

**Problem 1.**

InsertionSort and BubbleSort are stable in general (e.g. if we use  $a[j] \geq a[j+1]$  condition for Swap, Bubble sort will become unstable). SelectionSort is not.

SelectionSort is *not* stable. Example:

(3, a), (3, b), (2, c)

After first iteration of outer loop, this becomes

(2, c), (3, b), (3, a)

No other swaps occur in the rest of the execution. But now (3, b) and (3,a) have changed their relative positions.