C Programming

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TP 03

Exercice 1:

Turn in Directory	Solutions/cpp/ex01
Files to turn in	Makefile, *.cpp, *.h
Forbidden Functions	None

You have to implement two classes:

- PhoneBook
  - It has an array of contacts.
  - It can store a maximum of 8 contacts. If the user tries to add a 9th contact, replace the oldest one by the new one.
- Contact
  - Stands for a phonebook contact.

In your code, the phonebook must be instantiated as an instance of the PhoneBook class. Same thing for the contacts. Each one of them must be instantiated as an instance of the Contact class. You're free to design the classes as you like but keep in mind that anything that will always be used inside a class is private, and that anything that can be used outside a class is public.
On program start-up, the phonebook is empty and the user is prompted to enter one of three commands. The program only accepts ADD, SEARCH and EXIT.

- ADD: save a new contact
  - if the user enters this command, they are prompted to input the information of the new contact one field at a time. Once all the fields have been completed, add the contact to the phonebook.
  - The contact fields are: first name, last name, nickname, phone number. A saved contact can't have empty fields.
- SEARCH: display a specific contact

  - Display the saved contacts as a list of 4 columns: index, first name, last name and nickname.
  - Each column must be 10 characters wide. A pipe character (|) separates them. The text must be right-aligned. If the text is longer than the column, it must be truncated and the last displayable character must be replaced by a dot ('.').
  - Then, prompt the user again for the index of the entry to display. If the index is out of range or wrong, show an error message and ask the user to enter a valid index. Otherwise, display the contact information, one field per line.

- EXIT
  - The program quits and the contacts are lost forever!

Once a command has been correctly executed, the program waits for another one. It stops when the user inputs EXIT.

Exercice 2: Inheritance

Write a program that defines a shape class with a constructor that gives value to width and height.
Then define two sub-classes triangle and rectangle, that calculates the area of the shape **area()**.
In the main, define two variables a triangle and a rectangle, and then call the **area()** function in these two variables.