**CSCI 3400 Homework 4**

In this homework, you will implement a single linked list to store a list of textbooks in a store. Every textbook has a title, author, ISBN, and a price. You will create 2 classes: Textbook and Store. Textbook class should have all above attributes and also a “next” pointer.

|  |  |
| --- | --- |
| **Textbook** | |
| *Type* | *Member Variables* |
| String | title |
| String | author |
| String | ISBN |
| Float | price |
| Textbook\* | next |
| *Return Type* | *Member Function* |
| (constructor) | **Textbook**(string title, string author, string ISBN, float price) |
| Void | **print**() |

Store class should have a head pointer as a member variable (attribute) to keep the list of the books. Also, following member functions should be implemented in this class:

|  |  |
| --- | --- |
| **Store** | |
| *Type* | *Member Variables* |
| Textbook\* | head |
| int | size |
|  | |
| *Return Type* | *Member Function* |
| (constructor) | **Store**() |
| void | **addBook**(string title, string author, string ISBN, float price) |
| void | **removeBook**(string ISBN) |
| void | **print**() |
| void | **print**(char startingLetter) |
| void | **print**(string author) |
| int | **getSize**() |
| bool | **isEmpty**() |
|  |  |

**addBook()**: Adds a new book to the list. The new book is placed by the price of books. For example, if you have following three books:

A new book, “*Applied Cryptography (with $35 price).*” will be placed in by its price between the second and third book.

**removeBook()**: This functions will remove a book using the given ISBN number. If the given ISBN number is not in the list, it will give an error.

**print():** Print all books in order from beginning to end. Title, author, ISBN, and price should be printed for each book.

**print(char startingLetter):** Prints all books whose title starts with the input character, “startingLetter”.

**print(string author):** Prints all books of an author.

**getSize():** returns the number of books in the list

**isEmpty():** returns true if list is empty, returns false otherwise.

The main program is provided for you. So, you will only implement the Textbook and Store classes. I expect you to have 2 files: Store.h and Store.cpp. Textbook class definition will be in the Store.h file.

main.cpp includes all necessary functions to read the dataset file (dataset.txt). Also, several test cases are prepared for you to see whether your code is running or not. You do not need to change any code in the main.cpp file.