Book

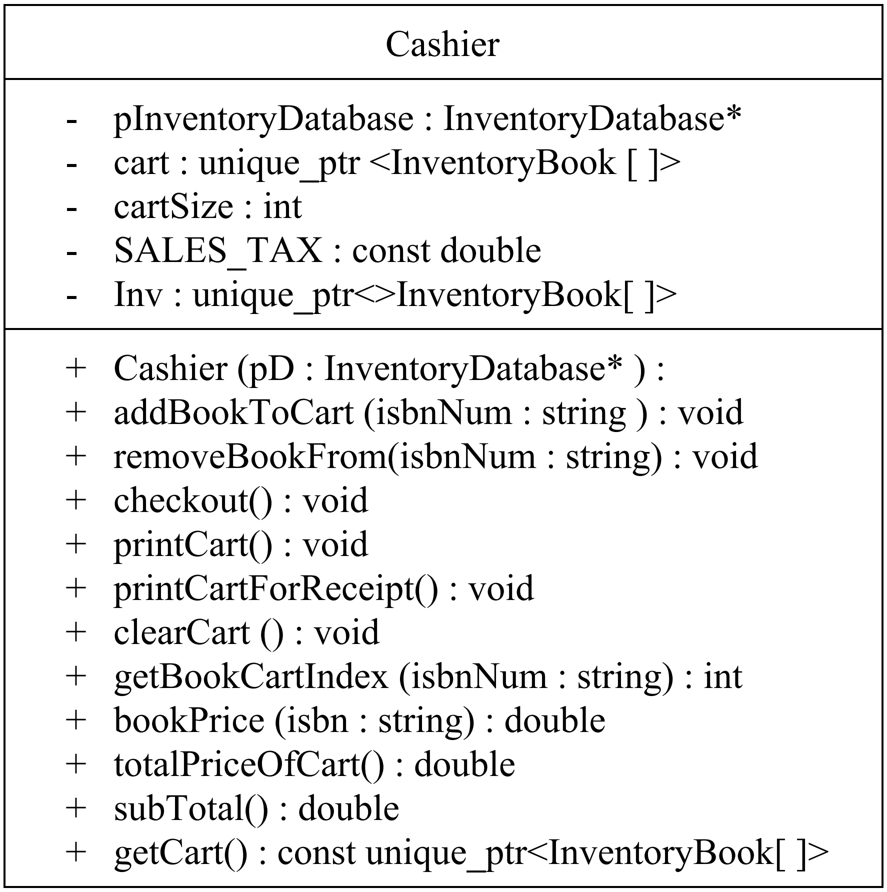
+ Isbn : string
+ title : string
+ author : string
+ publisher : string

+ Book() :
+ Book(is : string, ti : string, au string, pu : string)
+ ~Book() :
+ operator = (book : const Book&) : Book&
+ <<friend>> operator << (os : ostream&, book : const Book&) : ostream&

InventoryBook

+ addDate : string
+ quantity : int
+ wholeSale : double
+ retail : double

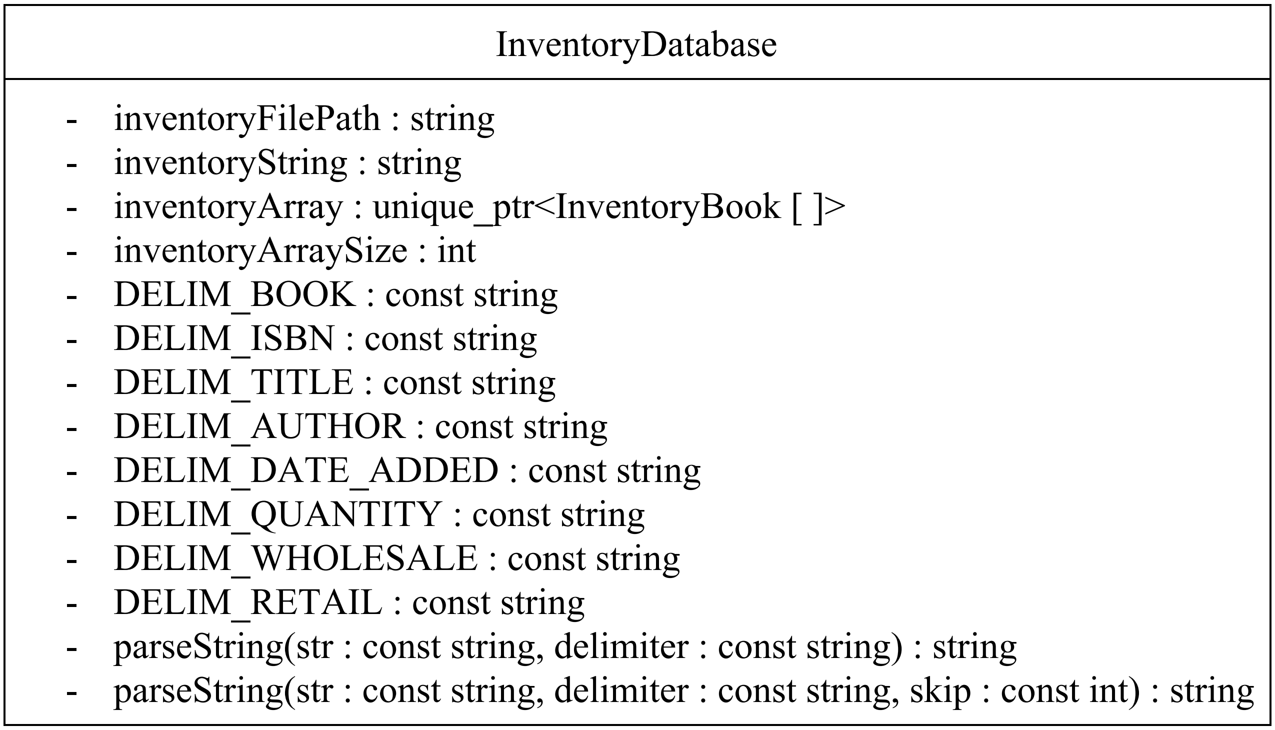
+ Inventory Book () :
+ InventoryBook (book : const InventoryBook&) :
+ InventoryBook(is : string, ti : string, au : string, pu : string, ad : string, qu : int, wh : double, re : double) :
+ ~InventoryBook() :
+ operator = (inventory book : const InventoryBook&) : InventoryBook&
+ operator + (n : const int) : InventoryBook&
+ operator - (n : const int) : InventoryBook&
+ operator += (n : const int) : InventoryBook&
+ operator -= (n : const int) : InventoryBook&
+ operator ++() : InventoryBook&
+ operator --() : InventoryBook&
+ operator ++(int) : InventoryBook&
+ operator --(int) : InventoryBook&
+ <<friend>>operator << (os : ostream&, inventoryBook : const InventoryBook&) : ostream&



```
Cashier

-  pInventoryDatabase : InventoryDatabase*
-  cart : unique_ptr <InventoryBook [ ]>
-  cartSize : int
-  SALES_TAX : const double
-  Inv : unique_ptr<>InventoryBook[ ]>

+  Cashier (pD : InventoryDatabase* ) :
+  addBookToCart (isbnNum : string ) : void
+  removeBookFrom(isbnNum : string) : void
+  checkout() : void
+  printCart() : void
+  printCartForReceipt() : void
+  clearCart () : void
+  getBookCartIndex (isbnNum : string) : int
+  bookPrice (isbn : string) : double
+  totalPriceOfCart() : double
+  subTotal() : double
+  getCart() : const unique_ptr<InventoryBook[ ]>
```



```
InventoryDatabase

-  inventoryFilePath : string
-  inventoryString : string
-  inventoryArray : unique_ptr<InventoryBook [ ]>
-  inventoryArraySize : int
-  DELIM_BOOK : const string
-  DELIM_ISBN : const string
-  DELIM_TITLE : const string
-  DELIM_AUTHOR : const string
-  DELIM_DATE_ADDED : const string
-  DELIM_QUANTITY : const string
-  DELIM_WHOLESALE : const string
-  DELIM_RETAIL : const string
-  parseString(str : const string, delimiter : const string) : string
-  parseString(str : const string, delimiter : const string, skip : const int) : string
-   fileToString(path : const string) : string
-   bookToString(book : InventoryBook) : string
-   inventoryArrayToString () : string
-   getNumBooksInString(str : const string) : int
```

```
+   InventoryDatabase() :
+   InventoryDatabase(path : const string) :
+   InventoryDatabase(const InventoryDatabase&) :
+   ~InventoryDatabase() :
+   buildInventoryArray(path : const string) : bool
+   getInventoryArray() : const unique_ptr<InventoryBook [ ]>
+   getInventoryArraySize() : const int
+   setBookIsbnByIsbn(isbn : const string, edit : const string) : void
+   setBookTitleByIsbn(isbn : const string, edit : const string) : void
+   setBookAuthorByIsbn(isbn : const string, edit : const string) : void
+   setBookPublisherByIsbn(isbn : const string, edit : const string) : void
+   setBookAddDateByIsbn(isbn : const string, edit : const string) : void
+   setBookQuantityByIsbn(isbn : const string, edit : const int) : void
+   setBookWholesaleByIsbn(isbn : const string, edit : const double) : void
+   setBookRetailByIsbn(isbn : const string, edit : const double) : void
+   addToBookQuantityByIsbn(isbn : const string, amount : const int) : void
+   addBookToArray(book : InventoryBook) : void
+   removeBookFromArray(index : int) : void
+   getBookByIsbn(isbn : string) : InventoryBook
+   getBookIndexByIsbn(isbn : string) : int
+   operator = (const InventoryDatabase) : InventoryDatabase&
```

Report

```
-   convertDataToInt(date : string) : int
-   <T : template> : template
-   Swap (a : T&, b : T&) : void
```

```
+   selectionSortQuantity(books : InventoryBook*, numBooks : int) :
    void
+   selectionSortCost(books : InventoryBook*, numBooks : int) : void
+   selectionSortAge(books : InventoryBook*, numBooks : int) : void
+   getBookTotalWolesale(book : InventoryBook) : double
```

+ getInventoryTotalWolesale(book : InventoryBook*, numBooks : int) : double
+ getBookTotalRetail(book : InventoryBook) : double
+ getInventoryTotalRetail(book : InventoryBook*, numBooks : int) : double

Main Pseudo Code:

```
Do this
Display Main Menu:

Cashier Mode.
Inventory Mode.
Report Mode.
Exit.

Get user input.
If user chooses Cashier Mode

    Display Cashier Mode Menu:

    Sell books
    Back

    If user chooses Sell Book

    Display Sell Books Menu:

    Add Book To Cart
    Remove Book From Cart
    Checkout
    Back

    If user chooses Add Book To Cart (in Sell Book Menu)
        Ask the user for an isbn
        Read the isbn from the user
        While
            Isbn is a 13 integer long, proceed
            If not display error message and read it again
        For every element in the inventory array
            Check if user isbn equals one of the inventory book isbn
                If book isbn found has a quantity less than or equal to zero
                    Display error message
                If quantity is greater call addBookToCart function in Cashier class
                    Decrease quantity book in copy of inventory array.
                Display a message letting user know book is added.
        If user isbn does not equal any of the inventory book isbn
            Display an error message letting the user know there is no book
    Ask the user if they want to add another book
    while user input is valid
        Proceed.
        If not display error message and read it again
    If user answer is one
        Run the loop again
    If user answer is two
        Return to Sell Book Menu

If user Chooses Remove Book From Cart (in Sell Book Menu)
    Ask user for a book isbn
    Read the book isbn from the user
    While
        Book isbn is a 13 digit long proceed
        If not
            Display error message and read it again
    To check if book exists in cart call getBookCartIndex in cashier
        If it is equal to negative one
            Display error message: book wasn't found on cart
        Also if the cart is empty
            Display error message: cart is empty.
        If book exists
            Call remove function from cashier class.
            Display message letting user know is remove.
    Ask the user if they want to remove another book from cart
    while user input is valid
        Proceed.
        If not display error message and read it again
    If user answer is one
        Run the loop again
    If user answer is two
        Return to Sell Book Menu

If user chooses Checkout (in Sell Book Menu)
    If cart is greater than zero
        Display the user cart so far with each price and a total price.
```

```
            Asks the user if they want to checkout or cancel the transaction
            If user inputs one
                It is going to print the receipt.
                Call the checkout function from cashier class
                Return to the Sell Book Menu
            If user inputs two
                Displays a message: Transaction Cancel
        If cart is less than or equal to zero
            Displays a message: Cart is empty
    If user chooses Back option (in Sell Book Menu)
        Goes back to Cashier Mode Menu

    If user chooses Back option (in Cashier Mode Menu)
        Goes back to Main Menu

If user chooses Inventory Mode
    Display the Inventory Mode Menu

    Find Book By Id
    Find Book By Isbn
    Add Book To Database
    Remove Book From Database
    Edit Book In Database
    Back

    If user chooses Find Book By Id (in Inventory Mode Menu)
        If copy of database array is equal to zero
            Display error message: database empty
        Else
            Proceed
        Ask the user for the ID of the book
        Reads the user input ID
            If id is less than zero or id is greater than the copy of database array
                Display error message: ID does not exists in database.
            Else
                Display books relevant to user’s input ID
                Press Enter to continue and return to Inventory Mode Menu

    If user chooses Find Book By Isbn (in Inventory Mode Menu)
```

```
        If copy of database array is equal to zero
            Display error message: database empty
        Else
            Proceed
        Ask the user to input the book isbn
        Reads the book isbn
        For every element in the copy of the inventory array
            If the user isbn equal a book isbn in copy of the inventory array
                Assigns the index of the book to a variable
                And sets a boolean variable to true.
        If boolean variable is false
            Display an error message: Book isbn does not exists in inventory.
        Else
            Display inventory array relevant to user book isbn.
            Press enter to continue and return to Inventory Mode Menu

    If user chooses Add Book To Database (in Inventory Mode Menu)
        While the variable isbn is an empty string
            Ask user for a book isbn
            Reads the user isbn
        If user isbn number is not 13 digits
            Display error message: isbn must be 13 digits
        Else
            Try an exception if parameter is out of rage
            If an empty string is catch
                Error message: isbn must be a number
            For every element in the inventory copy array
                If the user isbn equal to an existing isbn in the array
                    Display error message: isbn already exists
        Ask user for a book title
        Reads the book title
        Ask the reader for an author
        Reads the book author
        Asks the user for a publisher
        Reads the user publisher
        While the variable addDate is empty
            Ask the user for a date
            Read the user date
            If the user date does not equal 10 digits
```

```
                Set boolean variable error to true
            If user date does not contain the slash character
                Set boolean variable error to true
            else
                Try an exception if parameters are incorrect
                If an empty string is catch
                    Set boolean variable error to true

            if month, date, and year are not in the right range
                Set boolean variable error to true
            If error equals true
                Display error message: date must be mm/dd/yyyy
        Ask user for the number of books
        Reads the number of books
        Ask user for the wholesale price
        Reads user wholesale price
        Ask user for the retail price
        Reads the retail price
        Creates a variable from the InventoryBook class
        Class the constructor of the class in order to create an InventoryBook object
        An inventory database variable calls addBookToArray function to add the book
            Displays a message: Book successfully added
        Press enter to continue and return to Inventory Mode Menu

    If user chooses Remove Book From Database (in Inventory Mode Menu)
        if copy of database array is equal to zero
            Display error message: database empty
        Else
            Proceed
         Ask the user to enter the book isbn
        Read the book isbn
        For every element in the inventory copy array
            If the user isbn is equal to an existing book isbn in the array
                Call removeBookFromArray function from the inventory class
                Sets boolean variable bookExists to true
            If bookExists equals to true
                Display a message: successfully removed from inventory
            else
                Display error message: book does not exists in database
```

```
If user chooses Edit Book By Isbn (in Inventory Mode Menu)
    if copy of database array is equal to zero
        Display error message: database empty
    Else
        Proceed
     Ask the user to enter the book isbn
    Read the book isbn
    For every element in the inventory copy array
        If user isbn is equal to an existing isbn in the copy array
            Set bookExists to true
            Assign book index to foundIndex
            Assign the book to foundBook
        If bookExists is equal to false
            Display an error message: book does not exists on inventory
        else
            Display book attributes

            Isbn
            Title
            Author
            Publisher
            Date added
            On-hand
            Wholesale
            Retail

        Ask the user to choose an attribute to edit
        Read the user attribute

            If user chooses Isbn:
            While newString variable is an empty string
                Ask user to enter the new isbn
                Read the isbn from user
                Check if isbn is 13 digits if not
                    Display error message: isbn 13 digits long
                else
                    Try an exception if out of range
                    If empty string is catched
                        Display error message
        For every element in the inventory array
            If user isbn equals another isbn from array
                Display an error message
Inventory database calls setBookIsbnByIsn function sets new isbn
Display message: Isbn has been successfully added

If user chooses Title:
Ask the user for the book title
Reads the book title from the user
inventoryDatabase calls setBookTitleByIsbn and sets new title
Display message: title successfully added

If user chooses Author:
Ask the user for the book author
Reads the book author from the user
inventoryDatabase calls setBookAuthorByIsbn and sets new author
Display message: author successfully added

If user chooses Publisher:
Ask the user for the book publisher
Reads the book publisher from the user
inventoryDatabase calls setBookPublisherByIsbn sets publisher
Display message: publisher successfully added

If user chooses Added Date:
While newString is empty
    Ask user for the book date
    Reads the date from the user
If date is not have 10 characters long
    Set boolean variable error to true
else
    If date does not contain slashes /
        Set boolean variable error to true
    Try an exception if out of rage
    If empty input is catched
        Set boolean variable error to true
    If month, day and year is out of range respectively
        Set boolean variable error to true
If error is equal to true
```

```
                    Display an error message: date must be mm/dd/yyyy
                inventoryDatabase calls setAddDateByIsbn, sets new date
                Display message: Date successfully added.

                If user chooses Quantity:
                Ask the user for the book quantity
                Reads the book quantity from the user
                inventoryDatabase calls setBookQuantityrByIsbn sets quantity
                Display message: quantity successfully added

                If user chooses Wholesale:
                Ask the user for the book wholesale
                Reads the book wholesale from the user
                inventoryDatabase calls setBookWholesalerByIsbn sets wholesale
                Display message: wholesale successfully added

                If user chooses Retail:
                Ask the user for the book retail
                Reads the book retail from the user
                inventoryDatabase calls setBookRetailByIsbn sets new retail
                Display message: retail successfully added

            Press enter to continue and return to Inventory Mode Menu

    If user Chooses Back (in Inventory Mode Menu)
        Goes back to the Main menu

If user chooses Report Mode:
    Display Report Mode Menu

    Inventory List
    Inventory Wholesale value
    Inventory Retail value
    List By Quantity
    List By Cost
    List By Age
    Back

    If user chooses Inventory List (in Report Mode Menu)
```

```
        Display the whole book Inventory list

    If user chooses Inventory Wholesale Value (in Report Mode Menu)
        Display book Inventory by wholesale order value.

    If user chooses Inventory Retail Value (in Report Mode Menu)
        Display book Inventory by retail order value.

    If user chooses List By Quantity (in Report Mode Menu)
        Display book Inventory in quantity order

    If user chooses List By Cost (in Report Mode Menu)
        Display book Inventory in cost order

    If user chooses List By Age (in Report Mode Menu)
        Display book Inventory in age order

    If user chooses Back (in Report Mode Menu)
        Goes back to the Main Menu

If user chooses Exit:
    Displays goodbye function

======= Helper Functions =======

generateBars
    Gets an int as a parameter
        Depending on the number it generates the equal sign character “=”
    Returns the bars generated

getUserInputInt
Gets two int const as parameters
Do this
    Try an exemption if user input is out of range
        If user input exceeds the max and min bounds
            Display error message
    If an invalid argument is catch
        Display error message
        Set boolean variable to true.
    If out of range is catch
        Display error messahe
        Set boolean variable to true
    If empty string is catch
        Display error message
        Set boolean variable to true.
While error is true
    Do the loop again
Return the user integer

getUserInputDouble
Gets two double const as parameters
Do this
    Try an exemption if user input is out of range
        If user input exceeds the max and min bounds
            Display error message
    If an invalid argument is catch
        Display error message
        Set boolean variable to true.
    If out of range is catch
        Display error messahe
        Set boolean variable to true
    If empty string is catch
        Display error message
        Set boolean variable to true.
While error is true
    Do the loop again
Return the user double

getUserInputString
    Reads the user input by line

    Returns the user string

clearScreen
Gets a boolean as a parameter
    Clears the screen
    Display header after cleaning the screen
```

Pause

Pauses the screen until the user press enter

Initialize

Resize the window terminal

Creates two variables

Uses System mode to resize the terminal window

printHeader

Displays Serendipity Bookseller header

displayGoodbye

Clears the screen

Displays the goodbye message.