Merge

$$T(n) = \begin{cases} a & \text{, IF } n \leq 1 \\ 2T\left(\frac{n}{2}\right) + cn \end{cases}$$

$$T(n) = 2T\left(\frac{n}{2}\right) + cn$$

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

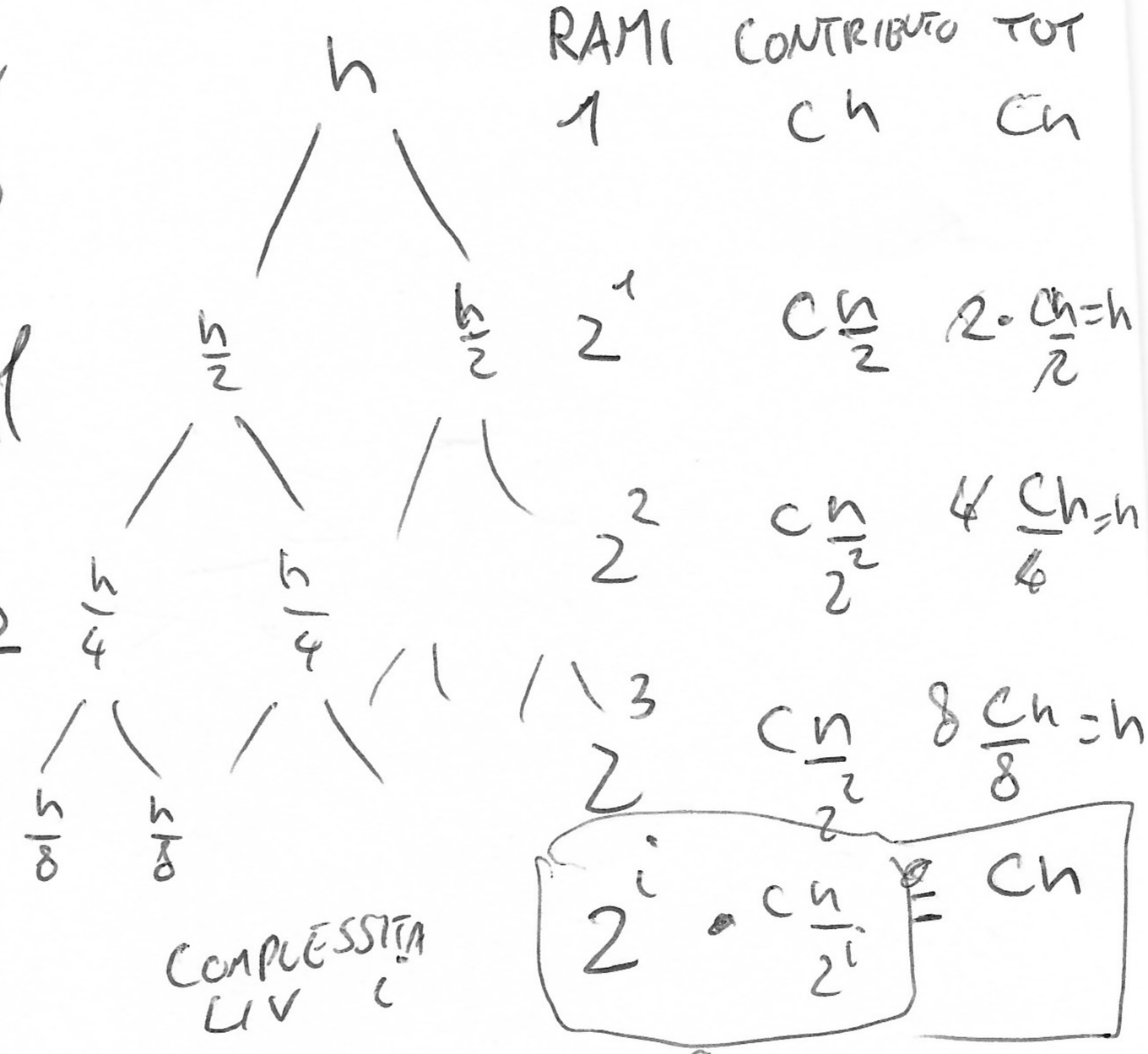
$$T\left(\frac{n}{4}\right) = 2T\left(\frac{n}{8}\right) + c\frac{n}{4}$$

$$T\left(\frac{n}{2^i}\right) = 2T\left(\frac{n}{2^{i+1}}\right) + \frac{cn}{2^i}$$

$$T\left(\frac{n}{2^k}\right) = a$$

altezza k

$\frac{n}{2^k} = 1$? $\boxed{k = \log_2 n}$



COMPLESSITÀ + valore foglie

$$\sum_{i=0}^{k-1} cn + 2^k a$$

$$kcn + 2^k a$$

$$n c \log_2 n + 2^{\log_2 n} a =$$

$$c \cdot (n \log_2 n) + n^{\log_2 2} a = \Theta(n \log n)$$