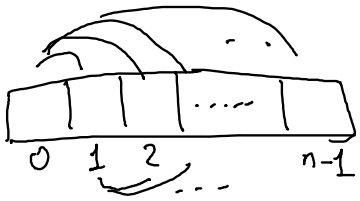
Algoritma Analizi

3 Mart 2022 Perşembe 14:45

1) $\sum_{i=1}^{n-1} 1 = n-1-1+1 = n-1 \in \Theta(n)$

2)



$i = 0 \to n-2$

$j : i+1 \to n-1$

$i = 0 \quad j = 1, 2, 3, \dots, n-1$

$i = 1 \quad j = 2, 3 \dots, n-1$

$0+1+2+\dots+n-2 = \frac{(n-2)(n-1)}{2}$

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

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

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

$$= \frac{2n^2-4n+2-n^2+3n-2}{2}$$

$$= \frac{n^2-n}{2}$$

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