CS Basics - Exercises
Structs and Files

E. Benoist and P. Mainini

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1 Using Structures

Define a structure "`car`", which has the following members: brand, type, identification number and price. Choose the appropriate data types for those.

Then, write a program which manages a *linked list*[1] of cars, and which creates new entries (cars) by asking the user for input. Input shall be terminated using `Ctrl-D`, and the program should support entering an arbitrary number of cars.

After finishing input, the contents of the car list should be printed out by the program.

Note: Use dynamic memory allocation when adding new entries to the list (and not arrays)! Take care to free any allocated memory blocks. Have a look at the `valgrind` *tool to find possible memory leaks!*

2 Writing and Reading Files

Write a second program, which can save and load a list of cars to/from a file (e.g. "`cars.txt`"). Reuse the type(s) you have defined in the previous exercise. You may also reuse other parts of the code.

3 The `const` Qualifier

Familiarize yourself with the `const` qualifier by writing a small program which uses `const` for different kinds of variables and other objects. Try to modify those and pass them to functions. Check for compile-time and runtime warnings and errors.

[1] A linked list is a data structure in which an entry references the next and possibly previous entry of the list. In C, you would typically use pointers for this.