**Programming Assignment #1**

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**Design:**

In this program, the Book header file defined the class and the functions for the Book class were contained in their own source file. The Book objects were contained in an array in order to facilitate efficient searching. Search functions were contained in the main source file, but outside of the main function because they weren’t functions that dealt exclusively with a Book object. No algorithms were used.

**Implementation:**

For the implementation process, I started with the Book header and moved onto the source file once all of my functions were declared. After both files were created, I filled the source file with the mutator and accessor functions before writing the print function. Once the functions were written, I tested them in main(). After the Book class worked completely, I started working on reading books.txt into an array and then wrote the code for user interaction. I used HW7 from Programming Foundations 1 as my guideline for the classes, especially when it came to including header files. The program took about 8 hours to write.

**Testing:**

I tested my program after the Book class’s functions were written, after books.txt was read, and after the user input was written. I didn’t protect my program from the possibility of books.txt not existing because I figured that it was given that the file would exist. When testing user input, I tested the regular 1 or 2 for search options, but I also tested non-number characters. Upon receipt of an unacceptable character, the computer will prompt the user to try again.

I also tested the title search using titles from books.txt. The program successfully finds the book, but only if the capitalization of the input completely matches the capitalization of the book title in books.txt. Fixing that problem would include converting strings to lowercase, which I could not figure out how to do immediately.

**Summary:**

* Overall, the project was a success. If I had to write this program again, I would definitely learn how to convert strings to lowercase. Also, I might make the title search a little more user-friendly by searching for all titles that contain the words inputted by the user, regardless of order. For example, I’d like to be able to type in “expect great” and have the computer return Great Expectations to me. The program took 8 hours to complete.

**Test Case 1:**

Choose how you'd like to search the bookshelf!

(1) Input a title and receive all books that match that title, or

(2) Input a year and receive all books published by that year.

Input a 1 or 2: 1

Input capitalization-correct title: Great Expectations

Great Expectations (2011) by Charles Dickens

Published by Simon & Brown. $10.95

Search again? (y/n): y

Input a 1 or 2: 2

Input year: 1995

Dirk Gently's Holistic Detective Agency (1991) by Douglas Adams

Published by Pocket Books. $7.99

The Long Dark Tea-Time of the Soul (1991) by Douglas Adams

Published by Pocket Books. $7.99

Search again? (y/n): n

Thank you for searching the bookshelf.

Press any key to continue . . .

**Test Case 2:**

Choose how you'd like to search the bookshelf!

(1) Input a title and receive all books that match that title, or

(2) Input a year and receive all books published by that year.

Input a 1 or 2: d

Please try again. 1 or 2? r

Please try again. 1 or 2? what?

Please try again. 1 or 2? uhhh

Please try again. 1 or 2? hello???

Please try again. 1 or 2? you guys are jerks just let me search

Please try again. 1 or 2? oh i see, you need me to input 1 or 2

Please try again. 1 or 2? 1 please

Please try again. 1 or 2? damn

Please try again. 1 or 2? 1

Input capitalization-correct title: groot expectootions

Sorry, nothing matches your search.

Search again? (y/n): y

Input a 1 or 2: 2

Input year: 1000

Sorry, nothing matches your search.

Search again? (y/n): what happens if i type in no

Thank you for searching the bookshelf.

Press any key to continue . . .

**Test Case 3:**

Choose how you'd like to search the bookshelf!

(1) Input a title and receive all books that match that title, or

(2) Input a year and receive all books published by that year.

Input a 1 or 2: 2

Input year: d

Not a year. Input a year: ??

Not a year. Input a year: uh what

Not a year. Input a year: 2001

Dirk Gently's Holistic Detective Agency (1991) by Douglas Adams

Published by Pocket Books. $7.99

The Long Dark Tea-Time of the Soul (1991) by Douglas Adams

Published by Pocket Books. $7.99

Search again? (y/n): y

Input a 1 or 2: 2

Input year: yes

Not a year. Input a year: no

Not a year. Input a year: 2008

David Copperfield (2008) by Charles Dickens

Published by Digireads.com. $14.39

The Ultimate Hitchhikers Guide to the Galaxy (2002) by Douglas Adams

Published by Del Rey. $11.28

Dirk Gently's Holistic Detective Agency (1991) by Douglas Adams

Published by Pocket Books. $7.99

The Restaurant at the End of the Universe (2005) by Douglas Adams

Published by Del Rey. $11.20

The Hitchhiker's Guide to the Galaxy (2004) by Douglas Adams

Published by Crown. $23.10

The Long Dark Tea-Time of the Soul (1991) by Douglas Adams

Published by Pocket Books. $7.99

Life, the Universe and Everything (2005) by Douglas Adams

Published by Del Rey. $11.76

So Long, and Thanks for All the Fish (2005) by Douglas Adams

Published by Del Rey. $11.90

Search again? (y/n): n

Thank you for searching the bookshelf.

Press any key to continue . . .