

## 6. Lists and The Insertion Sort

### 6.1 A Simple Spelling Checker

Here, an insertion sort involves creating an abstract list data structure, and then reading strings one at a time (possibly from file) and placing them in the **correct** part of the structure. This has a complexity of  $O(n^2)$ .

For this purpose, a list of valid words (unsorted) is available from the usual place.

**Exercise 6.1** Write a program which, based on a list implemented using arrays, reads the words in one at a time, inserting them into the **correct** part of the list so that the words are alphabetically sorted. The name of the file should be passed as `argv[1]`. How long does it take to build the list ? ■

**Exercise 6.2** Write a program which, based on a dynamic linked list data structure, reads the words in one at a time, inserting them into the **correct** part of the list so that the words are alphabetically sorted. The name of the file should be passed as `argv[1]`. How long does it take to build the list ? ■

**Exercise 6.3** Now extend the above programs so that the user is prompted for a word and is told whether this word is present in the list or not. Which program is fastest ? ■