

c

Constant

$\log n$

Logarithmic

$\log^2 n$

Logarithmic squared

n

Linear

$n \log n$

Quadratic

n^2

Cubic

n^3

2^n

Exponential

Bei Visualisierung

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

$$\sum_{i=0}^n i = 1 + 2 + 3 + \dots = \frac{n(n+1)}{2} = \frac{n^2}{2}$$

→ Bir algoritma 8 elementli problemi 1 sn çözüyor
16 elementli aynı problemi kaç saniyede çözer?

$$O(1) \rightarrow T(n) = 1 \text{ sn}$$

$$O(\log_2 n) \rightarrow T(n) = (1 \cdot \log_2 16) / \log_2 8 = 4/3 \text{ sniye}$$

$$O(n) \rightarrow T(n) = (1 \cdot 16) / 8 = 2 \text{ sniye}$$

$$O(n \log_2 n) \rightarrow T(n) = (1 \cdot 16 \cdot \log_2 16) / (1 \cdot 8 + \log_2 8) = 8/3 \text{ sniye}$$

$$O(n^2) \rightarrow T(n) = (1 \cdot 16^2) / 8^2 = 4 \text{ sniye}$$

$$O(n^3) \rightarrow T(n) = (1 \cdot 16^3) / 8^3 = 8 \text{ sniye}$$

$$O(2^n) \rightarrow T(n) = (2^{16}) / (2^4) = 2^8 = 256 \text{ sniye}$$