



Add up the cost of each level

$$T(n) = Cn + Cn + Cn - Ca + Cn - 2Ca + \dots + Ca$$

$$= Cn + C \sum_{i=0}^{\frac{n}{a}} (n - ia)$$

$$= C \left(n + \frac{n^2}{a} - \frac{n(\frac{n}{a})}{2} \right)$$

$$= C \frac{n^2}{2a} + Cn$$

$$= \Theta(n^2)$$