Homework 6

100 Points

Linked Lists

As en entry-level programmer you have to be able to read, understand existing code and update it (add new features). This is one of this assignment's goals: read about 600 lines of code (Projects A & B), compile and run these projects, read and understand the code, then change it as required. You are encouraged to reuse as much code as possible.

Project A: Student List // Code Review + write and test one function (Student struct)
StudentList.h, StudentList.cpp, 22B_H6_A_Stu.cpp

Project B: Student List // Code Review + write and test one function (Student class)
Student.h, StudentList.h, StudentList.cpp, 22B_H6_B_Stu.cpp

Project C: College List // see next pages

Grading

Program 6A – 10

Write a function that displays students with gpa <= a given gpa as show below

```
list.displayList(3.0);
```

Program 6B – 10

Write a function that displays students with gpa <= a given gpa as show below

```
list.displayList(3.0);
```

Program 6C

Build sorted list from file	– 15
Display list	– 20
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CIS 22B
Intermediate Programming Methodologies in C++
Programming Assignments

Project: Build and process a sorted linked list.

Write a program that does the following:

A. Reads data from a text file (**`colleges.txt`**) and inserts them into a sorted linked list. Create the input file using the data on the next page. The list is to be sorted in ascending order by the college ID named **`code`** (a unique key). The **`College`** class has four data members:

`code` (string)	such as	**`SBCC`**
`name` (string)		**`Santa Barbara City College`**
`rank` (int)		**`3`**
`cost` (int)		**`18524`**

College
- code - name - rank - noStu
+ College() + College () // *overloaded constructor* // *setters* + setCode() + setName() + setRank() + setCost() // *getters* + getCode() + getName() + getRank() + getCost() // *other functions* + hDdisplay() + vDisplay()

B. Display the list as shown below (using the `hDisplay()` function):

```
====== ==== ============================ =========
 Code  Rank         Name                    Cost
====== ==== ============================ =========
 DAC    1    De Anza College               19302
 PCC    5    Pasadena City College         22000
 SBCC   3    Santa Barbara City College    30687
====== ==== ============================ =========
```

C. Search: prompt the user to enter a college code, search for that code: if found, display its' data as shown below (using the `vDisplay()` function) otherwise display some message, such as "... Not found" – put this in a loop, to search for more items; to stop the loop enter Q.

```
Search
======
Enter a college code (or Q to stop searching):
OC
College with code "OC" has not been found in this list.

Enter a college code (or Q to stop searching):
SBCC

              Rank: 3
       School Name: Santa Barbara City College
Cost of Attendance: $18524

Enter a college code (or Q to stop searching):
CC

College with code "CC" has not been found in this list.

Enter a college code (or Q to stop searching): Q

 _____END SEARCH SECTION _____
```

D. Delete: prompt the user to enter the college code to be deleted – put this in a loop, to delete more items from the list; to stop the loop enter Q.

```
Delete
======
Enter a college code (or Q to stop deleting):
OC
College with code "OC" has not been found in this list.

Enter a college code (or Q to stop deleting):
SBCC
College with code "SBCC" has been deleted from this list.

Enter a college code (or Q to stop deleting):
CC
College with code "CC" has not been found in this list.

Enter a college code (or Q to deleting): Q

 _____END DELETE SECTION _____
```

E. Destroy list (no memory leak).

Input file (rank, code, name, cost): **`colleges.txt`**

```
3 SBCC Santa Barbara City College; 18524
97 ZZC ZZ College; 9997
5 PCC Pasadena City College; 17666
7 NVC Napa Valley College; 18920
15 PVC Palo Verde College; 18266
4 DVC Diablo Valley College; 20579
6 FC Foothill College; 19302
12 CS College of the Siskiyous; 21936
99 CPC Cupertino College; 9999
10 CC Cuesta College; 19135
8 OC Ohlone College; 15878
98 ABC AB College; 9998
1 DAC De Anza College; 19302
9 IVC Irvine Valley College; 20577
```

Test Plan - will be discussed in class.