

• Selection

$$\begin{array}{cccccc} & 0 & 1 & 2 & 3 & 4 \\ [1, 2, 3, 4, 5] & & & & & \\ & \underline{i} & & j & & \end{array} \quad j = 1$$

menor = 5
idx = 4

Tempo: $O(n^2)$
Estável: NÃO

$i = 0 \rightarrow n$
 $i = 1 \rightarrow n$

$i = 2 \rightarrow n$
 \vdots
 $i = n-1 \rightarrow n$
 $n \cdot n = n^2$

[2, 1, 3]

[1, 2, 3]

• Bubble

$$\begin{array}{cccccc} & 0 & 1 & 2 & 3 & 4 \\ [1, 2, 3, 4, 5] = \text{arr} & & & & & \end{array}$$

Tempo: $O(n^2)$
Estável: Sim

$\text{arr}[j-1] > \text{arr}[j]$

• Insertion

$$\begin{array}{cccccc} & 0 & 1 & 2 & 3 & 4 \\ [1, 2, 3, 4, 5] & & & & & \\ & & & & & i \\ & & & & & j \end{array}$$

$i = 4$
 $\text{key} = \text{arr}[i]$

$j = i - 1$
Tempo: $O(n^2)$

Estável: Sim

• Shell

$$\begin{array}{cccccccc} & 0 & 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 \\ [1, 2, 3, 4, 5, 6, 7, 8] & & & & & & & & & \\ & & & & & & & & & i \end{array}$$

$j \geq L + h = 1$

$h = 1$

$\text{arr}[j] < \text{arr}[j-h]$

$L = 0, R = 8$

$j = j - h$

$i = L + h = 8$

• Base do Algo.

$h = 1$

$$\frac{R-L}{3} = \frac{8-0}{3} = 2$$

$$\left. \begin{array}{l} L = 0 \\ R = 8 \end{array} \right\} \text{tam} = R - L$$

$h = 3 \cdot h + 1 \rightarrow 3 \cdot 1 + 1 = 4$

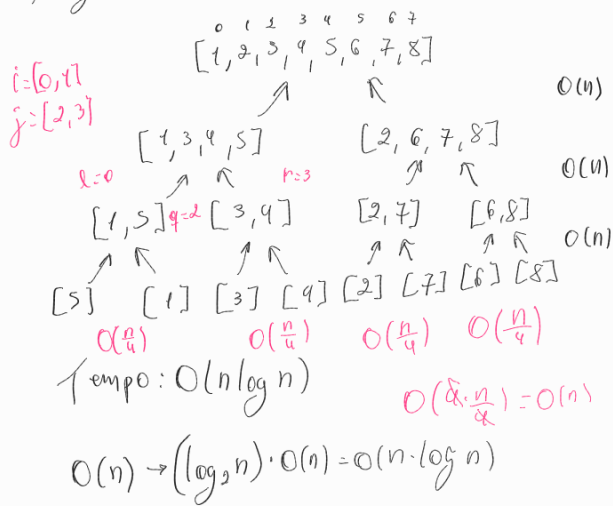
Tempo: $O(n^2)$

Dependendo do 'b', se for muito bom com relação ao vetor atual

$O(n \log n), O(n^{1.2})$

Estável: NÃO

• Merge



$$\frac{n}{2} \rightarrow \frac{n}{4} \rightarrow \frac{n}{8} = 1 \quad \frac{n}{2^i} = 1$$

Profundidade máxima: $\lceil \log_2 n \rceil$

$$T(n) = 2 \cdot T\left(\frac{n}{2}\right) + O(n)$$

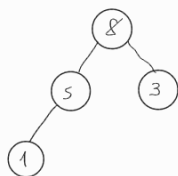
$$= O(n \log n)$$

Estável: Sim

• Fila de prioridade (8, 5, 3, 9, 1)

$[x, 8, 5, 3, 1]$

$k = 1$
 $e = 2 \cdot k$
 $d = 2 \cdot k + 1$



Tempo:

- push: $O(\log N)$

- pop: $O(\log N)$

- top: $O(1) \rightarrow \text{return pq[1]}$

- if se $N = 0$

