Selection-Sort : $A = \{1, 6, 3, 4, 5\}$

$n = 5$

for $j = 1$ to $(n-1)$

Selection Sort
Sayfa 1
Doğrulama
Analiz.

$j = 1$; ek = 1,

for i=j+1 to n $i = 2$, $A[2] < A[1]$ Hayır.

$i = 3$ $A[3] < A[1]$ Hayır

$i = 4$ $A[4] < A[1]$ Hayır

$i = 5$ $A[5] < A[1]$ Hayır.

$i = 6$ endfor $\longrightarrow$ $A[1] \leftrightarrow A[1] \rightarrow \{1, \ldots\}$

$j = 2$, ek = 2

for i=j+1 to n $i = 3$ $A[3] < A[2]$ evet , ek = 3

$i = 4$ $A[4] < A[3]$ Hayır

$i = 5$ $A[5] < A[3]$ Hayır.

$i = 6$ end for $\longrightarrow$ $A[2] \overset{\text{Yerd.}}{\leftrightarrow} A[3] \rightarrow \{1, 3, 6, 4, 5\}$

$j = 3$, ek = 3

for i=j+1 to n $i = 4$ $A[4] < A[3]$ evet ek = 4

$i = 5$ $A[5] < A[4]$ Hayır.

$i = 6$ endfor $\longrightarrow$ $A[3] \leftrightarrow A[4] \rightarrow \{1, 3, 4, 6, 5\}$

$j = 4$, ek = 4

for i=j+1 to n $i = 5$ $A[5] < A[4]$ evet ek = 5

$i = 6$ endfor $\longrightarrow$ $A[4] \leftrightarrow A[5] \rightarrow \{1, 3, 4, 5, 6\}$

$j = 5 \rightarrow$ end for $\longrightarrow 1$

n = length (A) $\longrightarrow n$

for $j = 1$ to $n-1$ $\longrightarrow n-1$

do ek = j $\longrightarrow \sum_{j=1}^{n-1} (n-j+1)$

for $i = j+1$ to n $\longrightarrow \sum_{j=1}^{n-1} (n-j)$

do if $A[i] < A[ek]$ $\longrightarrow \sum_{j=1}^{n-1} (n-j)$

then ek = i $\longrightarrow$

Yerdeğiştir $A[j] \leftrightarrow A[k]$ $\longrightarrow n-1$

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$$T(n) = c_1 + c_2 n + c_3(n-1) + c_4 \cdot \sum_{j=1}^{n-1}(n-j+1) + c_5 \sum_{j=1}^{n-1}(n-j) + c_6 \sum_{j=1}^{n-1}(n-j) + c_7(n-1)$$

$$T(n) = c_1 + c_2 n + c_3(n-1) + c_4 \cdot \frac{\overbrace{(n-1)(n+2)}^{n^2+n-2}}{2} + c_5 \frac{n^2-n}{2} + c_6 \frac{n^2-n}{2} + c_7(n-1)$$

$$= c_1 + c_2 n + c_3(n-1) + \underline{\frac{c_4}{2} n^2} + \frac{c_4}{2} n - 2 \cdot c_4 + \underline{\frac{c_5 n^2}{2}} - \frac{c_5 n}{2} + \underline{\frac{c_6 n^2}{2}} - \frac{c_6 n}{2} + c_7(n-1)$$

$$T(n) = \frac{c_4 + c_5 + c_6}{2} n^2 + \left(c_2 + c_3 + \frac{c_4}{2} - \frac{c_5}{2} - \frac{c_6}{2} + c_7\right) n + (c_1 - c_3 - 2c_4 - c_7)$$

$T(n) = an^2 + bn + c$ olarak bulunur.

$$\sum_{j=1}^{n-1} n - j + 1 = \sum_{j=1}^{n-1} n - \sum_{j=1}^{n-1} j + (n-1) = n(n-1) - \frac{(n-1)n}{2} + (n-1) = \frac{n(n-1)}{2} + (n-1) = \frac{(n+2)(n-1)}{2}$$

$$\sum_{j=1}^{n-1} n - j = \sum_{j=1}^{n-1} n - \sum_{j=1}^{n-1} j = n(n-1) - \frac{(n-1)(n)}{2} = \frac{n(n-1)}{2}.$$

selectionSort
sayfa 2

Doğrulama/Analiz