

# Homework 6

100 Points

## Linked Lists

**Project: Build and process a sorted linked list.** 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 270 lines of code (in three files: [NumberList.h](#), [NumberList.cpp](#), [Homework7.cpp](#)), compile and run the program, understand it, then change it as required. You are encouraged to reuse as much code as possible. Write a program that does the following:

A. Reads data from **countries.txt** (see next page) and inserts them into a sorted linked list. The list is to be sorted in ascending order by the country code named **code** (a unique key). The **Country** structure has four fields:

<b>code</b> (C-string)	such as <b>FR</b>
<b>name</b> (string)	<b>France</b>
<b>capital</b> (string)	<b>Paris</b>
<b>population</b> (int)	<b>60656178</b>

B. Print the list as a table with four columns (header included)

C. Delete countries: prompt the user to enter the code of the country to be deleted – put this in a loop, to delete more countries; to stop the loop enter QUIT

D. Search countries: prompt the user to enter the code of the country, search for that country: if found, display its' data, otherwise display some message, such as "... Not found" – put this in a loop, to search for more countries; to stop the loop enter QUIT

E. Destroy list //no memory leak

**Extra Credit: Create and use a sentinel node.**

### Grading:

Create a project consisting of four files: - 10

<a href="#">CountryList.h</a>	// former <a href="#">NumberList.h</a>
<a href="#">CountryList.cpp</a>	// former <a href="#">NumberList.cpp</a>
<a href="#">Homework6.cpp</a>	
<a href="#">Countries.txt</a>	

Build list from file - 20

Display list - 15

Delete - 15

Search - 15

The main() function - 15

Report - 10

FR France; Paris; 60656178  
MU Mauritius; Port Louis; 1230602  
RU Russia; Moscow; 143420309  
IR Iran; Tehran; 68017860  
TW Taiwan; Taipei; 22894384  
CN China; Beijing; 1306313812  
DO Dominican Republic; Santo Domingo; 8950034  
US United States; Washington, DC; 295734134  
EG Egypt; Cairo; 77505756  
CA Canada; Ottawa; 32805041  
JA Japan; Tokyo; 127288419  
ES Spain; Madrid; 40341462  
FJ Figi; Suva; 893354  
GR Greece; Athens; 10668354  
HU Hungary; Budapest; 10006835  
AU Australia; Canberra; 20090437  
NP Nepal; Kathmandu; 27676547  
LI Liechtenstein; Vaduz; 33717  
MC Monaco; Monaco; 32409  
BU Bulgaria; Sofia; 7262675  
MX Mexico; Mexico City; 106202903  
BR Brazil; Brasilia; 186112794