Coding Assignment 7

CSE 1320 Spring 2020

The format and content of the output are not suggestions – they are the specification given to you to follow so please follow them. Points will be lost for not following the specification. This includes using the specified functions. This is essential to the grading process. If the assignment says to use `strchr()`, then please use `strchr()` and not some other way of achieving the same result. The rubric is very specific and your code will be graded very specifically. This assignment is written the way it is to exercise the concepts we have been learning in class.

Please watch the videos showing the game being played and examine the sample output provided in this document. Understanding how to play the game before studying this specification will be helpful. After watching the game being played, read this specification and then watch the video called "Coding Assignment 7".

Using the file name passed on the command line, your program will read a file and place the information from the file into an array of structures where you will dynamically allocate the memory to store the file's information. You are then using that information to play the game. If you play the game and win, the winning entry is removed from the file so if you play again, you do not see the choice you already guessed.

Your goal should be to change as little code as possible – don't change it if you don't need to.

You will create 7 files and submit them as one zip file – `Code7_xxxxxxxxxx.zip`

```
    makefile
    Code7_xxxxxxxxxx.c
    GameLib.c
    GameLib.h
    FileLib.c
    FileLib.h
    PhraseBank.txt
```

Please note you that will NOT be able to put your name/id at the top of `PhraseBank.txt`. Also, remember to use UNIX EOL conversions. Either change your file to UNIX in your editor before transferring or use these UNIX commands to change the file on Omega.

```
cp PhraseBank.txt PB.txt
cat PB.txt | tr '\r' '\n' | tr -s '\n' > PhraseBank.txt
```

Create your own `PhraseBank.txt` file.

I have provided an example `PhraseBank.txt` file and you will need to create your own. You must have at least 5 lines in your file. They do not need to be songs like the example (but they can be). You just need to use something that has similar information. For example, you could use a movie title, the lead actor, the year it was released and the production company. You need to provide at least 4 fields where one of them is the field to be guessed and other three are used in the menu. Each field in the file should be separated by the pipe symbol (|). Please be professional and keep your choices PG. You will submit your own version of the file but the name must be `PhraseBank.txt`. Your program will be tested with your file and with a different variation of your file. Do not hardcode anything in your program using values based on the lines in the file.

`GameLib.c`

`StartGame()`

Parameters	Empty array for chosen phrase, File Handle, Array of Phrases
Return Value	The index of the chosen phrase from the array of phrases

Replace the include for `PhraseBank.txt` with a call to `ReadFileIntoArray().` If `ReadFileIntoArray()` returns 0, then print "`All of the games have been played - please reload file`" and use `exit(0)` to stop the program. Change the welcome to the game message to match what type of information you are using for your game. Change your menu to display the information as shown the sample output. Function `DashIt()` no longer needs to be called inside `StartGame()` since the menu no longer uses the actual phrases to be guessed. `ReadFileIntoArray()` will return the number of records it read and that value should be used to display the menu. `StartGame()` will now return the index from the array of the chosen entry.

The rest of the functions in `GameLib.c` should have **no** changes.

GameLib.h

Add the `typedef struct` to hold the data from a line in your file. With my song game, I created a structure with a `char` pointer for artist, a `char` pointer for song title, a `char` pointer for album name and a regular `char` array to hold the release date. Your structure must contain at least 3 `char` pointers and at least one member that has a known size that does not change. In my example, release year, will always be of size 5 (4 for the year and 1 for the `NULL`); therefore, no need to use `malloc()` on it since it will not vary. Your variable names must sufficiently describe their use.

Add a new define called `MAX_ENTRIES`. This value should be used to create your array of structures to hold the information read from the file.

FileLib.c

This file contains 3 new functions

A function to open a file. Should take 3 parameters – `argc`, `argv` and `mode`. This function should open the filename found in `argv[1]`. Make sure there are enough command line parameters before you use `argv[1]`. If the command line parameter is missing, prompt the user to enter a name. Your program should work with either a command line parameter file name or by entering the filename at a prompt. Try to open the file using the passed in mode. If the open fails, prompt again for a filename. Keep prompting for a filename until able to open the file. While condition should be properly formed – no arbitrary values or using break/continue/return/exit. Function should return the file handle once the file has successfully opened.

A function to read the file and store the contents in the array of structures. The array of structures and the file handle (which was returned by the function to open a file) should be passed into this function. It will return the number of records that were read from the file. Use `fgets()` to read through the file. If the file line starts with a blank, then use `continue` to not process the line. Replace the `\n` at the end of the line with a `NULL`. Ensure that you do not read more records from the file than the array can hold (`MAX_ENTRIES`). Use `strtok()` to find each field in each file line. Use `malloc()` to allocate the space and `strcpy()` to copy the token into the `malloc`'d memory.

A function to write out a new version of the file. Pass in the array, the index that was returned by `StartGame()` and the file handle. After correctly guessing and winning, the entry that was used should be removed from the file so that the next game does not include that entry the player has already guessed. Since the file was opened using a mode of `r+`, the file can be written to after it has been read. Write the contents of the array to the file and skip the winning entry. There will be an extra line at the end of the file that you will need to blank out. Use a combination of `fseek()` and `ftell()` to figure out how many blanks to write to the file to blank out the extra line. Be sure to free your dynamically allocated memory and close the file.

FileLib.h

This file contains the prototypes for the 3 functions in `FileLib.c`.

`main()`

Create an array of size `MAX_ENTRIES` of your `typedef`ed structure.

Call your new function to open a file. The return value of that function should be a file handle (`FILE *`).

Call function `StartGame()`. You are passing the empty `Phrase` and the file handle and the array. It should return the index of the chosen entry from the array. The rest of `main()` should continue to work like it did in Coding Assignment 5.

If the player wins the game, call your new function to write out the new version of the file.

BONUS – 10%

Add advanced command line parameter handling so that your program can be run

```
Code7_xxxxxxxxxx.e FILENAME=PhraseBank.txt
```

Sample Output

Sample File

```
[frenchdm@omega CA7]$ more PhraseBank.txt
The Bangles|Walk Like an Egyptian|1986|Different Light
Gregory Abbott|Shake You Down|1986|Shake You Down
Whitney Houston|I Wanna Dance with Somebody|1987|Whitney
Starship|Nothing's Going to Stop Us Now|1987|No Protection
B*Witched|C'est La Vie|1998|Fresh Hits 8
Bon Jovi|Livin' on a Prayer|1986|Slippery When Wet
Beastie Boys|(You Gotta) Fight for Your Right (To Party)|1986|Licensed to Ill
Prince|Sign o' the Times|1987|Sign o' the Times
Janet Jackson|Let's Wait Awhile|1986|Control
Crowded House|Don't Dream It's Over|1986|Crowded House
```

With command line parameter file name

```
[frenchdm@omega CA7]$ Code7_1000074079.e PhraseBank.txt


Welcome to 3 STRIKES - YOU'RE OUT - the CSE version

Please pick a song from the following menu

1. The Bangles's song that was released in 1986 on album Different Light
2. Gregory Abbott's song that was released in 1986 on album Shake You Down
3. Whitney Houston's song that was released in 1987 on album Whitney
4. Starship's song that was released in 1987 on album No Protection
5. B*Witched's song that was released in 1998 on album Fresh Hits 8
6. Bon Jovi's song that was released in 1986 on album Slippery When Wet
7. Beastie Boys's song that was released in 1986 on album Licensed to Ill
8. Prince's song that was released in 1987 on album Sign o' the Times
9. Janet Jackson's song that was released in 1986 on album Control
10. Crowded House's song that was released in 1986 on album Crowded House

Enter choice :
```

Without command line parameter file name

```
[frenchdm@omega CA7]$ Code7_1000074079.e
Must be run with an input file name.
```

```
Enter a file name at the prompt PhraseBank
Could not open a file named PhraseBank.
Enter a file name at the prompt PraseBank.txt
Could not open a file named PraseBank.txt.
Enter a file name at the prompt PhraseBank.txt


Welcome to 3 STRIKES - YOU'RE OUT - the CSE version

Please pick a song from the following menu

1. The Bangles's song that was released in 1986 on album Different Light
2. Gregory Abbott's song that was released in 1986 on album Shake You Down
3. Whitney Houston's song that was released in 1987 on album Whitney
4. Starship's song that was released in 1987 on album No Protection
5. B*Witched's song that was released in 1998 on album Fresh Hits 8
6. Bon Jovi's song that was released in 1986 on album Slippery When Wet
7. Beastie Boys's song that was released in 1986 on album Licensed to Ill
8. Prince's song that was released in 1987 on album Sign o' the Times
9. Janet Jackson's song that was released in 1986 on album Control
10. Crowded House's song that was released in 1986 on album Crowded House

Enter choice :
```

Entering an invalid menu choice

```
Welcome to 3 STRIKES - YOU'RE OUT - the CSE version

Please pick a song from the following menu

1. The Bangles's song that was released in 1986 on album Different Light
2. Gregory Abbott's song that was released in 1986 on album Shake You Down
3. Whitney Houston's song that was released in 1987 on album Whitney
4. Starship's song that was released in 1987 on album No Protection
5. B*Witched's song that was released in 1998 on album Fresh Hits 8
6. Bon Jovi's song that was released in 1986 on album Slippery When Wet
7. Beastie Boys's song that was released in 1986 on album Licensed to Ill
8. Prince's song that was released in 1987 on album Sign o' the Times
9. Janet Jackson's song that was released in 1986 on album Control
10. Crowded House's song that was released in 1986 on album Crowded House

Enter choice : 0
You entered an invalid choice.
Please reenter -1
You entered an invalid choice.
Please reenter 11
You entered an invalid choice.
Please reenter 3

Here's the phrase you need to guess


- ----- ----- ---- --------

Guess a letter :
```