Subject موضوع الدرس Date التاريخ

for the for loop:-

$$\sum_{i=0}^{n-2} \sum_{j=i}^{n-1} 1 =$$

$$\sum_{i=0}^{n-2} n - i = n\sum_{i=0}^{n-2} 1 - \sum_{i=0}^{n-2} i$$

$$= n(n-1) - \frac{(n-1)(n-2)}{2}$$

$$= n^2 - n - \frac{n^2-3n+2}{2} \simeq O(n^2)$$

$$\sum_{j=i}^{n-1} 1 = n-1-i+1 = n-i$$

$$\sum_{i=0}^{n-2} 1 = n-2-0+1 = n-1$$

$$\sum_{i=0}^{n-2} i = \frac{(n-1)(n-2)}{2}$$

for the entier algorithms:-

$$n+3+3+n^2-n-\frac{n^2-3n+2}{2}+1 =$$

$$n^2 - \frac{n^2-3n+2}{2} + 7 \simeq n^2 - \frac{n^2}{2} \simeq n^2 \qquad O(n^2)$$