1. ) The algorithm I chose was a bubble sort and it satisfies the relative ordering requirement because it is stable. If two values are equal, they will not swap.

Code highlight:

**if** (a[j] > a[i])

{

**int** temp = a[j];

a[j] = a[i];

a[i] = temp;

}

1. ) The best-case time complexity of this algorithm is O(N) because the loop will only run the outer loop once if the array is already sorted.

Code highlight:

**for** (**int** i = 0; i < arraySize; i++)

{

1. ) The worst-case time complexity of this algorithm is O(N^2) because most of the time, the double for loop will run twice.

Code highlight:

**for** (**int** i = 0; i < arraySize; i++)

{

**for** (**int** j = 0; j < arraySize; j++)

{