CSCI 2170 Open Lab 5 (Due: midnight, Friday March 15th)

This program aims to write a C++ program that uses the ***array of structs*** to maintain the top hit songs in a database.

First, your program reads from a data file named "topsongs.dat". Each song in this data file is described by four information: (1) the rank of the song at the end of the year, (2) the name of the artist, (3) the title of the song, and (4) the year the song debut. An example song record is shown below:

1	← number 1 ranked song
Katy Perry	← artist name
Dark Horse	← song title
2014	← billboard year

There can be a maximum of 500 song records in the data file. You can copy this file into your project folder with the command:

cp ~cen/data/topsongs.dat workspace directory/project directory/.

To allow the user to interact with the program, display a menu as shown below:

Billboard Top Song Management

Please select from the following menu choices:

1. Look up top hits by artist
2. Look up top hits by year
3. Add a new song
4. Delete a song
5. Exit

The program should allow the user to continually interact with the program by typing menu choices '1' – '4'. The program only terminates when the user types the menu choice '5':

- If the user selects choice '1', (s)he should be prompted to enter **the name of the artist**. The program then displays ALL the songs by this artist that have appeared in the billboard charts. If the artist does not have any top songs in the past 4 years, an error message should be displayed;

  Display information about the songs in tabular format using **setw(number).** For example, if the name of the artist entered is: **Beyonce**, the output of the program should be:

  Here are the songs by Beyonce

Title	**Rank**	**Year**
Drunk in Love	**22**	**2015**
Partition	**72**	**2015**
Best Thing I Never Had	**57**	**2012**
Countdown	**100**	**2012**

- If the user selects choice '2', (s)he should be prompted to enter the **year** to look for. The program displays the **titles** of **ALL the songs in that year in table format. (*Display the song titles only*)**
- If the user selects choice '3', (s)he should be prompted to enter the following information: (1) the title; (2) the artist name, (3) the rank, and (4) the year of a **new song**. This new song record should then be added to the end of the list.

- If the user selects choice ‘4’, (s)he should be prompted to enter the title of the song to be deleted. The program then deletes the song from the array. If no such song is found, display an error message.

- If the user selects ‘5’, the program terminates.

Programming requirements

- A user defined function named “PrintByArtist” should be defined that displays all the songs by an artist. This function takes as parameters: the array of songs, the number of songs stored in the array, and the artist name. The array of songs should be passed as a “const” array.

- A user defined function named “PrintByYear” should be defined that displays all the songs in a year. This function takes as parameters: the array of songs, the number of songs stored in the array, and the year value. The array of songs should be passed as a “const” array.

- A user defined function named “AddSong” should be used that add a new song into the list of songs. This function takes as parameters: the array of songs, the number of songs stored in the array.

- A user defined function named “DeleteSong” should be used that delete a song from the list of songs. This function takes as parameters: the array of songs, the number of songs stored in the array.

Electronically submit the program in D2L Dropbox named “Open Lab 5”.