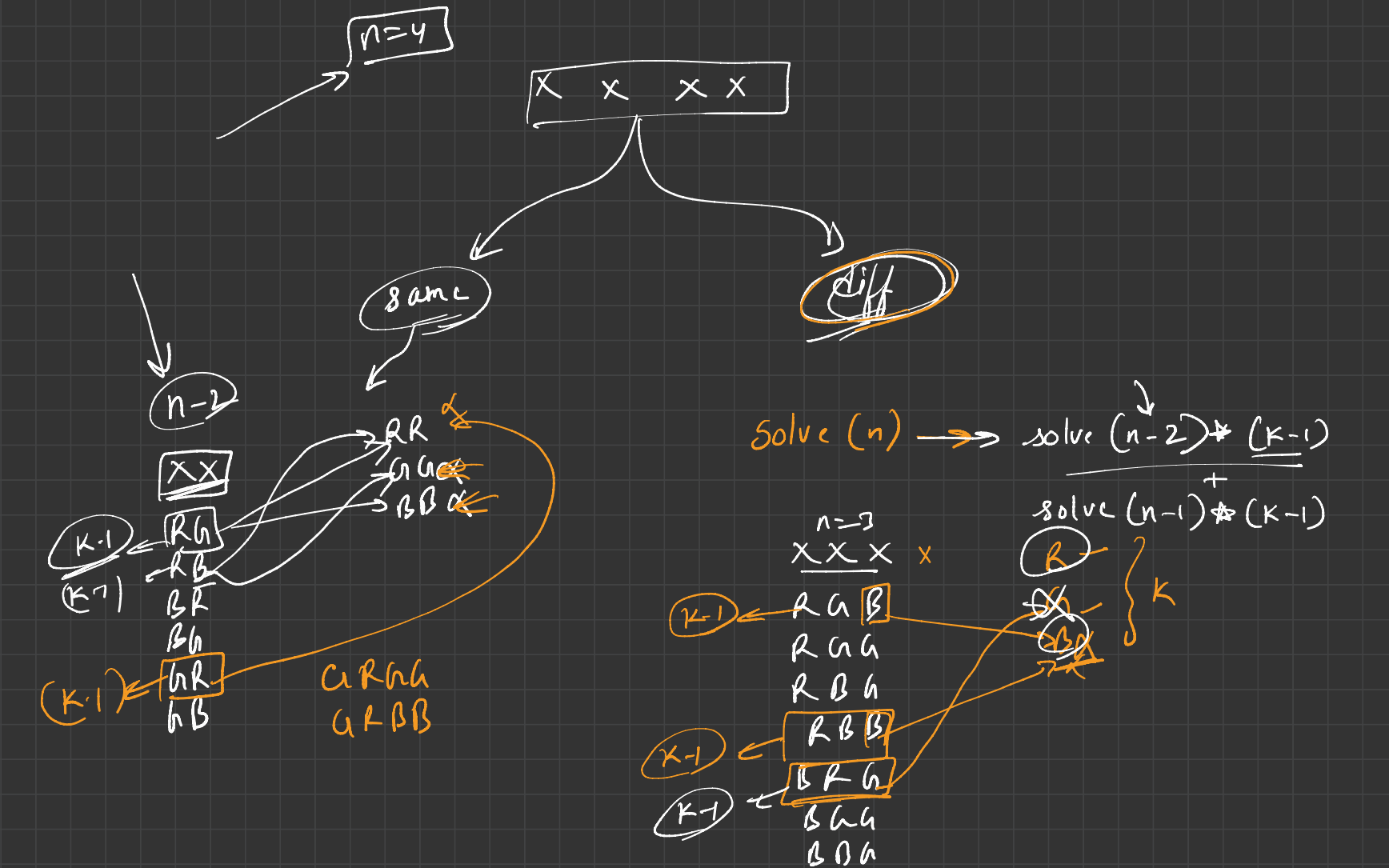
R B → K-1
G G → K-1
B B
R G
R B
G R
G B
B R
B G

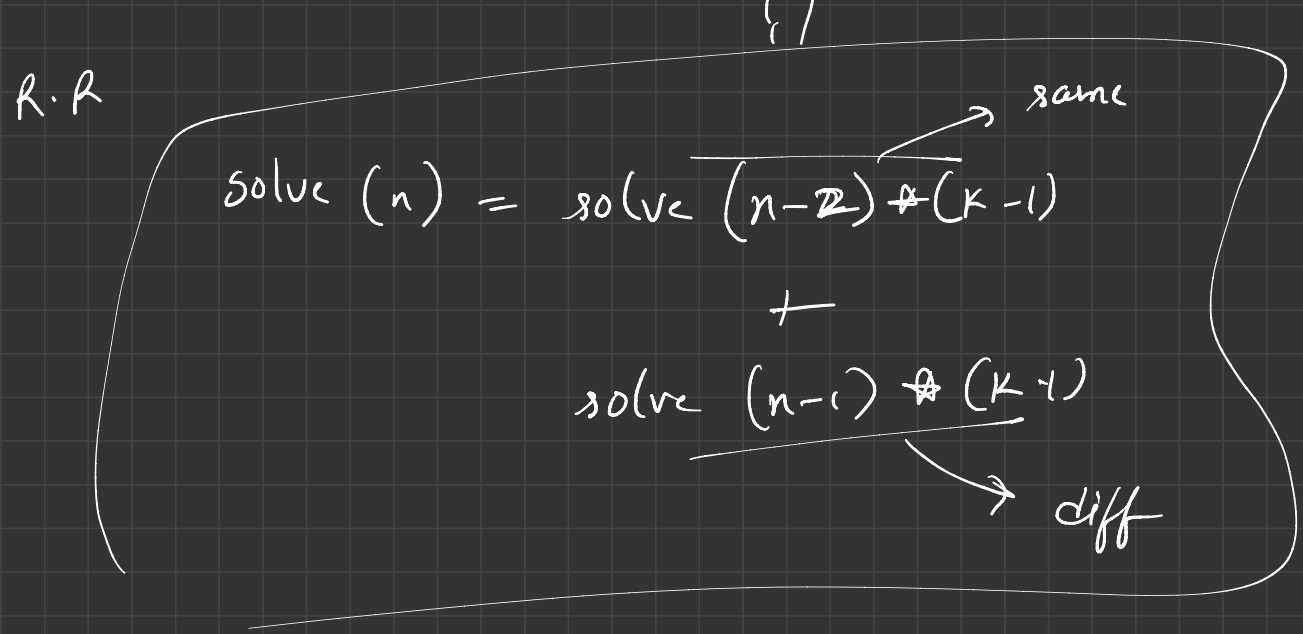
→ K-1

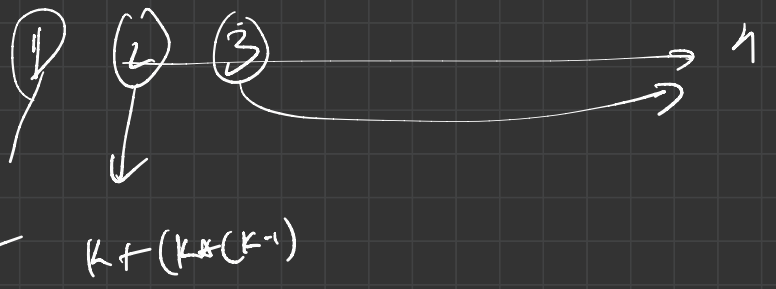
n = 4

↳ 1st way → last 2 post → diff

2nd way → last 2 post → same


n=4
X X X X
same
diff
n-2
XX
RR
GG
BB
RG
RB
BR
BG
GR
GB
(K-1)
(K-1)
(K-1)
GRGG
GRBB
Solve (n) → solve (n-2) * (K-1)
+
solve (n-1) * (K-1)
n=3
XXX X
RGB
RGG
RBG
RBB
BRG
BGG
BBG
R
G
B
K
(K-1)
(K-1)
(K-1)


R.R
solve (n) = solve (n-2) * (k-1)
same
+
solve (n-1) * (k-1)
diff

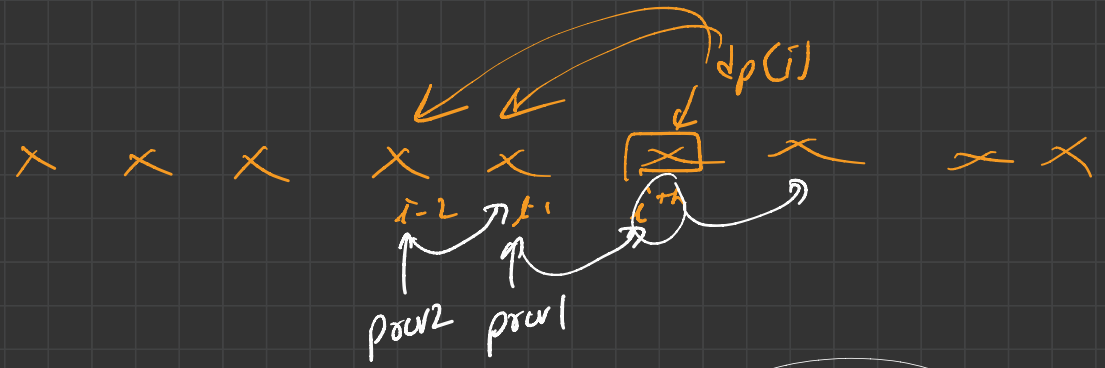


Rec → expo

Rec + Memo → T.C → O(N)
S.C → O(N) + O(N)

Tab → T.C → O(N)
S.C → O(N) → O(1)
S.O → ?

dp[i] → dp[i-1]
dp[i] → dp[i-2]



ans = prev1 + prev2

prev2 = prev1

prev1 = ans