2.1 Elementary Sorts

**Rules of the game**

* Certification: isSorted(a)
* Running time: compares + exchanges, # of times array is accessed
* Extra memory
* Types of data: implements *Comparable* interface
  + *compareTo():* defines an ordering on objects of that type known as the natural order for that type
  + *v.compareTo(w)* returns an integer that is negative, zero, positive when v<w, v=w, or v>w
  + Must implement a total order: reflexive, antisymmetric, transitive

Selection sort

* Repeatedly selecting the smallest remaining item
* Running time is insensitive to input does not take advantage of initial order in the input
* Data movement is minimal: number of array accesses is linear

Insertion sort

Shell sort

Bubble sort