Sorting with the Comparable and Comparator Interfaces
Example

I want to write a program that will read a sequence of names, sort it, and print it back in alphabetical order. Typical names might be:

- bob
- Fred Flintstone
- John Frederick Oberlin
- Charles Philip Arthur George Windsor

Naturally, we want to sort by last name.
What class structures will we use for this?
I like this structure:

First, we’ll have a Name class to hold the names. This has two String class variables: first and last (which might more properly be called `givenNames`, `familyName`). We will make a constructor that takes a string holding the full name and splits it up into those fields.
Then we need to store a whole sequence of these. This seems like another good use of ArrayLists, so we’ll make an ArrayList<Name> object to hold the list.

At this point the program is much like our integer list program. The one difference is that we need to sort the list.
There are two ways to get Java to handle the sorting. One way is to have the Name class implement the Comparable<Name> interface, which just means that we give it a compareTo method. This takes a Name other as an argument and returns -1, 0, or 1 if this < other, this == other, or this > other.
The *Collections* class has a static method `sort()` that can be applied to any list whose base type implements the `Comparable` interface. So we add method `compareTo()` to `Name`, we note that `Name` implements the `Comparable` interface, and then we call `Collections.sort(L)`, where `L` is the list of names to be sorted.
The other way is to make a class that implements the Comparator interface. This class needs a method `Compare(n1, n2)` where `n1` and `n2` have the base type of the list being sorted. `Compare` returns `-1, 0` or `1` if `n1 < n2`, `n1 == n2` or `n1 > n2`.

The Collections class has a method `sort(L, comp)` where `comp` is an object of the class that implements the Comparator interface. This time we don't need to make any changes to the Name class; we add the comparator class as a nested class inside our application program.
See the NameListComparable and NameListComparator programs.