**Exercise 3: Sorting Customer Orders**

There are several sorting algorithms that can be used to sort customer orders by their total price. Here's a brief overview of a few:

* **Bubble Sort**: Bubble sort is a simple sorting algorithm that repeatedly steps through the list, compares adjacent elements, and swaps them if they are in the wrong order. The pass through the list is repeated until the list is sorted.
* **Insertion Sort**: Insertion sort is a simple sorting algorithm that works the way we sort playing cards in our hands. The array is virtually split into a sorted and an unsorted region. Each subsequent element from the unsorted region is inserted into the sorted region in its correct position.
* **Quick Sort**: Quick sort is a divide-and-conquer algorithm that works by selecting a 'pivot' element from the array and partitioning the other elements into two sub-arrays, according to whether they are less than or greater than the pivot. The sub-arrays are then recursively sorted.
* **Merge Sort**: Merge sort is another divide-and-conquer algorithm that works by dividing the array into two halves, recursively sorting each half, and then merging the two sorted halves.

**Implementation:**

Please refer the code.

**Analysis**

**Time Complexity**

* **Bubble Sort**: The time complexity of Bubble Sort is O(n^2) in the worst case, where n is the number of items being sorted.
* **Quick Sort**: The time complexity of Quick Sort is O(n log n) on average, although it can be O(n^2) in the worst case if the pivot is chosen poorly.

**Quick Sort is generally preferred over Bubble Sort**

Quick Sort is generally preferred over Bubble Sort for several reasons:

* **Performance**: Quick Sort has an average time complexity of O(n log n), which is much faster than Bubble Sort's O(n^2) for large datasets.
* **Scalability**: Quick Sort is more scalable than Bubble Sort, as it can handle large datasets with ease.
* **Efficiency**: Quick Sort is more efficient than Bubble Sort, as it uses a divide-and-conquer approach that reduces the number of comparisons needed.

However, it's worth noting that Bubble Sort can be useful for small datasets or for educational purposes, as it is simple to understand and implement.