5) (10 pts) ALG (Sorting)

Write the code for any one of the following $O(n^2)$ sorts: Bubble Sort, Insertion Sort, Selection Sort in a single function below. Your code should sort the array from smallest to largest. (Namely, after your code finishes array[i] ≤ array[i+1] for all i, 0 ≤ i < length-1.) Please provide the name of the sort you are choosing to implement and fill in the function prototype below.

```
void bubblesort(int* array, int length) {
    int i,j;
    for (i=length-1; i>0; i--) {
        for (j=0; j<i; j++) {
            if (array[j] > array[j+1]) {
                int temp = array[j];
                array[j] = array[j+1];
                array[j+1] = temp;
            }
        }
    }
}

void insertionsort(int* array, int length) {
    int i,j;
    for (i=1; i<length; i++) {
        j = i;
        while (j>0 && array[j] < array[j-1]) {
            int temp = array[j];
            array[j] = array[j-1];
            array[j-1] = temp;
            j--;
        }
    }
}

void selectionsort(int* array, int length) {
    int i,j;
    for (i=length-1; i>=0; i--) {
        int bestJ = 0;
        for (j=1; j<=i; j++) {
            if (array[j] > array[bestJ])
                bestJ = j;
        }
        int temp = array[i];
        array[i] = array[bestJ];
        array[bestJ] = temp;
    }
}
```

Grading: 3 pts outer loop structure, 4 pts inner loop structure, 3 pts appropriate swapping, 1 pt off for sorting properly but using the wrong name for the sort or writing an extra function.