

* Maximum $N \times N$ Submatrix *

- given array size $2N \times 2N$; we need to find the max sum value of the left most submatrix of size $N \times N$.

- if matrix size is 6×6 ; $n=3$

- Example; matrix 4×4

$n=2$

$$\begin{bmatrix} 00 & 01 & 02 & 03 \\ 10 & 11 & 12 & 13 \\ 20 & 21 & 22 & 23 \\ 30 & 31 & 32 & 33 \end{bmatrix}$$

- Allowed operations are:

"Reversing row / column"

- The base logic here is like in rubik's cube we can get that particular max value to any required cell
- Just by reversing row/column we can re-arrange the value

to that specific cell

- For example: same color elements can be replaced by reverse operation

- Find max value of all possible values:

00	01	02	03
10	11	12	13
20	21	22	23
30	31	32	33

For '00' pos: $\max[\text{arr}[0][0], \text{arr}[0][3], \text{arr}[3][0], \text{arr}[3][3]]$

\Downarrow

generalized version: $\text{len}(\text{arr})$

$\max[\text{arr}[i][j], \text{arr}[i][n-j-i], \text{arr}[n-i-1][j], \text{arr}[n-i-1][n-j-i]]$