

1. Recursion

Re_combination(n, r)

If $n == 0$ then

Return 0

If $n == r$ or $r == 0$ then

Return 1

Return $\text{Re_combination}(n-1, r-1) + \text{Re_combination}(n-1, r)$

2. Dynamic programming

Dp_combination(n, r)

Let $\text{com}[0..n+1][0..r+1]$ be a new array

For $i = 0$ to n

For $j = 0$ to r

If $i == j$ then

$\text{Com}[i][j] = 1$

Else if $j == 0$ then

$\text{Com}[i][j] = 1$

Else if $i == 0$ then

$\text{Com}[i][j] = 0$

Else $\text{com}[i][j] = \text{com}[i-1][j-1] + \text{com}[i-1][j]$

Return $\text{com}[n][r]$