

Bookstore Database Project

# User Guide

COS221a – Fundamental Data Structures

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First, to run the program, you must compile it and execute it as you would any C++ application or run the executable (BookstoreDatabase.exe file).

If no file named "input.txt" is found in the same directory as the application, then the database when opening the program will be empty. When saving changes made to the database, a new "input.txt" file will be generated, including any products contained in the former "input.txt" file.

Upon running, the user is presented with multiple options:

- 1 – Insert Element
- 2 – Delete Element
- 3 – Modify Element
- 4 – Output Table
- 5 – Search
- 0 – Quit

Then, the user is prompted to select an operation to execute. To do this, the user must enter the number corresponding to each operation. If an invalid value is entered (any value different from those presented above), the program will immediately exit without saving any changes made prior.

In addition, when the user is prompted to enter a numerical value (such as when entering a year or the number of pages), entering any non-numerical input will cause the program to produce an error. Thus, discretion must be used when inputting values.

If the user selects option 1 (Insert Element), an additional dialogue prompts them on what type of product they want to add to the database. An input of 0 or any other value not associated to a product type will cancel the operation. If the user chooses a valid type, then they will be prompted to enter attributes for that product. The product is then stored in the database. If a product with the same title as the user input is found, then no new product will be stored in the database, but the stock number of the already-present product will be incremented by 1.

If the user selects option 2 (Delete Element), they will be prompted to enter the full title of the product they want to delete. If a product with the specified title is found in the database, it will be removed.

If the user selects option 3 (Modify Element), they will be asked to enter the full title of the product they want to modify. If a product with the specified title is found, the user will then be prompted to select which attribute to change. Depending on the choice, the user will then be asked to enter a new value for that attribute. If an invalid choice is made, the operation is canceled. If a user modifies the title of a product to that of another already-present product, the stock number of the already-present product with that title will be incremented and all

attributes (if they were different) of the old product will be lost, so care must be taken when conducting this operation.

If the user selects option 4 (Output Table), the entire database is printed out to the console (the description of each product containing all attributes).

If the user selects option 5 (Search), they will be prompted to select a searching criteria - either searching by the full product title, searching with a keyword in the product title's, or searching with a keyword in their descriptions (description contains all product attributes). If searching with the full title is selected, a message indicating whether the product is present in the database will be printed, and, if it is present, the product's attributes are also displayed. If one of the other two options is selected, the user will be asked to enter the desired keyword. If results are found containing the keyword, the user will then be asked to select a sorting criteria to sort the results (alphabetic sort, sorting based on price, or unsorted). An additional prompt asks the user whether they would like to save the results to an external file in the same directory as the program. If yes is selected, then the user must enter their desired file name (must end in .txt). It must be kept in mind that searching through the database is not case-sensitive, so if the user enters "english" as a keyword, all products containing "English" in their descriptions will be returned as search results.

If the user selects 0 (Quit), they will be first asked if they want to save the changes made to the database. Should the user select yes, the changes will be saved and the program will exit. If no is selected, the program will stop running without saving.

Screenshots of the program running:

#### *Initial Screen When First Launching*

```
Initializing inventory with data from txt input file...
Possible operations:
1 - Insert Element
2 - Delete Element
3 - Modify Element
4 - Output table
5 - Search
0 - Quit
Enter your choice:
```

*Message if input.txt file is missing*

```
Initializing inventory with data from txt input file...
Error opening initialization file. Opened inventory is empty.
Possible operations:
1 - Insert Element
2 - Delete Element
3 - Modify Element
4 - Output table
5 - Search
0 - Quit
Enter your choice: _
```

*Prompt when Insert Element selected*

```
Initializing inventory with data from txt input file...
Possible operations:
1 - Insert Element
2 - Delete Element
3 - Modify Element
4 - Output table
5 - Search
0 - Quit
Enter your choice: 1

Enter what type of product you want to add...
1 - Book
2 - Newspaper
3 - Magazine
4 - Audiobook
5 - AudioCD
6 - MovieDVD
0 - Cancel
Enter your choice: 1
Enter product title: Hamlet
Enter product price: 12
Enter number in stock: 2
Enter language: English
Enter publisher name: Penguin Books
Enter publishing year: 2001
Enter number of pages: 150
Enter book genre: Drama
Enter author: William Shakespeare
Enter book type: Play
```

*Prompt when Delete Element selected*

```
Possible operations:
1 - Insert Element
2 - Delete Element
3 - Modify Element
4 - Output table
5 - Search
0 - Quit
Enter your choice: 2

Enter title of product to be deleted (or leave blank to cancel): Hamlet
The element you wanted to search is present in the inventory.
```

*Prompt when Modify Element selected*

```
Initializing inventory with data from txt input file...
Possible operations:
1 - Insert Element
2 - Delete Element
3 - Modify Element
4 - Output table
5 - Search
0 - Quit
Enter your choice: 3

Enter title of product to be modified (or leave blank to cancel): Hamlet
The element you wanted to search is present in the inventory.
Please choose which attribute to modify!
1 - Title
2 - Price
3 - Number in stock
4 - Language
5 - Publisher
6 - Publishing Year
7 - Number of pages
8 - Genre
9 - Author
10 - Book Type
Enter your choice: 2
Old price: 12
Enter new price: 4
```

### *Console when Output Table selected*

```
Initializing inventory with data from txt input file...
Possible operations:
1 - Insert Element
2 - Delete Element
3 - Modify Element
4 - Output table
5 - Search
0 - Quit
Enter your choice: 4

Title: Harry Potter and the Chamber of Secrets
Category: Book
Format: Physical
Price: 22.79
Number in stock: 4
Language: English
Publisher: Scholastic Inc.
Publishing Year: 2021
Number of Pages: 400
Author: JK Rowling
Genre: Fiction
Book Type: Novel

Title: Red (Taylor's version)
Category: AudioCD
Format: Digital
Price: 60
Number in stock: 2
Language: English
Genre: 11/12/2021
```

### *Console when Search Option 1 selected*

```
Initializing inventory with data from txt input file...
Possible operations:
1 - Insert Element
2 - Delete Element
3 - Modify Element
4 - Output table
5 - Search
0 - Quit
Enter your choice: 5

Search based on which criteria?
1 - Search by full product title
2 - Search by keyword in product title
3 - Search by keyword in product description
  - Anything else to go back
Enter your choice: 1

Enter full product title: Hamlet

The element you wanted to search is present in the inventory.
Title: Hamlet
Category: Book
Format: Physical
Price: 12
Number in stock: 2
Language: English
Publisher: Penguin Books
Publishing Year: 2001
Number of Pages: 150
Author: William Shakespeare
```

### *Console when Search Option 2/3 selected*

```
Initializing inventory with data from txt input file...
Possible operations:
1 - Insert Element
2 - Delete Element
3 - Modify Element
4 - Output table
5 - Search
0 - Quit
Enter your choice: 5

Search based on which criteria?
1 - Search by full product title
2 - Search by keyword in product title
3 - Search by keyword in product description
  - Anything else to go back
Enter your choice: 3

Enter keyword in product description: English

Select sorting criteria for outputting results of search:
1 - Alphabetical Sort
2 - Sorted by Price
Anything else - Unsorted
Enter your choice: 2


Title: The Guardian
Category: Newspaper
Format: Physical
Price: 2
Number in stock: 2
```

### *Prompt to save search results*

```
Title: Red (Taylor's version)
Category: AudioCD
Format: Digital
Price: 60
Number in stock: 2
Language: English
Genre: 11/12/2021
Release Date: Folk
Electronic: false
Musician: Taylor Swift
Runtime: 2.2
Tracklist: State of Grace (Taylor's version), Red (Taylor's ve
ouble (Taylor's version), All Too Well (Taylor's version), 22

Do you want to save results to an external file? (y/n): y
Enter output txt file name (add .txt to the end): Results.txt
```

*Console when Quit selected*

 Microsoft Visual Studio Debug Console

```
Initializing inventory with data from txt input file...
Possible operations:
1 - Insert Element
2 - Delete Element
3 - Modify Element
4 - Output table
5 - Search
0 - Quit
Enter your choice: 0

Do you want to save changes made to the database? (y/n): n

C:\Users\Deni-chan uwu owo\Desktop\BookstoreDatabase\Debug\B
Press any key to close this window . . .
```