

48, 50, 82, 170
2 32 88

Selection Sort

$i=0$ 0 1 2 3 4
4, (5), 1, 2, 3
 ↗
 Swap with correct index

↓
 $i=1$ (4), 3, 1, 2, 5
 ↗

↓
 $i=2$ 2, (3), 1, 4, 5
 ↗

↓
 $i=3$ (2), 1, 3, 4, 5 $(n-i-1)$
 ↗ times

↓
1, 2, 3, 4, 5

complexity

$(n-1)$

4, (5), 1, 2, 3

$(n-2)$

(4), 3, 1, 2, [5]

$(n-3)$

2, (3), 1, [4, 5]

$n-4$

(2), 1, [3, 4, 5]

↪ Already at correct
"position", ignore in future
steps

Total comparison $\rightarrow 0 + 1 + 2 + \dots + (n-1)$

$$\rightarrow \frac{(n-1) * (n-1+1)}{2}$$

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

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

$$O(n^2)$$

worst case = $O(N^2)$

Best case = $O(N^2)$

Stable = No

// It performs well on small lists / arrays