Name:_____

1. Last lecture we developed the following selection sort code:

```
# Sorts the list in ascending order by selection sort
def selectionSort(myList):
    #outer loop keeps track of the dividing line between
    #the sorted and unsorted part of myList
    for lastUnsortedIndex in range(len(myList)-1, 0, -1):
        # search for the largest item in the unsorted
        # part of myList, i.e., myList[0 .. lastUnsortedIndex]

        # Assume the first item (at index 0) is the largest
        maxIndex = 0
        # Correct the assumption by looking for a larger item
        for testIndex in range(1, lastUnsortedIndex+1):
            if myList[testIndex] > myList[maxIndex]:
                maxIndex = testIndex

        # Now, maxIndex is the location of the largest
        # item in the unsorted part, so "swap" it with
        # the last unsorted item to extend the sorted part
        temp = myList[maxIndex]
        myList[maxIndex] = myList[lastUnsortedIndex]
        myList[lastUnsortedIndex] = temp
```

a) Which instruction in the selection sort is executed the most number of times?

b) How many times is it executed, assume there are "n" items in the list?

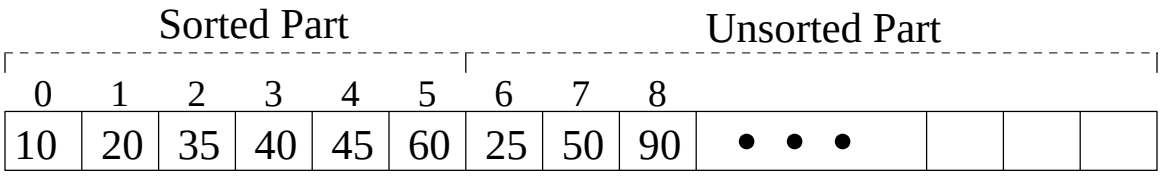
c) Besides comparisons between list items, what is another "fundamental" operation of sorting algorithms?

d) How many of these operations does the above selection sort algorithm perform, assume there are "n" items in the list?

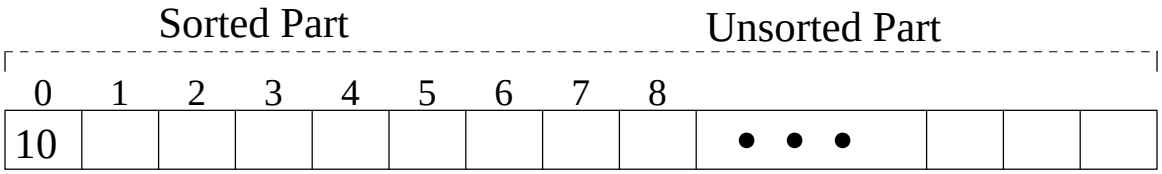
Name:_____

2. Another simple sort is the insertion sort. Like all simple sorts, the outer loop keeps track of the dividing line between the sorted and unsorted part with the sorted part growing by one in size each iteration of the outer loop.

After several iterations of the outer loop, the list would look like:



a) Like all simple sorts the job of the inner loop is to extend the sorted part by one element in size. Insertion sort takes the "first unsorted element" (25 at index 6 in the above example) and "inserts" it into the sorted part of the list "at the correct spot." What would the list look like after 25 is inserted into the sorted part?



b) Write the code for insertion sort.