서점 재고 관리 프로그램

설명:

프로그램은 다음과 같은 기능을 사용자에게 제공하여야 함.

입력기능

  1. 서점의 재고는 파일에 저장되어 있으며, 이 파일의 데이터를 입력 받아 프로그램이 동작

사용자 서비스 기능

  2. 재고의 데이터를 저자의 이름 순으로 정렬하여 출력

  3. 특정 작가의 작품을 제목 순으로 출력

  4. 새로운 서적 정보 입력

  5. 특정 서적의 가격 정보 변경

  6. 특정 서적의 재고 숫자 변경

  7. 재고에 있는 전체 서적의 재고 숫자 출력

  8. 재고에 있는 서적들에 대한 전체 가격 출력

규칙:

  1. 메인 함수는 아래의 알고리즘으로 작성 되어야 함. 작성시 아래 메인함수에 다른 기능이
      나 파라메타의 변경이 없어야 함.

      Int main (void) {

          greeting( );

          theInvertory 선언 /* theInventory는 구조체를 원소로한 일차원 배열임 */

          readDatabase(theInventory);

          flag = 1;

          while (flag) {

              choice = printMenu( );

              if (choice == "1")

                  displayInventory(theInventory);

```
        else if (choice == "2")

            displayAuthorsWork(theInventory);

        else if (choice == "3")

            addBook(theInventory);

        else if (choice == "4")

            changePrice(theInventory);

        else if (choice == "5")

            changeQty(theInventory);

        else if (choice == "6")

            totalQty(theInventory);

        else if (choice == "7")

            calculateTotalAmount(theInventory)

        else if (choice == "8") {

            printf("Thank you for using this program\n");

            flag = 0;}

        else

            printf("Invalid choice\n");

    return 0;

}
```
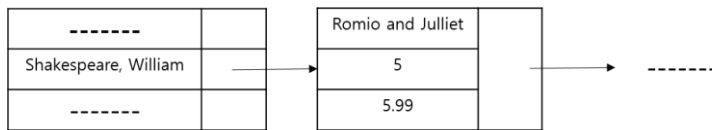
2. 전체 프로그램에 대해 재고를 저장하기 위한 자료구조(theInventory)는 하나만 선언하여야 하고 메인함수에서 선언 하여야 함. theInventory는 구조체 일차원배열로 구조체는 작가의 이름(last name, first name)과 이 작가의 서적정보를 담는 연결리스트의 주조를 저장할 변수를 포함 하여야 함. 작가의 이름은 저장하기 전, last name 과 first name의 첫번째 알파벳만 대문자이고 나머진 소문자로 나타내어야 함. 서적정보를 저장할 연결리스트는 서적명, 재고량, 서적당 가격과 다음 노드를 가르킬 포인터변수를 포함하는 자기참조 구조체가 필요함.

예:

Shakespeare, William	

Romio and Julliet	
5	
5.99	

→ -------

3. 함수의 정의는 아래와 같고 매개변수 변경은 불가능함. 아래 함수 외 다른 함수 정의는 가능하나 아래 정의된 함수에서만 호출이 가능하고 메인에서의 호출은 불가능함. 또한 전역변수 사용은 금지함.

함수정의

greeting( )

이 함수는 이 프로그램을 사용하여 고맙다는 표현을 출력하는 함수로 샘플 실행의 내용을 포함하여도 괜찮음.

readDatabase (inventory)

이 함수는 사용자에게 입력파일명을 요구하고, 입력파일의 데이터를 2번에 있는 구조로 만드는 함수임. 즉, theInventory를 만드는 함수임.

printMenu( )

이 함수는 사용자 메뉴를 출력하는 함수로 사용자의 choice를 린턴함. 샘플 실행을 참조할 것

displayInventory(inventory)

이 함수는 재고를 출력하는 함수로 저자의 정렬 순으로 출력하며 저자별로는 책 제목 순으로 정렬된 정보를 출력해줌

displayAuthorsWork(inventory)

이 함수는 사용자에게 저자명(last name 과 first name)을 요구하고 그 저자의 책 정보를 제목으로 정렬된 순으로 출력해줌. 만약 사용자가 요청한 저자가 정보에 없다면 적절한 출력을 해줘야 함.

addBook(inventory)

이 함수는 사용자에게 저자명, 책제목, 재고량, 그리고 책 가격을 요구하고 만약 저자가 존재하면, 만약 새 책일 경우 정보를 저장하고 이미 존재 한다면, 적절한 출력을 해 줘야 함. 만약 저자가 존재하지 않다면, theInvetory에 새로운 원소(저자명)가 추가되어 그 저자에 대한 정보로 저장되어야 함.

재고량은 정수로 입력되어야 하고,

가격은 양의 실수로 입력되어야 함.

changePrice(inventory)

이 함수는 사용자에게 가격정보를 변경하기 위해 필요한 저자의 이름과 책 제목을 요구하고, 양의 실수로 입력될 때만 가격을 변경해 줌. 만약 저자나 혹은 책제목이 존재 하지 않을 경우 적절한 출력 메시지 필요

changeQty(inventory)

이 함수는 위 changePrice와 같은 기능을 하나 가격이 아닌 재고량을 변경해 주는 기능을 함. 항상 양의 정수를 입력 받아야 함.

totalQty(inventory)

이 함수는 재고에 있는 모든 책의 개수를 계산하여 출력해 줌.

calculateTotalAmount(inventory)

이 함수는 재고에 있는 모든 책의 가격을 합산하여 출력해 줌.

4. 입력파일 구조

lastname^firstname^title^qty^price

아래 입력파일에서 콤마는 스페이스로 변경하여 사용하여야 함.

Shakespeare,William,Romeo and Juliet,5,5.99

Shakespeare,William,Macbeth,3,7.99

Dickens,Charles,Hard Times,7,27.00

Austin,Jane,Sense And Sensibility,2,4.95

Dickens,Charles,David Copperfield,4,26.00

Shakespeare,William,Antony And Cleopatra,10,7.00

Austin,Jane,Emma,3,5.95

Shakespeare,William,The Merchant Of Venices,8,3.99

Hawthorne,Nathaniel,The Scarlet Letter,6,18.00

Shakespeare,William,Hamlet,10,6.99

Chaucer,Geoffrey,The Canterbury Tales,4,20.00

Dickens,Charles,Great Expectations,2,25.00

Shakespeare,William,King Lear,4,3.99

Bronte,Emily,Wuthering Heights,5,6.50

샘플 실행

```
bash-4.1$ python proj2.py
Welcome to the bookstore program!
Enter the name of the file: none.txt
Error reading database
Enter the name of the file: database.txt


-------------------------------
Enter 1 to display the inventory
Enter 2 to display the books by one author
Enter 3 to add a book
Enter 4 to change the price
Enter 5 to change the qty on hand
Enter 6 to view the total number of books in the inventory
Enter 7 to see the total amount of the entire inventory
Enter 8 to exit
Enter your choice: 1
The author is:  Austin, Jane

        The title is: Emma
        The qty is: 3
        The price is: 5.95

        ----

        The title is: Sense And Sensibility
        The qty is: 2
        The price is: 4.95

        ----

The author is:  Bronte, Emily

        The title is: Wuthering Heights
        The qty is: 5
        The price is: 6.50

        ----

The author is:  Chaucer, Geoffrey

        The title is: The Canterbury Tales
        The qty is: 4
        The price is: 20.00

        ----

The author is:  Dickens, Charles

        The title is: David Copperfield
        The qty is: 4
        The price is: 26.00

        ----

        The title is: Great Expectations
        The qty is: 2
        The price is: 25.00

        ----
```

```
Enter 8 to exit
Enter your choice: 2
Enter the author's first name: john
Enter the author's last name: steinBECK
Sorry, but no books by Steinbeck, John in the inventory


--------------------------------
Enter 1 to display the inventory
Enter 2 to display the books by one author
Enter 3 to add a book
Enter 4 to change the price
Enter 5 to change the qty on hand
Enter 6 to view the total number of books in the inventory
Enter 7 to see the total amount of the entire inventory
Enter 8 to exit
Enter your choice: 2
Enter the author's first name: WILLiam
Enter the author's last name: shakesPEARE
        The title is: Antony And Cleopatra
        The qty is: 10
        The price is: 7.00


        ----

        The title is: Hamlet
        The qty is: 10
        The price is: 6.99


        ----

        The title is: King Lear
        The qty is: 4
        The price is: 3.99


        ----

        The title is: Macbeth
        The qty is: 3
        The price is: 7.99


        ----

        The title is: Romeo And Juliet
        The qty is: 5
        The price is: 5.99


        ----

        The title is: The Merchant Of Venice
        The qty is: 8
        The price is: 3.99


        ----



--------------------------------
Enter 1 to display the inventory
Enter 2 to display the books by one author
Enter 3 to add a book
Enter 4 to change the price
Enter 5 to change the qty on hand
Enter 6 to view the total number of books in the inventory
Enter 7 to see the total amount of the entire inventory
```

The title is: Hard Times
        The qty is: 7
        The price is: 27.00

The author is: Hawthorne, Nathaniel

        The title is: The Scarlet Letter
        The qty is: 6
        The price is: 18.00

The author is: Shakespeare, William

        The title is: Antony And Cleopatra
        The qty is: 10
        The price is: 7.00

        The title is: Hamlet
        The qty is: 10
        The price is: 6.99

        The title is: King Lear
        The qty is: 4
        The price is: 3.99

        The title is: Macbeth
        The qty is: 3
        The price is: 7.99

        The title is: Romeo And Juliet
        The qty is: 5
        The price is: 5.99

        The title is: The Merchant Of Venice
        The qty is: 8
        The price is: 3.99

Enter 1 to display the inventory
Enter 2 to display the books by one author
Enter 3 to add a book
Enter 4 to change the price
Enter 5 to change the qty on hand
Enter 6 to view the total number of books in the inventory
Enter 7 to see the total amount of the entire inventory

Enter 8 to exit
Enter your choice: **3**
Enter the author's first name: **charLOTTE**
Enter the author's last name: **bronTE**
Enter the title: **shirLEY**
Enter the qty: **hello**
Invalid input for qty.
Enter the qty: **-5**
Invalid input for qty.
Enter the qty: **5.0**
Invalid input for qty.
Enter the qty: **5.25**
Invalid input for qty.
Enter the qty: **5**
Enter the price: **hello**
Invalid input for price.
Enter the price: **4**
Invalid input for price.
Enter the price: **4.256**
Invalid input for price.
Enter the price: **-4.25**
Invalid input for price.
Enter the price: **4.25**

Enter 1 to display the inventory
Enter 2 to display the books by one author
Enter 3 to add a book
Enter 4 to change the price
Enter 5 to change the qty on hand
Enter 6 to view the total number of books in the inventory
Enter 7 to see the total amount of the entire inventory
Enter 8 to exit
Enter your choice: **3**
Enter the author's first name: **nathanIEL**
Enter the author's last name: **hawTHORNE**
Enter the title: **the HOUSE of the seven GABLES**
Enter the qty: **5**
Enter the price: **6.50**

Enter 1 to display the inventory
Enter 2 to display the books by one author
Enter 3 to add a book
Enter 4 to change the price
Enter 5 to change the qty on hand
Enter 6 to view the total number of books in the inventory
Enter 7 to see the total amount of the entire inventory
Enter 8 to exit
Enter your choice: **3**
Enter the author's first name: **CHARLOTTE**
Enter the author's last name: **brONTE**
Enter the title: **jane EYRE**
Enter the qty: **7**
Enter the price: **8.25**

Enter 1 to display the inventory
Enter 2 to display the books by one author
Enter 3 to add a book
Enter 4 to change the price
Enter 5 to change the qty on hand
Enter 6 to view the total number of books in the inventory
Enter 7 to see the total amount of the entire inventory
Enter 8 to exit

```
Enter your choice: 3
Enter the author's first name: william
Enter the author's last name: shakespeare
Enter the title: hamlet
This book is already in the Inventory and cannot be added again


---------------------------------
Enter 1 to display the inventory
Enter 2 to display the books by one author
Enter 3 to add a book
Enter 4 to change the price
Enter 5 to change the qty on hand
Enter 6 to view the total number of books in the inventory
Enter 7 to see the total amount of the entire inventory
Enter 8 to exit
Enter your choice: 1
The author is:  Austin, Jane

        The title is: Emma
        The qty is: 3
        The price is: 5.95

        ----

        The title is: Sense And Sensibility
        The qty is: 2
        The price is: 4.95

        ----

The author is:  Bronte, Charlotte

        The title is: Jane Eyre
        The qty is: 7
        The price is: 8.25

        ----

        The title is: Shirley
        The qty is: 5
        The price is: 4.25

        ----

The author is:  Bronte, Emily

        The title is: Wuthering Heights
        The qty is: 5
        The price is: 6.50

        ----

The author is:  Chaucer, Geoffrey

        The title is: The Canterbury Tales
        The qty is: 4
        The price is: 20.00

        ----

The author is:  Dickens, Charles

        The title is: David Copperfield
        The qty is: 4
        The price is: 26.00

        ----

        The title is: Great Expectations
        The qty is: 2
```

```
            The price is: 25.00

            ----

            The title is: Hard Times
            The qty is: 7
            The price is: 27.00

            ----

The author is:  Hawthorne, Nathaniel

            The title is: The House Of The Seven Gables
            The qty is: 5
            The price is: 6.50

            ----

            The title is: The Scarlet Letter
            The qty is: 6
            The price is: 18.00

            ----

The author is:  Shakespeare, William

            The title is: Antony And Cleopatra
            The qty is: 10
            The price is: 7.00

            ----

            The title is: Hamlet
            The qty is: 10
            The price is: 6.99

            ----

            The title is: King Lear
            The qty is: 4
            The price is: 3.99

            ----

            The title is: Macbeth
            The qty is: 3
            The price is: 7.99

            ----

            The title is: Romeo And Juliet
            The qty is: 5
            The price is: 5.99

            ----

            The title is: The Merchant Of Venice
            The qty is: 8
            The price is: 3.99

            ----


---------------------------------
Enter 1 to display the inventory
Enter 2 to display the books by one author
Enter 3 to add a book
Enter 4 to change the price
Enter 5 to change the qty on hand
Enter 6 to view the total number of books in the inventory
Enter 7 to see the total amount of the entire inventory
```

Enter 8 to exit
Enter your choice: **7**
The total value of the inventory is $944.45

Enter 1 to display the inventory
Enter 2 to display the books by one author
Enter 3 to add a book
Enter 4 to change the price
Enter 5 to change the qty on hand
Enter 6 to view the total number of books in the inventory
Enter 7 to see the total amount of the entire inventory
Enter 8 to exit
Enter your choice: **4**
Enter the author's first name: **Franz**
Enter the author's last name: **Kafka**
No such author in your database. So you cannot change the pri

----
Enter 1 to display the inventory
Enter 2 to display the books by one author
Enter 3 to add a book
Enter 4 to change the price
Enter 5 to change the qty on hand
Enter 6 to view the total number of books in the inventory
Enter 7 to see the total amount of the entire inventory
Enter 8 to exit
Enter your choice: **4**
Enter the author's first name: **william**
Enter the author's last name: **SHAKESPEARE**
Enter the title: **julius caesar**
No book with the title Julius Caesar by Shakespeare, William i
----
Enter 1 to display the inventory
Enter 2 to display the books by one author
Enter 3 to add a book
Enter 4 to change the price
Enter 5 to change the qty on hand
Enter 6 to view the total number of books in the inventory
Enter 7 to see the total amount of the entire inventory
Enter 8 to exit
Enter your choice: **4**
Enter the author's first name: **william**
Enter the author's last name: **SHAKESPEARE**
Enter the title: **hamLET**
Enter the price: **hello**
Invalid input for the new price.
Enter the price: **-5.45**
Invalid input for the new price.
Enter the price: **5.455**
Invalid input for the new price.
Enter the price: **5.0**
Invalid input for the new price.
Enter the price: **5.45**
Price will be updated from 6.99 to 5.45

Enter 1 to display the inventory
Enter 2 to display the books by one author
Enter 3 to add a book
Enter 4 to change the price
Enter 5 to change the qty on hand
Enter 6 to view the total number of books in the inventory
Enter 7 to see the total amount of the entire inventory
Enter 8 to exit
Enter your choice: **7**
The total value of the inventory is $929.05

Enter 1 to display the inventory
Enter 2 to display the books by one author

Enter 3 to add a book
Enter 4 to change the price
Enter 5 to change the qty on hand
Enter 6 to view the total number of books in the inventory
Enter 7 to see the total amount of the entire inventory
Enter 8 to exit
Enter your choice: 6
The total number of books is 90

Enter 1 to display the inventory
Enter 2 to display the books by one author
Enter 3 to add a book
Enter 4 to change the price
Enter 5 to change the qty on hand
Enter 6 to view the total number of books in the inventory
Enter 7 to see the total amount of the entire inventory
Enter 8 to exit
Enter your choice: 5
Enter the author's first name: truman
Enter the author's last name: capote
No such author in your database. So you cannot change the qty

----
Enter 1 to display the inventory
Enter 2 to display the books by one author
Enter 3 to add a book
Enter 4 to change the price
Enter 5 to change the qty on hand
Enter 6 to view the total number of books in the inventory
Enter 7 to see the total amount of the entire inventory
Enter 8 to exit
Enter your choice: 5
Enter the author's first name: charles
Enter the author's last name: dickens
Enter the title: a tale of two cities
No book with the title A Tale Of Two Cities by Dickens, Charles in in

----
Enter 1 to display the inventory
Enter 2 to display the books by one author
Enter 3 to add a book
Enter 4 to change the price
Enter 5 to change the qty on hand
Enter 6 to view the total number of books in the invento
Enter 7 to see the total amount of the entire inventory
Enter 8 to exit
Enter your choice: 5
Enter the author's first name: charLES
Enter the author's last name: dickens
Enter the title: david copperFIELD
Enter the qty: hello
Invalid input for the new qty.
Enter the qty: -9
Invalid input for the new qty.
Enter the qty: 9.25
Invalid input for the new qty.
Enter the qty: 9
Qty will be updated from 4 to 9

Enter 1 to display the inventory
Enter 2 to display the books by one author
Enter 3 to add a book
Enter 4 to change the price
Enter 5 to change the qty on hand
Enter 6 to view the total number of books in the invento
Enter 7 to see the total amount of the entire inventory
Enter 8 to exit
Enter your choice: 6
The total number of books is 95

Enter 1 to display the inventory
Enter 2 to display the books by one author
Enter 3 to add a book
Enter 4 to change the price
Enter 5 to change the qty on hand
Enter 6 to view the total number of books in the inventory
Enter 7 to see the total amount of the entire inventory
Enter 8 to exit
Enter your choice: 8
Thank you for using this program