PROJECT

Phone Book

Fatema Moharam, 6655

Nourhan Waleed, 6609

User Manual

You can choose one of these functions to access, modify or delete the information in this file.

1. To load the file, please choose ‘1’. This ‘Load’ function will ask you to enter the file name and its extension (Please don’t forget the extension). Unless the file exists, an error message of “File not found. Please try again” will pop up.
2. To search for a certain contact in the file, please choose ‘2’. the program will ask you to enter the LAST NAME of the contact you are looking for. It will then show a list of contacts who have got this last name. If it is not found, a ‘Contact not found’ message will appear.
3. To add a contact entry, please choose ‘3’. This function will ask you to enter the contact details without using a comma. It will go by the order of last name, first name ,date of birth(day, month, then year) and it checks that a digit has been entered and not an alphabetical character, address, city, e-mail, and finally phone number, and for this field too, it checks that no alphabetical character has been entered. If a message: "Full phone book" appears, save your changes and exit. Then reopen the program and add the data, then save to a new file.
4. To delete an entry, please choose ‘4’, it will redirect you to the search function, for you to choose which contact to delete. A warning message of ‘Are you sure you want to delete this contact will appear, then you will be given 2 choices yes ‘y’ or no ‘n’. Please choose a character and not a word. Choosing ‘y’ will delete the contact, and choosing ‘n’ won’t. Any other choice will result in an error message of “Invalid Input. Please try again”. In the end it will sort the file.
5. To modify a contact, please choose ‘5’. It will first redirect you to the search function to choose which contact you are going to modify, it will delete the existing contact, while you enter its new details and then sort the file.

6.To sort print the whole file, please choose ‘6’.The program will first sort the contacts either by last name or date of birth ascendingly according to the user’s choice, then it will print the contacts one by one in this format:

Last name:

First name:

Date of birth: dd-mm-yyyy

Address:

E-mail:

Phone number:

7. To save the file, please choose ‘7’. It will ask you to enter the file name and extension, and then saves the contacts in the file
8. To exit/quit the file, please choose ‘8’. A message of “Warning, In case you didn’t save them, all of your changes will be discarded. Do you wish to proceed?” and again two choices will be given: ‘y’ or ‘n’. Choosing yes will lead to changes not being saved, and choosing no will take you back to the last step. Any other choice will lead to a message of “Invalid input. Please try again”.
   Note: choosing any other character/number other than 1-8 will result in “Invalid input. Please try again”.

Algorithms And Code Description

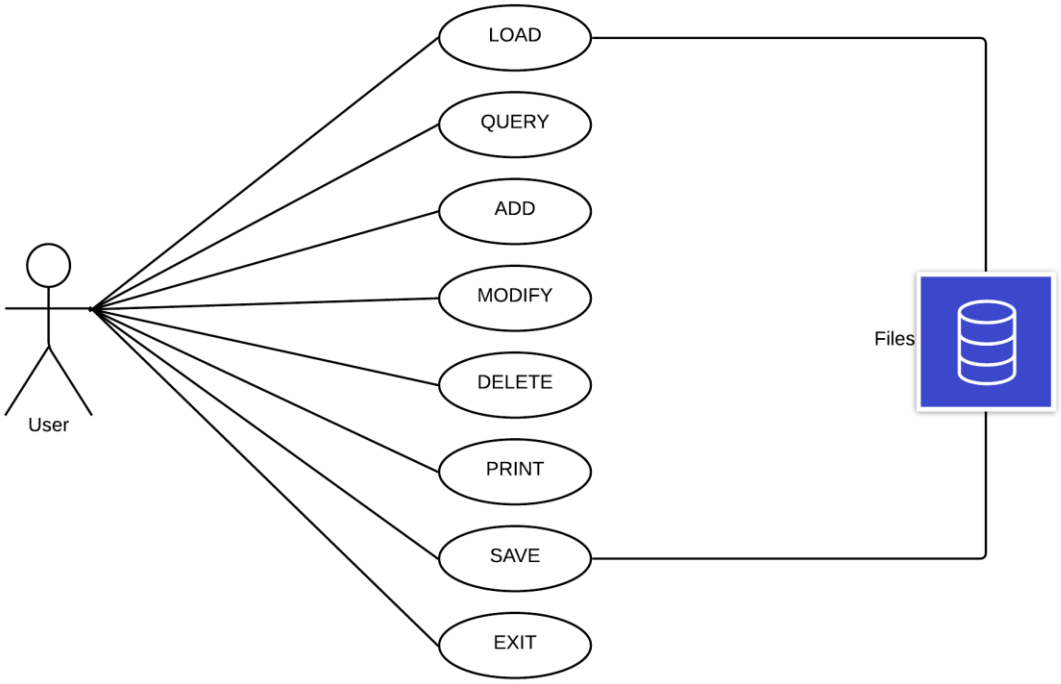

Figure 1: Use-case diagram

The diagram in Figure 1 shows the functions and commands the user can access, and shows that only the LOAD and SAVE functions have access to the data stored in the file. In the main function there's a while loop with a condition of always true (1), So that the menu of commands is printed and the user input is taken after every execution of a command, unless that command was to QUIT.

The header file contains structures and the global variable of the array of structures alongside included libraries and function declarations. Here's a brief description of what happens when each command is chosen, sorted in a way that's easier to explain and to understand:

LOAD

```
Choose one of the following(by entering the choice number):
1.LOAD  2.QUERY     3.ADD   4.DELETE    5.MODIFY    6.PRINT     7.SAVE  8.QUIT
1
Enter the file name and extension (eg.: textfile.txt):
newfile.txt
Choose one of the following(by entering the choice number):
1.LOAD  2.QUERY     3.ADD   4.DELETE    5.MODIFY    6.PRINT     7.SAVE  8.QUIT
1
Enter the file name and extension (eg.: textfile.txt):
newfileeee
File not found. Please try again.
Choose one of the following(by entering the choice number):
1.LOAD  2.QUERY     3.ADD   4.DELETE    5.MODIFY    6.PRINT     7.SAVE  8.QUIT
```

Figure 2 : sample run of the LOAD command

LOAD is a void function that takes a pointer to the count integer. When the user types "1" after the command menu is shown, they are prompted to enter a file name and extension. A file pointer is opened in the read mode. If the default directory does not contain a file with the name entered, in which case the file pointer will be NULL, a message will appear :"File not found, please try again." And the function returns. If the file is found and is not empty , every line is scanned with fgets in a while loop, then split into tokens with strtok with the comma as a delimiter or a dash when the date is scanned, the tokens are stored as members of a structure of type contact, which contains another structure of type DATE to store the dates of birth. After each line is scanned , the count is incremented by 1. All of the lines are stored in an array of structures of type contact. When the pointer reaches end of file, the loop is broken and the function returns.

SAVE

```
Choose one of the following(by entering the choice number):
1.LOAD  2.QUERY     3.ADD   4.DELETE    5.MODIFY    6.PRINT     7.SAVE  8.QUIT
7
Enter the file name and extension (eg.: textfile.txt):
myphonebook.txt
Choose one of the following(by entering the choice number):
1.LOAD  2.QUERY     3.ADD   4.DELETE    5.MODIFY    6.PRINT     7.SAVE  8.QUIT
```

Figure 3 : Sample run of the SAVE command

SAVE calls a void function too, takes const int count as a parameter. The user is prompted to enter the file name. then, a file pointer is opened in the write mode, so it doesn't matter whether the file exists. A for loop runs (count) times. Inside the loop, fprintf stores the data in the array of structures in a format that could be read with the LOAD function.

ADD

```
Choose one of the following(by entering the choice number):
1.LOAD  2.QUERY     3.ADD   4.DELETE    5.MODIFY    6.PRINT     7.SAVE  8.QUIT
3
Enter the contact details(Please do not use a comma(,) in your input)
Last name: Moharam
First name: Fatema
Date of birth:
Day: r
Invalid input.
Day: 8
Month: 9
year: 2000
Address: 11 street name, city
Invalid input.
Address: 11 street name
City: Alexandria5
Invalid input.
City: Rio de janiero
e-mail: moharamfatema.com
Invalid input.
e-mail: moharamfatema@gmail
Invalid input.
e-mail: moharamfatema@gmail.com
Phone number:
```

Figure 4: Sample run of the ADD function

The ADD function is void and takes pointer to the integer count as a parameter. All of the input entered by the user is checked for errors. For example you can't enter a number in the city or the name fields. You can't enter an alphabetical character in any of the date fields or the phone number. The email is checked for an @ sign and at some point after it a dot sign. All of the fields are checked for a comma . this happens by calling a group of int functions made for checking strings each in its suitable place. If the input does not match the standards, the user is prompted to enter it again and again until it is correct. This uses a do – while loop. You can also skip a filed by just hitting enter, it will be stored empty. The count integer is incremented by one.

PRINT

```
Choose one of the following(by entering the choice number):
1.LOAD  2.QUERY     3.ADD   4.DELETE    5.MODIFY    6.PRINT     7.SAVE  8.QUIT
6
Last name: Moharam
First name: Fatema
Date of birth: 5-9-2000
Address: 11 streetname,Alex
e-mail: moharamfatema@gmial.com
Phone number: 0123456789

Last name: Moharam
First name: Osama
Date of birth: 1-1-1111
Address: 33 streetname,Alex
e-mail: mail@gmail.com
Phone number: 01234567879

Last name: Waleed
First name: Nourhan
Date of birth: 1-1-1111
Address: 22 streetname,Alex
e-mail: Nouraabouelsoaoud@yahoo.com
```

Figure 5: Sample run of the PRINT command

This command calls a sorting function first then a print function that prints everything in the array of structures. The sorting function takes const int count as a parameter and uses bubble sort algorithm. The array is sorted three times. First, by phone number. Second, by first name. Then, by last name. The inner for loop compares the first structure in the array to the one next to it. If its value is found larger, they are swapped using a temporary contact. The comparison continues until all contacts are compared. The outer for loop determines the number of passes (as count passes)of the inner loop.

QUERY

```
Choose one of the following(by entering the choice number):
1.LOAD  2.QUERY     3.ADD   4.DELETE    5.MODIFY    6.PRINT     7.SAVE  8.QUIT
2
Enter the last name : Moharam
Last name: Moharam
First name: Fatema
Date of birth: 5-9-2000
Address: 11 streetname,Alex
e-mail: moharamfatema@gmial.com
Phone number: 0123456789


Last name: Moharam
First name: Osama
Date of birth: 1-1-1111
Address: 33 streetname,Alex
e-mail: mail@gmail.com
Phone number: 01234567879
```

Figure 6: Sample run of the QUERY command

The QUERY command calls the search with last name function. This one is an integer that returns the number of contacts found. It takes two pointers to two integers a and b which are then set to the index numbers of the first and last contacts that have this last name. The array is sorted first using the sort function, then two for loops that compare the last names to the entered one. The first for loop stops when the first contact with this last name is found. The other one runs backwards. If any of the loops reach the end of the array and does not find a match, it prints "contact not found".

Unless the return value of the search function is zero, a print function is called to print the details of the contacts between the indexes a and b.

DELETE

```
Choose one of the following(by entering the choice number):
1.LOAD  2.QUERY     3.ADD   4.DELETE    5.MODIFY    6.PRINT     7.SAVE  8.QUIT
4
Enter the last name : Moharam
Enter the first name : Fatema
Last name: Moharam
First name: Fatema
Date of birth: 5-9-2000
Address: 11 streetname,Alex
e-mail: moharamfatema@gmial.com
Phone number: 0123456789

Are you sure you want to delete this contact? (y/n)
y
Choose one of the following(by entering the choice number):
1.LOAD  2.QUERY     3.ADD   4.DELETE    5.MODIFY    6.PRINT     7.SAVE  8.QUIT
```

Figure 7: Sample run of the DELETE command

This function is void and takes a pointer to the integer count. It calls the search by last name function, if more than one contacts with the entered last name are found, another search by first name function is called, this last is very similar to the search by last name function but only loops between the indexes a and b . The details of the first found contact with the matching last and first names are printed, followed by a message to make sure the user wants to delete this one. If yes, the contact is replaced with the last contact in the array then the count is decreased by 1. If no, the function returns.

MODIFY

```
Choose one of the following(by entering the choice number):
1.LOAD  2.QUERY     3.ADD   4.DELETE    5.MODIFY    6.PRINT     7.SAVE  8.QUIT
5
Enter the last name : Moharam
Enter the contact details(Please do not use a comma(,) in your input)
Last name: Mohamed
First name: Fatema
Date of birth:
Day: 0
Month: 0
year: 0
Address: 66 streetname2
City: city name
e-mail:
Phone number:
Choose one of the following(by entering the choice number):
1.LOAD  2.QUERY     3.ADD   4.DELETE    5.MODIFY    6.PRINT     7.SAVE  8.QUIT
```

Figure 8 : Sample run of the MODIFY command

This one deletes then adds. It does the same thing in delete but without printing the contact details or the warning. Then calls the Add function. It also doesn't make any changes to the count. Pretty simple.

QUIT

```
Choose one of the following(by entering the choice number):
1.LOAD  2.QUERY     3.ADD   4.DELETE    5.MODIFY    6.PRINT     7.SAVE  8.QUIT
8
Warning: in case you didn't save them, all of your changes will be discarded.
Do you wish to proceed? (y/n)
n
Choose one of the following(by entering the choice number):
1.LOAD  2.QUERY     3.ADD   4.DELETE    5.MODIFY    6.PRINT     7.SAVE  8.QUIT
8
Warning: in case you didn't save them, all of your changes will be discarded.
Do you wish to proceed? (y/n)
y

Process finished with exit code 0
```

Figure 9 : Sample run of the QUIT command

Here's the end with our favorite command. The user is warned or in other words reminded to save the changes they made. In case they are sure to quit, The exit(0); is used. In case they aren't, the loop continues.