Computer Science 1
N^2 Sorting Algorithms

```
void selectionSort(int A[], int n) {

     int cur, j, min;

     // Loop through each index of the array. At each loop iteration
     // we will be placing the smallest unplaced item left in this
     // location of the array.
     for (cur = 0; cur <n; cur++) {

          // At first, the smallest unplaced element is at cur

          _______________________;

          // Look through the rest to find a value < list[cur]
          // If we find one, update WHERE it is located, min

          for (______________________________)
          {
               // We found a smaller element!

               if (______________________)

                    ______________________;
          }
          // Now, swap A[min] into its sorted
         // location, A[cur].

          ______________________________________;
     }
}
```

How many times will this section of code run?

____

____

```
void insertionSort(int A[], int n) {
     int i,j;

     // Loop through each element to insert.
     for (i=1; i<n; i++) {
          j=i;

          // Continue swapping the element with
          // its left neighbor,until it hits the correct
          // location in the sorted elements.

          while (j > 0 && ____________________) {
                // Example of pointer arithmetic.

                ____________________;

                ________;
          }
     }
}
```

How many times will this section of code run?

____

____

____

```
void bubbleSort(int A[], int n) {

     int i,j;

     // Loop through each element, if two consecutive
     // elements are out of order swap them.
      for (i=n-2; i>=0; i--) {

          for (______________________________)

              if (______________________________)

                ________________________________;

          }
}
```

How many times will this section of code run?

____

____

```
// Swaps the integers pointed to by a and b.
void swap(int *a, int *b) {
     int temp = *a;
     *a = *b;
     *b = temp;
}
```

What's the limitation of sorts that only swap adjacent elements?