

## Exercises for Lab 4

Inside your `Workspace\AP2` folder create a new folder named `Lab4`.

### 4A. (*Dictionaries*)

Implement a very simple natural language translator. Use a dictionary whose keys are words in one language (the *source language*) and whose values are the corresponding words in another language (the *target language*). The translator should be a function that takes a source-language phrase (a string) and returns the corresponding target-language phrase.

Choose your own source and target languages. You may assume that there is a one-to-one correspondence between words in the source and target languages. (Of course this is an extremely naïve assumption!)

Place your translator in a file `translator.py`. Test it thoroughly. For testing purposes, a very small dictionary (say 20 words in each language) should be sufficient.

*Submit* a copy of `translator.py` to your tutor on the day of the lab session (either a printout or an e-mail attachment).

### 4B. (*Recursion – optional*)

Further develop the family tree application outlined in the course notes (§8).

Define the following functions on a family tree:

- (a) `generation(family, k)` returns a list of names of persons in the  $k$ 'th generation of `family`.
- (b) `parent(family, name1, name2)` returns `True` iff the person named `name1` is a parent of the person named `name2` in `family`.
- (c) `descendants(family, name)` returns a list of names of all descendants of the person named `name` in `family`.

Assume that every person in the family tree has a unique name.

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

*Submit* a copy of `family.py` to your tutor on the day of the lab session (either a printout or an e-mail attachment).