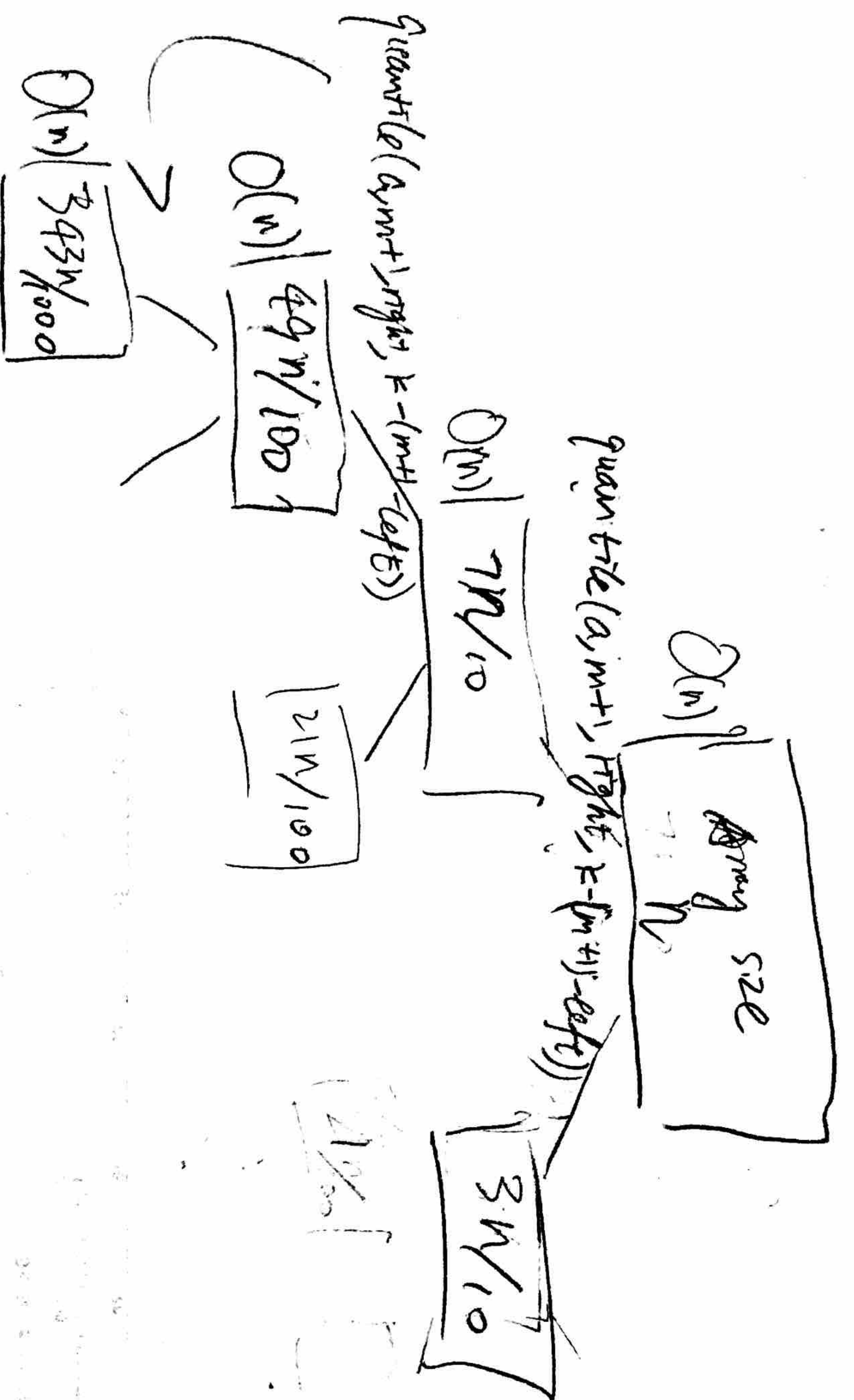


4. total work
each $i = O(n)$



Assume $T(m) \leq C \times n$
 $6. T(n) \leq \left(\frac{7}{5}\right) \times \left(\frac{7n}{10}\right) + 9 \times n$

$$\leq C \times \left(\frac{n}{5} + 1\right) + \left(\frac{7n}{10} + 1\right) + 9 \times n$$

$$\leq \frac{9}{10} C \times n + 7C + 9 \times n$$

$$\leq C \times n - (C \times n/10 - 7C - 9 \times n)$$

$$\leq C \times n$$

So, there exist a
constant C .

$$\text{So } T(n) = O(n)$$

$$\begin{aligned} &\text{quantile}(k, \text{left} + 5 \times i, \text{left} + 5 \times (i+1) - 1, 2) \\ &\quad O(n) \mid \frac{n}{5} \\ &\quad \downarrow \\ &\quad O(1) \mid 1 \end{aligned}$$