

Lab 18

In this lab, we practice using the sorted list class to work with struct type data.

Add the following struct type definition for BookType to slist.h file. In addition, make "ItemType" an alias of the type "BookType".

```
#ifndef SortedList_H
#define SortedList_H
struct BookType
{
    string title;
    string author;
    int publicationYear;
    bool operator < (const BookType & rhs) {
        return (title < rhs.title);
    }
    bool operator != (const BookType & rhs) {
        return (title != rhs.title);
    }
    bool operator > (const BookType & rhs) {
        return (title > rhs.title);
    }
};
typedef BookType ItemType;    // ← this line sets the item type of this list to be of type
                              // "BookType"
class SortedList
{
    ....
};
#endif
```

Write the client program to read the book records from the data file one record at a time. Once the values of one book is read, insert it into the list of books. Repeat this until the end of the data file is reached.

```
int size=0;
BookType aBook;
while (size < MAX_SIZE && getline(myIn, aBook.title)) {
    getline(myIn, aBook.author);
    myIn >> aBook.publicationYear;
    myIn.ignore(100, '\n');
    // You are required add code below
    // to add the book into the list and update "size"
}
```

After the list of books is built, display the books one by one as shown below. Prompt the user to enter the name of an author, display only the books written by this author. Here is the program logic for the client program:

```
// First, add code here to "reset" the iterator for the list object
// Then, apply a "for" loop to go through the entire list item by item:
{
    // First, retrieve the next item
    // Then, check to see if this item has the author name matches with the author name
    entered by the user
    // If the name matches, display the information about the book
}
```

Example output of the program

The list of books are:
Title: A Couple of Blaguards
Author: Frank McCourt
Publication Year: 2013
Title: Angela's Ashes: A Memoir
Author: Frank McCourt
Publication Year: 2012
Title: Born Free
Author: Leo Johnson
Publication Year: 2012
Title: Cat Lovers
Author: Mary Johnson
Publication Year: 2013
Title: Catching Fire
Author: Suzanne Collins
Publication Year: 2013
Title: Emma
Author: Jane Austin
Publication Year: 2013
Title: Harry Potter And The Order Of The Phoenix
Author: J. K. Rowling
Publication Year: 2015
Title: Harry Potter and the Deathly Hallows
Author: J. K. Rowling
Publication Year: 2014
Title: Harry Potter and the Half-Blood Prince
Author: J. K. Rowling
Publication Year: 2015
Title: Mockingjay
Author: Suzanne Collins
Publication Year: 2014

Title: Persuasion
Author: Jane Austin
Publication Year: 2015
Title: Pride and Prejudice
Author: Jane Austin
Publication Year: 2012
Title: The Cat Bible
Author: John Eddleman
Publication Year: 2012
Title: The Fault in Our Stars
Author: John Green
Publication Year: 2013
Title: The Girl on the Train
Author: Paula Hawkins
Publication Year: 2014
Title: The Golden Compass: His Dark Materials
Author: Philips Pullman
Publication Year: 2012
Title: The Hunger Game
Author: Suzanne Collins
Publication Year: 2011
Title: The Jungle Cats
Author: Steve Martin
Publication Year: 2013
Please enter the name of an author: J. K. Rowling
Title: Harry Potter And The Order Of The Phoenix
Author: J. K. Rowling
Publication Year: 2015
Title: Harry Potter and the Deathly Hallows
Author: J. K. Rowling
Publication Year: 2014
Title: Harry Potter and the Half-Blood Prince
Author: J. K. Rowling
Publication Year: 2015