Programming Assignment 4 - Linked List

Due Date :

Section 252- Wednesday March 31st , 2021 - No Later than 3:45 pm.

Section 253 - Wednesday March 31st , 2021 - No Later than 2:15 pm.

For this assignment you will implement linked List ADT using actual pointers. The purpose of the program is to :

A. Build 2 lists (list_1 and list_2). Each list consists of 15 random characters that are between A and Z exclusive Display List_1 and List_2.

B. Create new list (list_3) that contain all elements of list_1 and elements of list_2. Display list_3.
list_3 is created according to the following rules :
Element 1 from list_1 followed by element 1 from list_2 followed by element 2 from list_1 followed by element 2 from list_2 ….etc

C. Display the first element in the list and then calculate and display the number of occurrences of the first element in list_3.

D. Create a new list (list_4) by removing all duplicate characters that are in list_3 . Display number of elements in list_4.

Display List_4.

E. Move the last element in list_4 and place it at the beginning of the same list. Display List_4.

Notes :

- You design your own output format. However, The output must be easy to follow.
- Your program will display the output of point A, followed by the output of point B … etc
- Must place the following at the beginning of the program as a header

Pointer Implementation of Linked List

- Must place the following after before terminating the program as a footer .

This LL program is implemented by :
Husain Gholoom - March 31 , 2021

Style Guidelines:

At the beginning of your program (and **before** the #include statement), include the following :

Header comments (file documentation block) should be at the top of each file and should contain: Author / s, Due Date, Assignment Number, Course number and section, Instructor, and a brief description of the purpose of the code in the file. For example :

```
//      Author : (Your name here!!)
//
//      Programming Assignment Number 4
//
//      Spring 2021 - CS 3358 - Your Section Number
//
//      Due Date :
//
//      Instructor:  Husain Gholoom.
//
//       <Brief description of the purpose of the program>
```

Variable names :

- Must be meaningful.
- The initial letter should be lowercase, following words should be capitalized, no other caps or punctuation (i.e. `weightInPounds`).
- Each variable must be declared on a separate line with a descriptive comment.

Named constants :

- Use for most numeric literals.
- All capitals with underscores (i.e. `TX_STATE_SALES_TAX`)
- Should occur at top of function, or global (only if necessary)

Line length of source code should be no longer than 80 characters (no wrapping of lines).

Indentation :

- Use 2-4 spaces (but be consistent throughout your program).
- Indent blocks, within blocks, etc.
- Use blank lines to separate sections.

Comments for variables :

All variable definitions should be commented as follows:

```
int  gender;     // integer value for the gender,
                 // 1 = Male , 2 = Female ,
```

Rules :

1. Your program **must compile** and run using Code::Blocks 20.03 under windows.
2. The entire program must be **documented according to the style above . See the website for the sample programming style program.**
3. You must use the appropriate libraries in writing this program, however, you are **not allowed** to use libraries that support the functionality of linked lists such as list or forward_list.
4. You are not allowed to use any type of local / global arrays or variables.
5. Must use a class along with its separate 5 functions.
6. You must name your program as :

   - **LastName_FirstName_3358_253_PG4_LL.cpp (not .cbp) or**

   Where LastName is your Last Name and FirstName is your First Name.

7. **No late assignments will be accepted. DO NOT** send your assignment solution via email.

   Use Canvas To upload electronic version of your program

The following points will be deducted if :

- Incorrect file format such as uploading .cbp instead of .cpp , missing electronic copy , compilation Errors , Using arrays or global arrays , vectors or global vectors , not using class and functions within the class … etc **(- 10 points)**

- Other **(at least 1 point each)** :

  - Logical Errors
  - Incorrect program file name.
  - Incorrect Style **such as but not limited to** missing comments or program documentations , missing section number, incorrect header comments, missing header, or signature line … etc