

Basic C++ : OOP Lab

In this lab you will build a books catalog query application that can load a book catalog, index it and enable users to query it.

Input Data:

Books catalog input can be from various source:

- Library of congress catalog
- National Medical Library Catalog
- Database
- Text file

For the test you will be given a text file with the following format:

First line contains column headers, each subsequent line is a record of one book with the following fields separated by |

- ISBN, unique identification
- Book title
- Book Author, note that in case of several authors, only the first is provided.
- Year of publication
- Publisher

In-Memory Representation:

The application will parse and store in memory a compact representation of the books catalog. Publishers and authors will be stored only once in memory although they appear in multiple books. The data structures used should be optimized for space and time of executing the queries described bellow.

Queries:

User can query the catalog using one of the following:

1. Search for a book by ISBN
2. Search for books by title or part of it, where part is a complete word or words.
3. Optionally specify a word or words that must not be present in the title by prefixing it with a – sign.

The application will execute the query and display the result as list of book records if any are found to satisfy the query.

Demo:

[1. Search by ISBN]

[2. Search by Title]

> **1**

>>ISBN: **425120279**

ISBN: 425120279
Title: The Hunt for Red October
Author: Tom Clancy
Year: 1990
Publisher: Berkley Publishing Group

>2

Words in title: **Tailor**

553227254	Tinker Tailor Soldier Spy	John Le Carre	1982	Bantam Doubleday Dell
723205949	The Tailor of Gloucester	Beatrix Potter	1984	Frederick Warne

>2

Words in title: **House The**

*Will display book with **The** and **House** and in the title- order not important.*

Will Display

679725393|The House of Mirth (Library of America)|Edith Wharton|1990|Vintage Books USA
688163726|The Watch House|Robert Westall|1998|HarperTrophy
590021117|Little House On the Prairie|Laura Ingall Wilder|0|Scholastic Inc
451454243|The Forest House|Marion Zimmer Bradley|1995|Roc
425113892|Someone in the House|Barbara Michaels|1989|Berkley Publishing Group
014036336X|The House With a Clock in Its Walls|John Bellairs|1993|Puffin Books
553258001|The Cider House Rules|John Irving|1986|Bantam Books
671042793|The Russia House|John Le Carre|2000|Pocket

But will not display:

140345809|House of Stairs|William Sleator|1991|Puffin Books

>2

Words in title: **House -Cider -Russia**

*Will display book with **House** in the title but without **Cider** or **Russia**.*

Will Display

140345809|House of Stairs|William Sleator|1991|Puffin Books
679725393|The House of Mirth (Library of America)|Edith Wharton|1990|Vintage Books USA
688163726|The Watch House|Robert Westall|1998|HarperTrophy
590021117|Little House On the Prairie|Laura Ingall Wilder|0|Scholastic Inc
451454243|The Forest House|Marion Zimmer Bradley|1995|Roc
425113892|Someone in the House|Barbara Michaels|1989|Berkley Publishing Group
014036336X|The House With a Clock in Its Walls|John Bellairs|1993|Puffin Books

But will not display:

553258001|The Cider House Rules|John Irving|1986|Bantam Books
671042793|The Russia House|John Le Carre|2000|Pocket

Deliverables:

1. Class Design Document
2. Source code of the application including:
 - a. Makefile
 - b. Unit tests for cardinal components
 - c. Interactive application