2) $cte_1 + \sum_{i=1}^{n} \left[\sum_{j=i}^{i \times i} \left[\sum_{k=1}^{j} cte_2 \right]\right] =$

$= cte_1 + \sum_{i=1}^{n} \left[\sum_{j=1}^{i.i} j . cte_2 \right] =$

$= cte_1 + \sum_{i=1}^{n} \left[cte_2 \sum_{j=1}^{i.i} j \right] =$

$= cte_1 + \sum_{i=1}^{n} \left[cte_2 . \left(\frac{(i*i).((i*i)+1)}{2} \right) \right] =$

$= cte_1 + \sum_{i=1}^{n} \left[cte_2 . \left(\frac{i^4 + i^2}{2} \right) \right] =$

$= cte_1 + cte_2 . \left(\sum_{i=1}^{n} (i^4 + i^2) . \frac{1}{2} \right) =$

$= cte_1 + cte_2 \left(\frac{1}{2} \left(\sum_{i=1}^{n} i^4 + \sum_{i=1}^{n} i^2 \right) \right) =$

$= cte_1 + cte_2 \left(\frac{1}{2} \left(\frac{n(n+1).(6n^3+9n^2+n-1)}{30} + \frac{n(n+1)(2n+1)}{6} \right) \right) =$

$= cte_1 + cte_2 \left(\frac{1}{2} \left(\frac{(n^2+n).(6n^3+9n^2+n-1)}{30} + \frac{(n^2+n).(2n+1)}{6} \right) \right)$

$= cte_1 + cte_2 \left(\frac{1}{2} \left(\left(\frac{6n^5+15n^4+10n^3-n}{30} \right) + \left(\frac{2n^3+n^2+2n^2+n}{6} \right) \right) \right)$

$= cte_1 + cte_2 . \left(\frac{1}{2} . \frac{6n^5+15n^4+20n^3+15n^2+4n}{30} \right)$

$$cte1 + cte2 \cdot \left(\frac{6n^5 + 15n^4 + 20n^3 + 15n^2 + 4n}{60} \right) =$$

$$cte1 + cte2 \left(\frac{6n^5}{60} + \frac{15n^4}{60} + \frac{20n^3}{60} + \frac{15n^2}{60} + \frac{4n}{60} \right) =$$

$$= cte1 + n^5 \cdot \frac{cte2}{10} + n^4 \frac{cte2}{4} + n^3 \frac{cte2}{3} + n^2 \frac{cte2}{4} + n \frac{cte2}{15}$$

$$\boxed{T(n) = cte1 + n^5 \frac{cte2}{10} + n^4 \frac{cte2}{4} + n^3 \frac{cte2}{3} + n^2 \frac{cte2}{4} + n \frac{cte2}{15}}$$

b) como $T(n)$ es un polinomio de grado 5

$T(n) \Rightarrow O(n^5)$.

Escaneado con CamScanner