MIDDLE EAST TECHNICAL UNIVERSITY, NORTHERN CYPRUS CAMPUS
CNG140 C Programming – Worksheet 26

Purpose:
In this work sheet, you will get hands-on experience with structures and files.

Tasks:

a) Define a structure type to represent a word list. The structure will contain one string component for the language of the words (e.g., English, Japanese, Spanish), an integer component that keeps track of how many words are in the list, and an array of MAX_WORDS 20-character strings to hold the words.

Define the following functions to work with word lists:

i) `load_word_list` () - takes as parameters the name of an input file and a wordlist structure to be filled.
ii) `add_word()` - takes as parameters a word and a wordlist structure to modify. If the wordlist is already full, it displays the message "List full, word not added." If the word is already in the list, it leaves the structure unchanged. Otherwise, it adds the word to the list and updates the list size. Do not bother keeping the list in order.
iii) `contains()` - takes as parameters a word and a wordlist. If the word matches one of the wordlist entries, the function returns true, otherwise false.
iv) `equal_lists()` - takes two wordlists as parameters and returns true if the lists are in the same language, have the same number of elements, and every element of one list is found in the other. (Hint: call contains repeatedly.)
v) `display_word_list()` -displays all the words of its wordlist structure parameter in four columns.

Imagine that the words.txt content is as follows:

book
music
art
laptop
tree

The sample run could be as follows:

```
The words.txt file has been loaded successfully and the first
wordlist is created.


Enter a word to search in the first list: movie
Word "movie" is not found in the first wordlist
Enter a word to search in the first list: pencil
Word "pencil" is found in the first wordlist

Now let's create the second wordlist!
How many words should the second wordlist contain? 5
Enter the language of the second wordlist: English
Enter 5 words of the second wordlist:
```

```
Word 1: book
Word 2: music
Word 3: art
Word 4: laptop
Word 5: bottle

First and the second wordlists are not equal!

First wordlist is:
book
music
art
laptop
tree

Second wordlist is:
book
music
art
laptop
bottle
```

b) Assume that you are writing a stock management program for a supermarket. In this stock managament application, you will keep track of the stock in the following way: a unique identification number, name of the stock and number of stock. For example, an entry is as follows: 1 Milk 15 which means the identifitication code is 1, the name of the stock is milk and you have 15 available. Write the following functions to create this stock management application:

i) `load_stock()` – this function will be used to load the stock from an external file called "stock.txt" to an array of stock structure. Please do not make any assumption about the size of the stock. Your function needs to return the array of stock.
ii) `search_stock()` – this function will take a stock id and return the position of that stock in the array of stock list if that stock exists in the list. If that stock does not exist, then it will return -1.
iii) `delete_stock()` – this function will take a stock id from the user, and delete it from the stock.
iv) `save_stock()` – this function will save the updated list of stock items to the external file.

Imagine that the stock.txt content is as follows:

1 Milk 15
2 Small water 20
3 Coke 30
4 Bread 100
.....

Then the sample run could be as follows:

```
Please select your choice:
  1. Search
  2. Delete
```

```
  3. Exit
Choice: 1
Enter the stock id: 1
You have 15 Milk (id:1) in stock!

Please select your choice:
  1. Search
  2. Delete
  3. Exit
Choice: 1
Enter the stock id: 8
That item does not exist in the stock!

Please select your choice:
  1. Search
  2. Delete
  3. Exit
Choice: 2
Enter the stock id: 4
Bread deleted from stock!

Please select your choice:
  1. Search
  2. Delete
  3. Exit
Choice: 3
Saved data successfully!
BYE!
```

Now the stock.txt content is as follows:

1 Milk 15
2 Small water 20
3 Coke 30
.....

c) Assume that you are writing program for managing PhotoBook. In this PhotoBook application, you will keep track of the photos in the following way: name of the photo, size of the photo and the city name where the photo is taken. For example, an entry is as follows: IMG_5949.JPG;128;Nicosia which means the name of the photo is IMG_5949.JPG, the size of the photo is 128 KB (we assume that the size is always KB) and the photo is taken at Nicosia. Write the following functions to create this PhotoBook application:

i) `load_photos()` – this function will be used to load the photos from an external file called "photos.txt" to an array of photos structure. Please do not make any assumption about the number of the photos. Your function needs to return the array of photos.
ii) `search_photos()` – this function will take a city name and displays all photos which are taken at that city. If there are not any available photo which is taken at that city, it should show appropriate message. Please see sample run.
iii) `delete_photo()` – this function will take a photo name from the user, and delete it from the photos. Assume that only the exactly matched photo names will be deleted. Otherwise, relevant error messages will be given. Please see sample run.
iv) `save_photos()` – this function will save the updated list of photos to the same external file.

Imagine that the photos.txt content is as follows:

```
IMG_5949.JPG;128;Nicosia
IMG_5250.JPG;712;London
IMG_5120.JPG;86;Nicosia
.....
```

Then the sample run could be as follows:

```
The photos.txt file has been loaded successfully!

----- MENU-----
1. Search Photos
2. Delete Photos
3. Exit

Enter your option: 1
Enter the city name: Ankara
There is not any available photo taken at city Ankara.

----- MENU-----
1. Search Photos
2. Delete Photos
3. Exit

Enter your option: 1
Enter the city name: Nicosia
Photos taken at Nicosia are as follows:
IMG_5949.JPG
IMG_5120.JPG

----- MENU-----
1. Search Photos
2. Delete Photos
3. Exit

Enter your option: 2
Enter the photo name: IMG_5949
That image is not in your store so cannot delete!



----- MENU-----
1. Search Photos
2. Delete Photos
3. Exit

Enter your option: 2
Enter the photo name: IMG_5949.JPG
IMG_5949.JPG deleted from the PhotoBook!

----- MENU-----
1. Search Photos
2. Delete Photos
3. Exit
```

```
Enter your option: 3
The photos.txt file has been updated successfully!
```

Now the photos.txt content is as follows:

```
IMG_5250.JPG;712;London
IMG_5120.JPG;86;Nicosia
.....
```

Recommended Reading: Chapter 12 (p. 577-597)
Recommended Exercises: Programming Exercises given in the following pages.