1, 1, 1, 0, 1, 1, 1, 0, 1

1 swap

L → 1 2 3 0 1 2 3 0 1

R → 3 2 1 0 3 2 1 0

7

i   L[i-1]   R[i+1]

1 1 1 0 1 1 1

3+3

L → 1 2 3 0 1 2 3

x   3 2 1 0 3 2 1

y   1, 1, 1, 0, 1, 1, 1, 0

$(x+y) < T$

$\underbrace{1, 1, 1}_{3}$, 0, $\underbrace{1, 1, 1}_{3}$, 0

---

1 1 1 0 1 1 1 0 1

3 + 3

3 + 3 + 1

Majority Element

$\frac{N}{2}$

6 → 3 ⟶ 4

⇒ 3, 3, 4, 2, 4, 4, 2, 4, 4

O(1) space

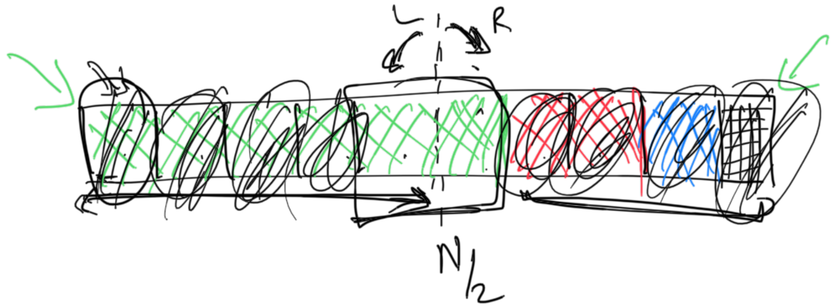
Sort

$\Rightarrow$ 2, 2, 2, 2, 4, 4, 4, 4, 4

N log N   O(1)

O(N)   O(1)

3, 3, 4, 2, 4, 4, 2, 4, 4, 4

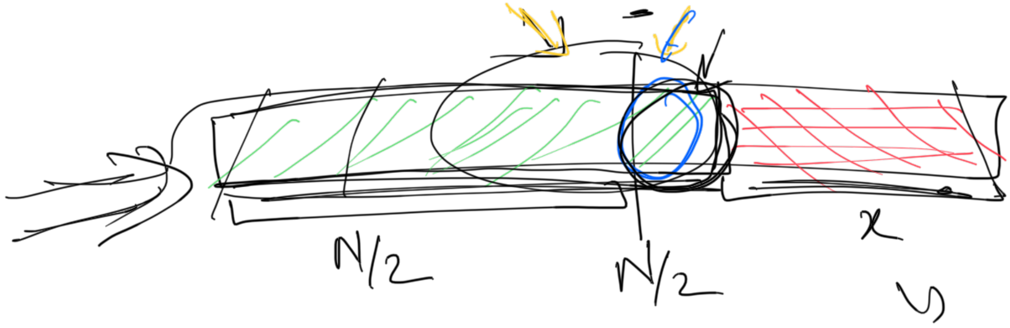


$> N/2$

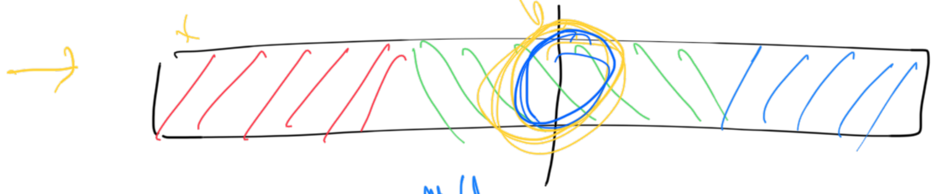
3 → 1 1

4 → 1 1   1 1 1 1

2 → 1 1



$x < N$



$\Rightarrow$ 3, 3, 4, 2, 4, 4, 2, 4, 4

ME : 4

↳ Count : 3

⇒ 3, 3, 2, 2, 4, 4, 4, 4

ME 4

C

O(1)

3

O(n)

3 → 2

2 → 2

4 → 4

$> N/3$

3

10, 10, 20, 30, 110, 10

⇒ ME1 : 10   ME2 : 110

C1 : 2   C2 : 1

Size of Array = N $> \frac{N}{2}$

Min count of ME = $\frac{\text{Size}}{2} + 1$ ⇒ $\frac{N}{2} + 1$

⇒ Size = (N-2)

$\frac{(N-2)}{2} + 1 \Rightarrow \frac{N}{2} = N/2$

K-1

K-1

$> N/2$

$> N/3$

Map< >

$> N/K$

10	20	30	40
15	25	35	45
27	29	37	48
32	33	39	50

43

n+m

A(0,0)

33

28

col<0 || row >= n

A[0][n-1]

n, m

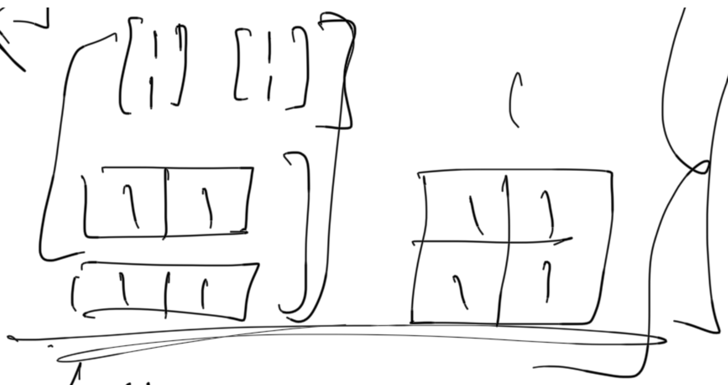
n+m

11

[1 1
1 1]

[1] [1]
[1] [1]

Sum of all possible sub-matrices

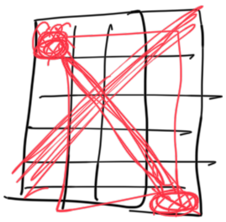


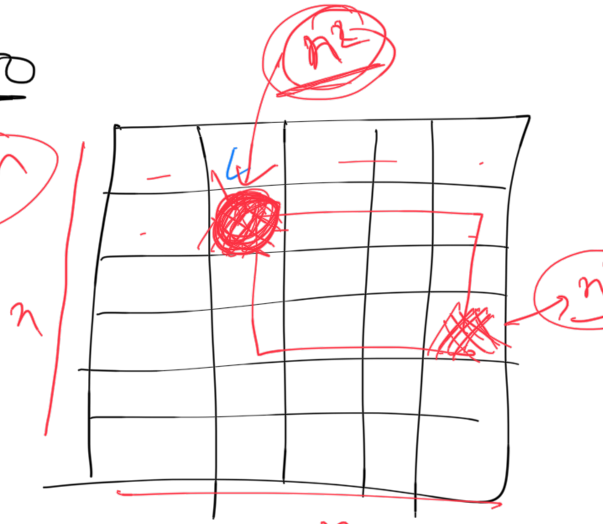
$4 \times 1 + 4 \times 2 + 1 \times 4$

16

$$\begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix} \rightarrow 500$$

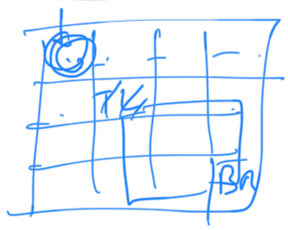
$n \times n$



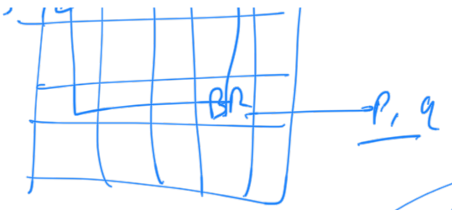


$O((n^2 \times n^2))^n$

$O(n^4) \rightarrow O(n^2) \rightarrow O(n^6)$




```
sum = 0
for(i=0 → n)
    for(j=0 → n) {
        TL = A(i)(j),
        for(p = i → n)
            for(q = j → n)
```



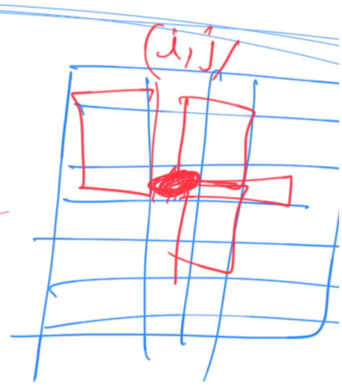
BR = A(p)(q)

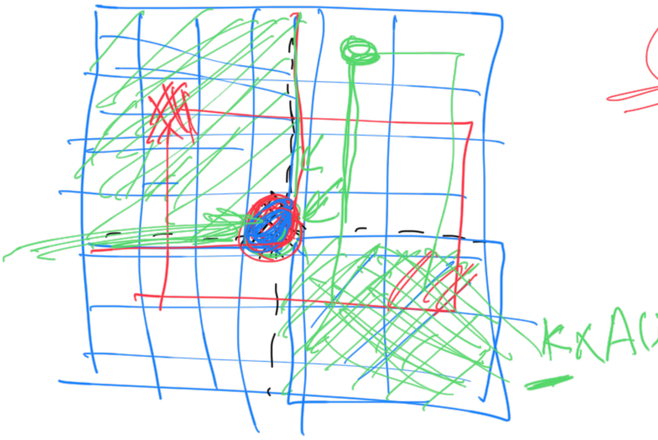
```
for (k=i → p){
  for(l=j → q){
    Sum += A(k)(
  }
}
```

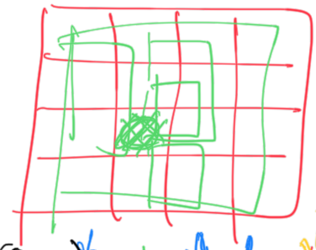
$O(n^6)$

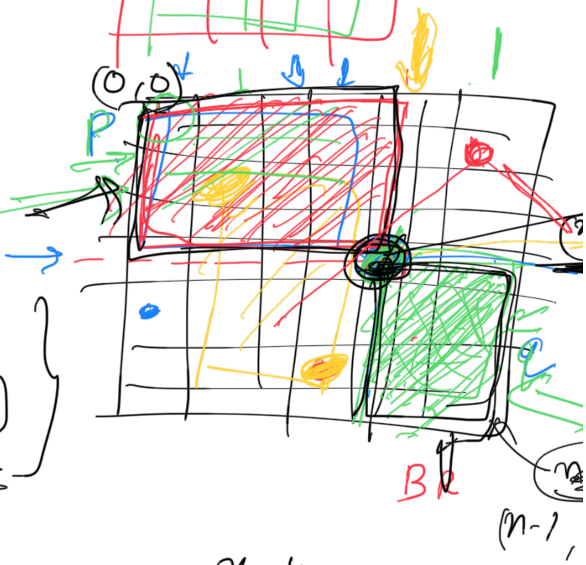
$K \times A(i)(j)$

N^2









$(P \times q) \times A(i)(j)$

$P = (x+1) \times (y+1)$

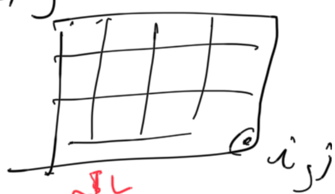
$q = (n-x) \times (n-y)$

0,0	0,1	0,2
1,0	1,1	1,2
2,0	2,1	2,2

2,2 → x, y

$(2+1) \times (2+1) = 9$

x, y




```
for (i=0 → n){
```

for (j = 0 → n) {

BL

No_TL = (i+1) × (j+1)

NO_BR = (n-i) × (N-j)

Sum += No_TL × No_BR × A

}

}