6.897
L17.3
Apr. 28, 2003

Sorting using funnels (Funnelsort)

- choose $K = N^{1/3}$ since K-funnel needs K^3 elements

① split array into $N^{1/3}$ segments each of $N^{2/3}$ elements
② recursively sort each segment
③ merge using $N^{1/3}$-funnel

$$T(N) = N^{1/3} T(N^{2/3}) + O\left(\underbrace{\frac{N}{B} \log_{M/B} \frac{N}{B}}_{\text{this dominates that}} + N^{1/3}\right)$$

provided $N/B = \Omega(\sqrt{N})$, e.g. $N = \Omega(B^2)$

$T(B^2) = O(B)$

- total leaf cost: $\frac{N}{B^2} \cdot O(B) = O(N/B)$

$\Rightarrow$ root dominates.

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