COMP 1130 Principles of Programming II
Project 5 – Create your Playlist
Maximum Possible Points: 20

Due Date:

- The In-Lab part of the project needs to be demonstrated by the end of the lab period.
- The complete source code and one program execution screenshot needs to be submitted by the beginning of next lab period.

Objectives:

- To gain experience with linked lists.

Overview:

For this project, you will have to write a C++ program to create, play, and edit a music playlist. You will need to use a one-way linked list for representing the playlist. Each song will be represented by a single node in the linked list. The playlist information is stored in the given input file named *playlist.txt*.

You will have to use a self-referential structure called *Song* to implement the linked list. The structure will have members for the song title and artist name, both represented as strings. You will need to have several functions to perform different operations on the playlist.

- The *buildPlaylist* function will read the playlist information from the input file and build the linked list. This will be done by repeatedly inserting a node at the end of the linked list. This function should have no parameters, but will return the head pointer. You should maintain a local tail pointer to help you repeatedly insert a node at the end.
- The *showPlaylist* function will receive the head pointer and display the playlist as shown in the sample execution.
- The *playSong* function will receive the head pointer and will play the song as wanted by the user.
- The *removeSong* function will receive the head pointer (as reference) and will remove the song as wanted by the user. Note that if the user wants to remove the first song from the playlist, it will require the first node of the linked list to be deleted; thereby requiring the head pointer to be updated.

Inside the main function, you will need to declare the head pointer; initially both will be null. Then once you build the playlist, you will need to display the menu repeatedly to perform the different operations as selected by the user. You will need to call the appropriate function based on the user option; you will need to validate the user choice for the main menu option (1-4). Note that you will need to keep track of the number of songs in the playlist and you may use a global variable for this purpose; this variable needs to be incremented or decremented every time you are inserting or removing a song.

Instructions:

- This will be an individual programming project.
- Write your code in a file called **prog5.cpp**.
- Use meaningful variable names, helpful comments, and a consistent coding style.
- All program files should have the appropriate comment block at the top:

```
// Name: Your Name
// File Name: prog5.cpp
// Date: Day Month, Year
// Program Description: brief description of the program
```

Deliverables:

You will need to submit the following in Blackboard by the beginning of the next lab period:

- The complete source file and the screenshot of your program execution in Visual Studio or Eclipse.

Grading:

This project is worth 20 points distributed as follows:

In-Lab Demo (10 pts)
- Correct declaration of Song structure (2 pts)
- Correct implementation of buildPlaylist (4 pts)
- Correct implementation of showPlaylist (2 pts)
- Correct implementation of playSong (2 pts)

Complete Program (6 pts)
- Correct implementation of removeSong (4 pts)
- Correct implementation of main function (2 pts)

Program Style (4 pts)
- Meaningful variable names (1 pt)
- Proper indentation (1 pt)
- Sufficient comments (2 pts)

YOU WILL LOSE 50% OF THE POINTS YOU RECEIVE IF YOUR PROGRAM DOES NOT COMPILE AND YOU DO NOT SUBMIT THE SCREENSHOT.

Sample Execution:

```
Enter the playlist filename: playlist.txt
Playlist created!

1) Show the playlist
2) Play a song
3) Remove a song
4) Quit

Enter your option: 0
Invalid option, enter again: 5
Invalid option, enter again: 1

Enter your option: 1

-------------------------------------
1) November Rain        Guns N' Roses
2) Livin' on a Prayer   Bon Jovi
3) Back in Black        AC/DC
4) Hysteria             Def Leppard
5) Wind of Change       Scorpions
6) Here I Go Again      Whitesnake
7) Heaven and Hell      Black Sabbath
8) Perfect Strangers    Deep Purple
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1) Show the playlist
2) Play a song
3) Remove a song
4) Quit

Enter your option: 2
Enter the song number (1-8): 3
Now playing "Back in Black" by AC/DC

1) Show the playlist
2) Play a song
3) Remove a song
4) Quit

Enter your option: 3
Enter the song number (1-8): 4
"Hysteria" removed from playlist!
```

```
1) Show the playlist
2) Play a song
3) Remove a song
4) Quit

Enter your option: 1

-------------------------------------
1) November Rain        Guns N' Roses
2) Livin' on a Prayer   Bon Jovi
3) Back in Black        AC/DC
4) Wind of Change       Scorpions
5) Here I Go Again      Whitesnake
6) Heaven and Hell      Black Sabbath
7) Perfect Strangers    Deep Purple
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1) Show the playlist
2) Play a song
3) Remove a song
4) Quit

Enter your option: 2
Enter the song number (1-7): 7
Now playing "Perfect Strangers" by Deep Purple

1) Show the playlist
2) Play a song
3) Remove a song
4) Quit

Enter your option: 4

Good-bye.
```

** Anything typed in **blue** indicates a user input.