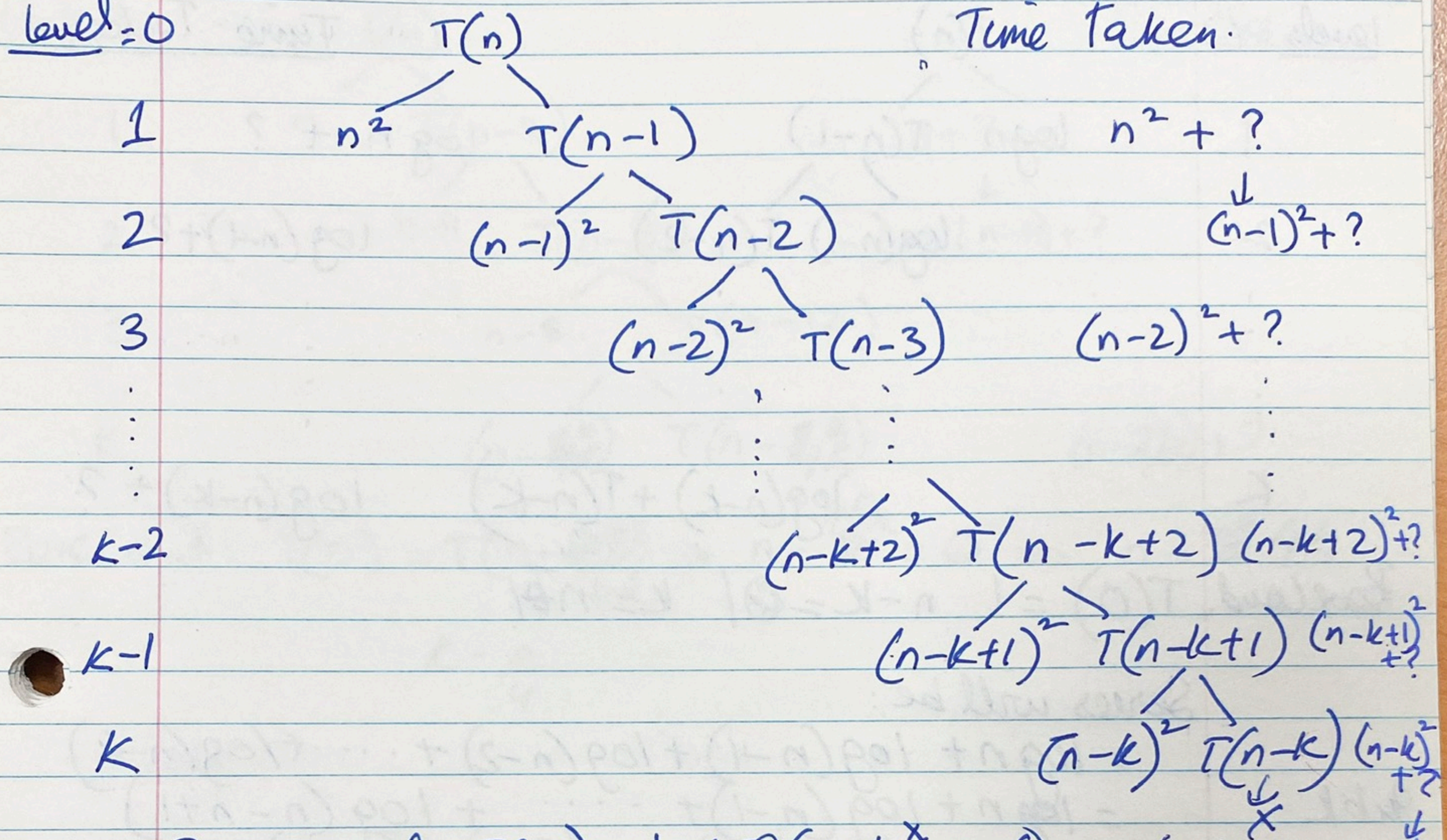
Eg) $T(n) = \begin{cases} T(n-1)+n^2 & , n>0 \\ 1 & , n=0 \end{cases}$



Base cond $T(0)=1 \therefore n-k=0 \quad k=n$

Series will be:

$= n^2+(n-1)^2+(n-2)^2+\cdots+(n-k+2)^2+(n-k+1)^2+(n-k)^2$

Sub k $= n^2+(n-1)^2+(n-2)^2+\cdots+2^2+1^2+0^2$

$$\Sigma = \frac{n(n+1)(2n+1)}{6}$$

$$= \frac{n^3}{3}+\frac{n^2}{2}+\frac{n}{6}+n$$

Dominant term

$\therefore \boxed{O(n^3)}$

Hilroy