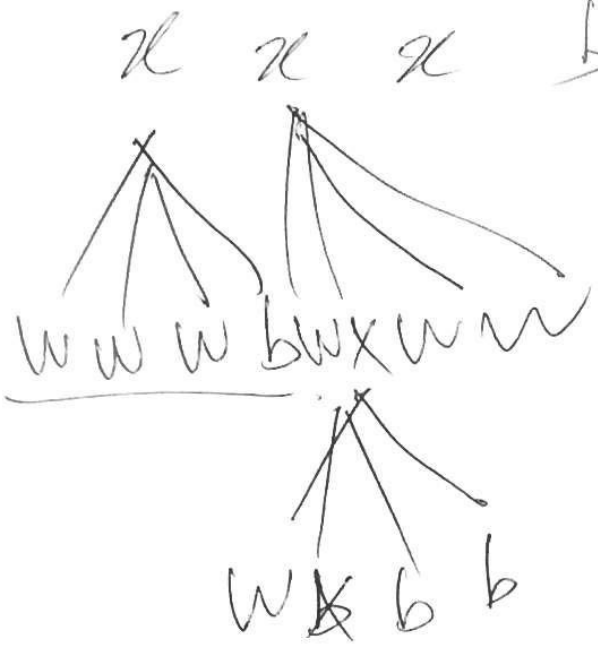
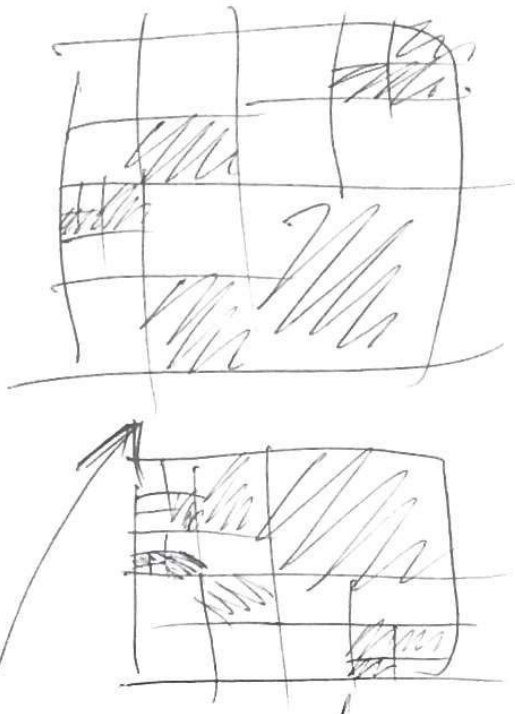
Quad-Tree

색깔이 3종류 black → b
white → w
b&w → x.





x x x b.

0 wwwb xwwwb xwxwbbbww

wwwb, xwwwb. xwxwbbbww

xxxwwbb bww wwb b

주어진 코드의 0 1 자리에 바뀐 이미지의
의 코드를 구하기

(2번)

UI PI ?

A : 7 1 5 9 6 7 3

(arrows: 4, i under 5; j under 7)

x_{ij} : $(j - i + 1) \times \min_{i \le k \le j} (A[k])$

길이 (under $(j-i+1)$)

$(i \le j)$

$x_{2,5} = 4 \times 5 = 20.$

find $\max(x_{ij}) = ?$

$0 \le i \le j \le n-1$

- 1 | 4 4 4 4 | 1 1

  4 × [illegible] 6.

* [illegible] ?

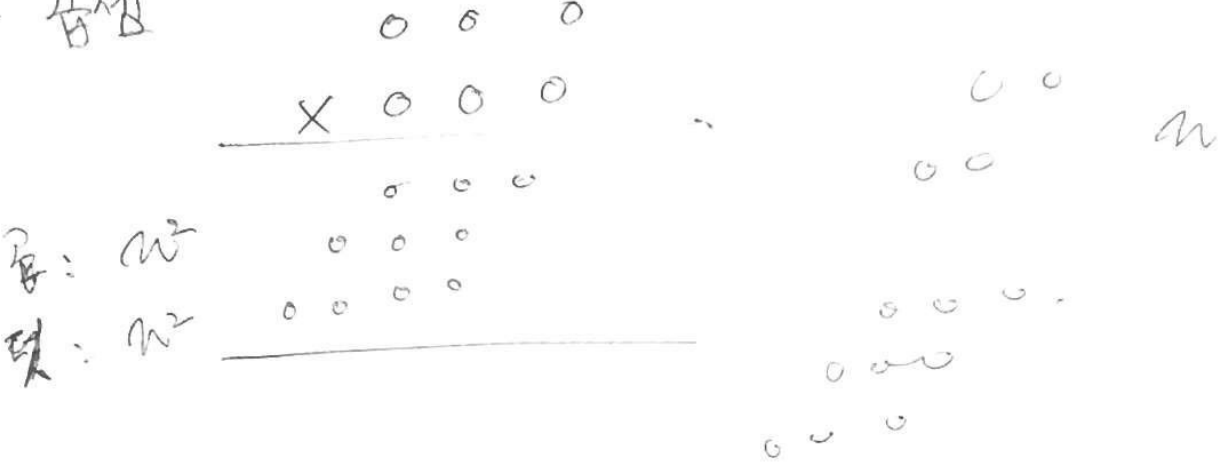
- 1 8 2 2

  8

분할정복

- 카라츠바 $O(n^{1.585}) = O(n^{\log_2 3})$

- 곱셈



곱: n^2

덧: n^2

$$X * Y = (x_1 \times 10^{\frac{n}{2}} + x_0)(y_1 \times 10^{\frac{n}{2}} + y_0)$$

$$= x_1 y_1 \times 10^{2n} + 10^{\frac{n}{2}} x_1 y_0 + 10^{\frac{n}{2}} x_0 y_1 + x_0 y_0$$

$$= 10^{n} x_1 y_1 + 10^{\frac{n}{2}}(x_1 y_0 + x_0 y_1) + x_0 y_0$$

$$= x_1 y_1 10^{n} + (x_1 y_0 + x_0 y_1) 10^{\frac{n}{2}} + x_0 y_0$$

$\frac{n}{2}$

$$T(n) = 4T\left(\frac{n}{2}\right) + O(1)$$

$$(x_1 + x_0)(y_1 + y_0)$$

$$= x_1 y_1 + x_1 y_0 + x_0 y_1 + x_0 y_0$$

$$z = \boxed{\quad} - x_1 y_1 - x_0 y_0$$