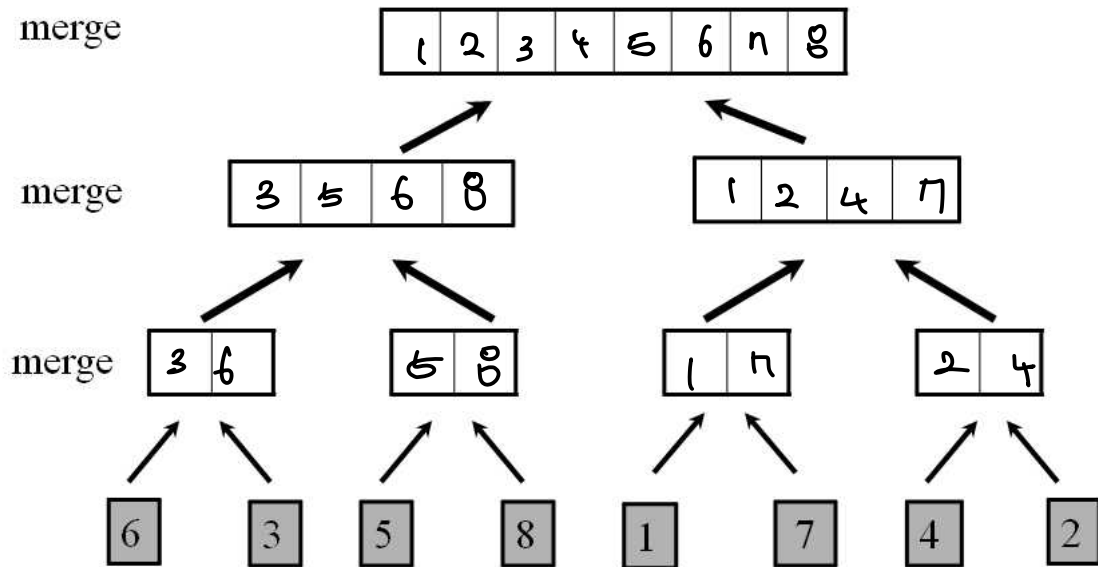


Review 2

2023065350 정민

- Fill in the blanks when the numbers are sorted by merge sort in non-decreasing order.

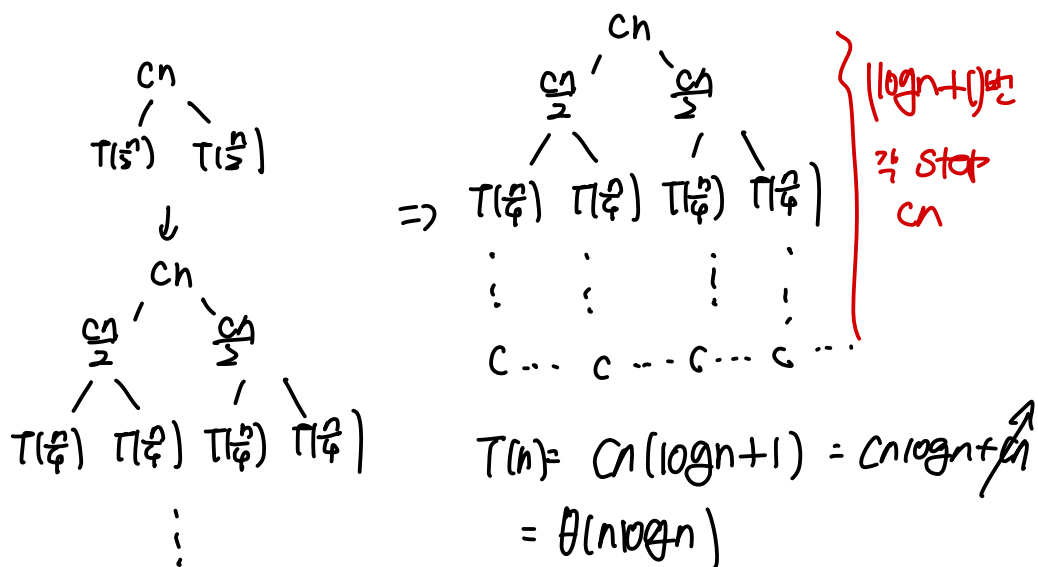


- Fill in the blanks with proper asymptotic running times. Assume that $p = 1$, $r = n$.

MERGE-SORT(A, p, r)	running time
if $p < r$	1
then $q = \lfloor (p+r)/2 \rfloor$	1
MERGE-SORT(A, p, q)	$\tau(\frac{n}{2})$
MERGE-SORT($A, q+1, r$)	$\tau(\frac{n}{2})$
MERGE(A, p, q, r)	n

3. Solve the recurrence of merge sort by using a recursion tree.

$$T(n) = \begin{cases} \theta(1) & \text{if } n=1 \\ 2T(n/2) + \theta(n) & \text{if } n>1 \end{cases}$$



4. What is the number of multiplications to evaluate the following cubic polynomial $f(x)$ when $x = 3$ if the Horner's rule is used?

$$f(x) = 4x^3 + 2x^2 + 5x + 2$$

$$x(4x^2 + 2x + 5) + 2$$

$$x(x(4x + 2) + 5) + 2$$

$$x(x(x(4) + 2) + 5) + 2$$

3 multi

5. Fill in the blank entries when the numbers are sorted by selection sort in non-decreasing order.

7	4	3	6	8	1	2
1	4	3	6	8	7	2
1	2	3	6	8	7	4
1	2	3	6	8	7	4
1	2	3	4	8	7	6
1	2	3	4	6	7	8
1	2	3	4	6	7	8
1	2	3	4	6	7	8