Sorting methods

- Naive methods - $O(n^2)$:
  - Bubble sort, Selection sort, Insertion sort
- Divide and conquer - O(n log n):
  - Merge sort, Quick sort
- Linear (depend on characteristics of data type) - close to O(n):
  - Counting sort, Bucket sort, Radix sort
- Hybrid methods - Timsort (used in Python)

Selection sort

```
def selection_sort(A):
    n = len(A)
    for i in range(n):
        min_index = i
        for j in range(i + 1, n):
            if A[j] < A[min_index]:
                min_index = j
        A[i], A[min_index] = A[min_index], A[i]
```

- Runs in $O(n^2)$ time - 2 nested for-loops
- Repeatedly places min element at correct index
- Slow but intuitive, and doesn't require an extra output array