

Homework 6

100 Points

Linked Lists

As an 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: City List // see next pages

Grading

Program 6A – 10

Write a function that displays students with gpa \leq a given gpa as show below
`list.displayList(3.0);`

Program 6B – 10

Write a function that displays students with gpa \leq a given gpa as show below
`list.displayList(3.0);`

Program 6C

Build sorted list from file	– 15
Display list	– 20
Delete	– 15
Search	– 15
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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 (**cities.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 city name (assume it is unique). The **City** class has the following data members: state, city name, and year founded:

state (C-string)	such as CA
name (string)	Los Angeles
year (int)	1850

B. Display the list as shown below:

```
==== =====  
State City Year  
==== =====  
TX Dallas 1856  
CA Los Angeles 1850  
PA Philadelphia 1701  
==== =====
```

C. Search: prompt the user to enter a city name, search for that name: if found, display its' data (all members), 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 city name (or Q for stop searching):  
Cupertino  
City "Cupertino" was not found in this list.  
  
Enter a city name (or Q for stop searching):  
Dallas  
State: TX  
Name: Dallas  
Year Founded: 1856  
  
Enter a city name (or Q for stop searching):  
San Jose  
City "San Jose" was not found in this list.  
  
Enter a city name (or Q for stop searching):  
  
_____END SEARCH SECTION_____
```

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

E. Destroy list (no memory leak).

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Input file: **cities.txt**

```
TX 1837 San Antonio
CA 1850 Los Angeles
TX 1856 Dallas
AZ 1881 Phoenix
IL 1837 Chicago
PA 1701 Philadelphia
OH 1834 Columbus
WI 1846 Milwaukee
NY 1898 New York
IN 1832 Indianapolis
MD 1797 Baltimore
DC 1788 Washington
FL 1822 Jacksonville
TN 1826 Memphis
TX 1837 Huston
CA 1850 San Diego
CA 1850 San Jose
MI 1815 Detroit
CA 1850 San Francisco
MA 1822 Boston
```