

* Time Complexity:

$M[1,4]$ time $k=1$ to $n-1$

- $C^*(n-1)$
- $2^* C^*(n-2)$
- $3^* C^*(n-3)$

0	x_1	x_4	x_6
0	0	x_2	x_5
0	0	0	x_6
0	0	0	0

4×4

$n \times n$

\vdots
 $(n-1)^* C^*(n-(n-1))$ where C is some constant

$$\begin{aligned} \Rightarrow T(n) &= C(n-1) + 2C(n-2) + \dots + (n-1)C(n-(n-1)) \\ &= C [1(n-1) + 2(n-2) + \dots + (n-1)(n-(n-1))] \\ &= C \sum_{i=1}^{n-1} i \cdot (n-i) \end{aligned}$$

$$\approx n \sum_{i=1}^{n-1} i - \sum_{i=1}^{n-1} i^2$$

$$\approx \frac{3n \cdot (n-1)(n)}{2 \times 3} - \frac{(n-1)(n)(2n-1)}{6}$$

$$\approx 3n^2(n-1) - 2n^2 - n(n-1)$$

$$\approx 3n^3 - 3n^2 - 2n^3 - n^2 + 2n^2 + n$$

$$= n^3 - 2n^2 + n$$

$$\approx n^3$$

$$\Rightarrow \boxed{T(n) = O(n^3)}$$