Exercises for Lab 3

Inside your Workspace\AP2 folder create a new folder named Lab3.

3A. (Strings)

Many Scottish surnames start with "Mc" or "Mac". When surnames are listed alphabetically (in a telephone directory, for example), these surnames are conventionally listed before all other surnames starting with "M". Also, no distinction is made between "Mc" and "Mac". For example, "McKay" (or "MacKay") is listed before "MacKenzie", and both are listed before "Maastricht".

One way to solve this problem on a computer is to translate all such surnames into a standardized form. So, for example, "McKay" and "MacKay" are both translated to "M'cKay", and "MacKenzie" is translated to "M'cKenzie". This is effective because, in the standard computer lexicographic ordering, "M'cKay" comes before "M'cKenzie", which in turn comes before "Maastricht".

- (a) Define a function standardise whose argument is a surname. If the surname has the prefix "Mc" or "Mac", the function must return the surname with the prefix replaced by "M'c". Otherwise the function must return the original surname. Place your function definition in a file named surnames.py (in your Lab1 folder). Test it thoroughly.
- (b) Define a function compare whose arguments are two surnames. The function must return -1 if the first surname should be listed before the second surname, +1 if it should be listed after, or 0 if they are the same. Add your function definition to the file surnames.py. Test it thoroughly.

Submit a printout of surnames.py to your tutor on the day of the lab session.

3B. (*Tuples and lists*)

Every mobile phone has a contacts list. At its simplest, this is just a list of (name, phone-number) pairs. For convenience, the list is kept sorted by name. E.g.:

[('Andrea', '5678'), ('Bob', '6666'), ('Christine', '1234')]

Define the following functions on a contacts list:

- (a) initialize (contacts) makes the contacts list empty.
- (b) add(contacts, name, number) adds a new name and phone-number to the contacts list. (Remember to keep the contacts list sorted.)
- (c) lookup(contacts, name) searches the contacts list for a given name, returning the corresponding phone-number.
- (d) remove (contacts, name) removes the entry for a given name from the contacts list.
- (e) tabulate (contacts) prints the contacts list in a tabular format.

Place your function definitions in a file contacts.py. Test them all thoroughly.

Submit a printout of contacts.py to your tutor on the day of the lab session.