1. Week 6: Lists and The Insertion Sort

1.1 A Simple Spelling Checker

Here, an insertion sort involes 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 complexty of $O(n^2)$.

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

Exercise 1.1 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 1.2 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 1.3 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 ? ■