Simple data structures and a complete program

Objectives: Using simple data structures such as lists, tuples, sets, and dictionaries in python. Reinforcement of loops and functions. Extension of input/output with files. Re-using strings.

1. Create a file that contains pairs of passengers and seats. In each line there should appear first the name of the person and then an identifier of the seat, separated by a comma, for example:

   ```
   Maria, 2A
   Manuel, 21D
   Dorothea, 14F
   Samuel, 10C
   ```

   Write a program that reads-in the file and converts it automatically into a file that contains in its first line the identifiers of the seats and in its second line the corresponding names. (Extension: try to sort the list according to the seat identifier.)

2. Generate a small reservation system for an airplane A320. The program should work with a main menu where an entry of a single character selects one action, for instance, `r` activates the reservation module, `l` activates the list generation module, `q` quits the program.

   The menu should contain at leat the following modules:

   - read a file (in the same format as given above)
   - list all occupied seats
   - add a reservation given a name and a seat number (take care, only one passenger per seat, and only available seats)
   - store the reservations into a file
   - cancel a reservation (either by passenger name or by seat number)
   - show unoccupied seats
   - extend your program with functions you consider useful (especially for debugging purposes).

   In order not to make things too complicated, assume that the seat numbers are consecutive and there are always the same number of seats in a row. Make good use of the data structures you know, for instance, use may use a tuple to join a passenger and a seat, a dictionary for the occupation of the airplane, sets for the characters of the menu etc. You will realize: the more you develop a modular program, the easier you will succeed.

   Consider working in small groups, where each participant contributes one or several modules.