Homework 10: Bubble Sort

Python does contain built-in methods for sorting data. But the goal of this assignment and the next is not to actually sort data; the goal is to understand two particular sorting algorithms. So you should NOT use any of the built-in methods for sorting in these assignments!

This assignment concerns the Bubble Sort, which is a naive and very straightforward method for sorting data. It is among the worst possible ways to sort a long list, but it is easy to understand and code, and it is effective for short lists. You will need to watch the accompanying presentation since you are being asked to implement it *exactly* as described therein, and not using any of the minor variations.

This program will require the accompanying file `input.txt` to be in the same directory as the `hw10.py` file.

Put all of your code for the problems below in one file named: `hw10-yourlastname.py`
('hw' in lower case, no spaces in the filename please!)

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1. (30 points) Complete the function `bubble_sort(L)` which sorts the list L using the Bubble Sort algorithm described exactly as in the presentation. It should return the number of comparisons it performed.

Note: There are several variations on this algorithm which will use slightly differing numbers of comparisons. For reference, if you apply it to the input file containing just the single line:
`Hello world, this is just a very short list for testing.`
then the output should be:

```
Read a list of size = 11
bubble_sort() worked - the list IS sorted now.
It used 80 comparisons.
```