Nicole Ortiz
Programming Assignment 1
IT 114 - Adv Programming For IT
5 October, 2018

Documentation Write Up

1. Formulating the Problem

1.1 <u>Problem Description</u>
Design and implement a Java program to create a system that will keep track of books in a local bookstore. The program will maintain a current list of books that can be purchased in a bookstore and ask the user if they would like to order the book if it is not in stock. Book data for the program includes the author's first and last and an array of books written by the author which will contain name of book, isbn number, price and genre. Each author can have a maximum of five books.

1.2 <u>Verbalization</u>
What is the goal?   Create a system that keeps tracks of books in a bookstore
What are the givens?   The max amount of authors and books per author
What are the unknowns? None

1.3 <u>Information Elicitation</u>
Goal   Sort book info and authors
Givens   How many and books to manage
Unknowns   The exact number of books / authors
Conditions   None

2. Planning the Solution

2.1 <u>Solution Strategy</u>
Ask the user first whether to see all books/authors, or search by author. If first, print out all books. If second, user enters a name and it is searched for. Results are printed.

2.2 <u>Goal Decomposition</u>
Sub-goal 1   Check if should print all books or search
Sub-goal 2.1 If print all; print all books
Sub-goal 2.2 If search, use user input and compare to list
Sub-goal 3 Print all search results, if none ask if want to order (add to list)

2.3 Resources
Relevant Commands Array, Book Object, Search loops, System input
Command Breakdown Array of books and authors. Book Object for each book that is in the library (can create more). Search loops to iterate through the array when finding author. System input to attain what the user wants to do and their input.

2.4 Data Organization and Description
Input (givens):

Name	Description	Origin	Used in Sub-goal #
all	Prints complete author/book list	User	1
find	Brings to initial search page	User	1
z	Author's name (search)	User	2.2
newAuthor	Creates new book object	User	3

Output (unknowns):

Name	Description	Origin	Used in Sub-goal #
authors	Array of author's names	Screen	2.1 / 2.2
books	Array of books	Screen	2.1 / 2.2

3. Designing the Solution

3.1 Structure Chart
First Level Decomposition
The first level decomposition shows the broad outline of the whole program. The three main steps in solving this problem are (a) getting the inputs, (b) doing the actual conversions and (c) displaying the results
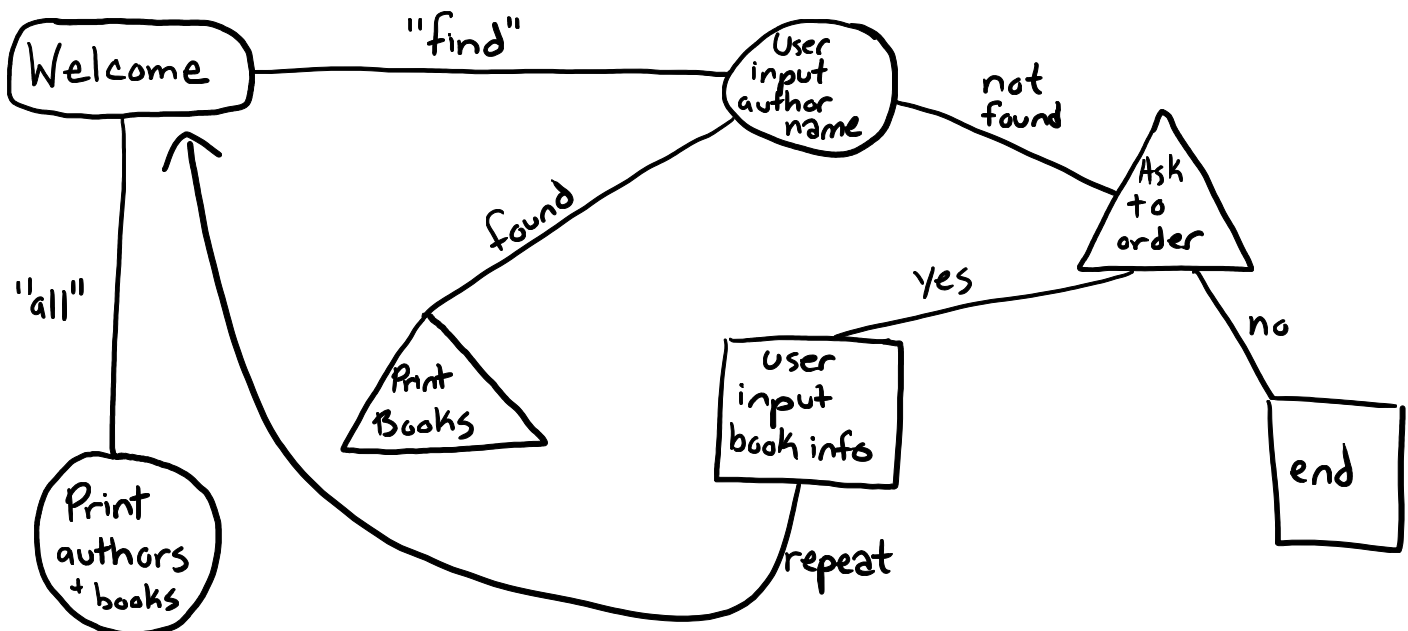
3.2 Module and Data Specifications
Name: Welcome - Display instructions to the user
Input: None
Output: None
Logic: 1st user decision: Display all or search authors

Name: SelectInit - Directs Wclcome choice to correct route
Input: None
Output: None
Logic: Processes Welcome's choice, directs user to next screen
---
Name: Inventory - Displays bookstore inventory (authors & books)
Input: None
Output: authors, books
Logic: Displays authors and corresponding books

Name: Search - Displays instructions to user on search
Input: String
Output: authors, or order book message
Logic: Searches authors for inputted String

Name: UpdateStock - Adds Book Objects to books array
Input: Book Object
Output: None
Logic: adds to books & authors

Name: NewAuthor - Asks user for Book Object info
Input: Strings, int, double
Output: None
Logic: creates new book object (to be used in UpdateStock)

Name: BookStock - Used for program testing
Input: None
Output: None
Logic: creation of multiple book objects

3.3 Algorithm
Algorithm Description
First the program asks the user whether to print all books and authors saved or to search for an author. If the user chooses to print all books, all authors and their corresponding books are printed. If the author chooses to search, they are asked to input the author's name. If the author's name is found, their books and information are printed. If not found, the user if asked if they want to 'order' the book. If yes, user inputs book data. If no, program ends.

4. Translation

4.1 Source Code
Please refer to the included folder labeled 'Source Code' for the main java file Bookstore.java and the book class Book.java

4.2 Program and Module Description

main Welcomes the user to the program; initializes books and authors arrays; runs bookStock (for testing); runs welcome

welcome Prints out the user's initial choices to print all books or search for author by name. Sends choice to selectInit

selectInit Switch. Processes choice from welcome, and redirects user to either inventory, search, or back to welcome.

inventory Goes through authors array and prints out each author and the corresponding book info from books

search Asks user for String of author's name. Goes through authors array. If found, print out all book information from books. If not found, ask user if they want to order the book. If yes, run newAuthor. If no, end program. If error, run search again.

updateStock Adds book Object to books array & corresponding author to authors array.

newAuthor Asks user for book object information. Sends author name and book object to updateStock.

bookStock Creates various book objects for program testing

5. Solution Testing
Test the program by running through all scenarios:
Ask for complete list of authors; Ask for author search (with real author & new author); Create new author

6. Testing: Output
Print List of authors & books

```
C:\Users\Nicole\Desktop>java -jar "Bookstore.jar"
Welcome to the Bookstore!

*****     *****     *****     *****     *****     *****     *****
Would you like to
        (all) See a list of all authors and books?
        (find) Search for a specific author?


 *Please type the command found in {} to select an option
*****     *****     *****     *****     *****     *****     *****
Choice: all
*****     *****     *****     *****     *****     *****     *****
Inventory:
Williams
        Author: Barbara Williams
        Title: Albert's Impossible Toothache
        ISBN: 1
        Price: 3.0
        Genre: fiction
        ---
Seuss
        Author: Dr Seuss
        Title: The Cat in the Hat
        ISBN: 2
        Price: 5.25
        Genre: fiction
        ---
        Author: Dr Seuss
        Title: Breen Eggs and Ham
        ISBN: 4
        Price: 5.25
        Genre: fiction
        ---
Hinton
        Author: S.E Hinton
        Title: The Outsiders
        ISBN: 3
        Price: 12.99
        Genre: fiction
        ---
Card
        Author: Orson Scott Card
        Title: Ender's Game
        ISBN: 5
        Price: 11.99
        Genre: sci fi
        ---

C:\Users\Nicole\Desktop>
```

Search for an author in the list

```
C:\Users\Nicole\Desktop>java -jar "Bookstore.jar"
Welcome to the Bookstore!

*****     *****     *****     *****     *****     *****     *****
Would you like to
        (all) See a list of all authors and books?
        (find) Search for a specific author?


 *Please type the command found in {} to select an option
*****     *****     *****     *****     *****     *****     *****
Choice: find
*****     *****     *****     *****     *****     *****     *****
Search By Author
        Enter An Author's Last Name: Seuss
*****     *****     *****     *****     *****     *****     *****
Results:
        Author: Dr Seuss
        Title: The Cat in the Hat
        ISBN: 2
        Price: 5.25
        Genre: fiction
---
        Author: Dr Seuss
        Title: Breen Eggs and Ham
        ISBN: 4
        Price: 5.25
        Genre: fiction
---

C:\Users\Nicole\Desktop>
```

Search for an author not in the list and create

```
C:\Users\Nicole\Desktop>java -jar "Bookstore.jar"
Welcome to the Bookstore!

*****     *****     *****     *****     *****     *****     *****
Would you like to
        (all) See a list of all authors and books?
        (find) Search for a specific author?


 *Please type the command found in {} to select an option
*****     *****     *****     *****     *****     *****     *****
Choice: find
*****     *****     *****     *****     *****     *****     *****
Search By Author
        Enter An Author's Last Name: Ortiz
*****     *****     *****     *****     *****     *****     *****
Results:
Sorry, this author is not in stock.
Would you like to order a book by this author? (yes/no) yes
*****     *****     *****     *****     *****     *****     *****
Author First Name:
Nicole
Author Last Name:
Ortiz
Book Title:
Me, Myself, and I
ISBN:
1234
Price:
5.55
Genre:
nonfiction
Book Added to library
*****     *****     *****     *****     *****     *****     *****
Would you like to
        (all) See a list of all authors and books?
        (find) Search for a specific author?


 *Please type the command found in {} to select an option
*****     *****     *****     *****     *****     *****     *****
Choice: all
*****     *****     *****     *****     *****     *****     *****
Inventory:
Williams
        Author: Barbara Williams
        Title: Albert's Impossible Toothache
        ISBN: 1
        Price: 3.0
        Genre: fiction
        ---
Seuss
```

Search for an author not in the list and end

```
C:\Users\Nicole\Desktop>java -jar "Bookstore.jar"
Welcome to the Bookstore!

*****     *****     *****     *****     *****     *****     *****
Would you like to
        (all) See a list of all authors and books?
        (find) Search for a specific author?


 *Please type the command found in {} to select an option
*****     *****     *****     *****     *****     *****     *****
Choice: find
*****     *****     *****     *****     *****     *****     *****
Search By Author
        Enter An Author's Last Name: Ortiz
*****     *****     *****     *****     *****     *****     *****
Results:
Sorry, this author is not in stock.
Would you like to order a book by this author? (yes/no) no
Thank you.
*****     *****     *****     *****     *****     *****     *****

C:\Users\Nicole\Desktop>
```