

### Bubble Sort - $O(n^2)$

```
def bubble_sort(arr):  
    n = len(arr)  
    for i in range(n):  
        for j in range(n-i-1):  
            if arr[j] > arr[j+1]:  
                arr[j], arr[j+1] = \  
                    arr[j+1], arr[j]
```

### Quick Sort - $O(n \log n)$

```
def quick_sort(arr):  
    if len(arr) <= 1:  
        return arr  
    pivot = arr[0]  
    left = [x for x in arr[1:]  
            if x < pivot]  
    right = [x for x in arr[1:]  
             if x >= pivot]  
    return quick_sort(left) + \  
           [pivot] + quick_sort(right)
```

**Figura 1:** Comparación de algoritmos de ordenación