



Library Manager Software Guide

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1 Introduction

The Library Manager is a database client program designed to make the process of issuing and returning library items such as books or movies easier for school libraries. By connecting to and interfacing with a central database server, the software is able to track issuances, reservations, returns, and additions—as well as providing an easy process through which librarians issue and return items for the library’s members:

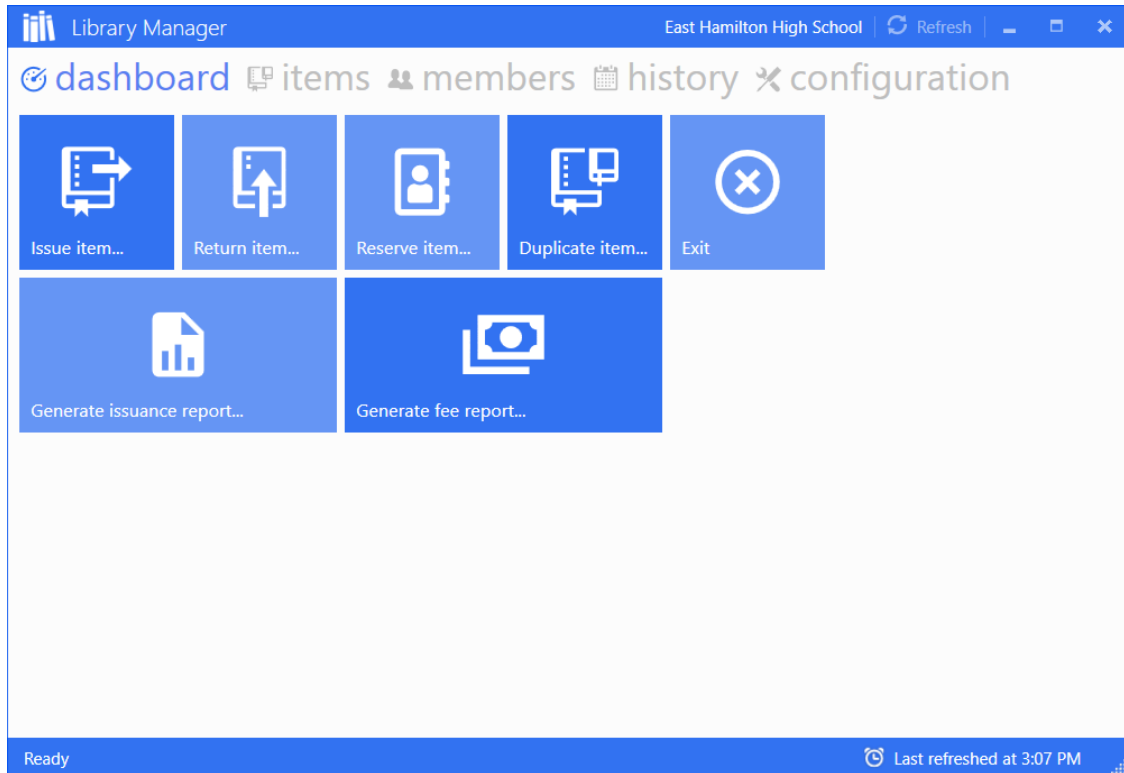


Figure 1: The home screen of the program that appears on startup, showing its basic organization.

2 Organization

Organized into five separate **tabs**, the program supports navigation throughout its pages via their labels at the top of the window (Figure 2). Each has a different purpose, which is briefly detailed below (*See the individual sections for more information*):

- *Dashboard*: Contains shortcut buttons that display a variety of wizards for accomplishing the most common tasks a librarian would accomplish on a given day, such as issuing, returning, or generating issuance reports for books and items.
- *Items*: Contains a grid view of each item (called `IssuableItem` in the data back-end) that allows editing, addition, and deletion of each
- *Members*: The same as *Items* but containing each library member (called `Member`) and further allowing editing, addition, and deletion
- *History*: A specialized grid view that shows a read-only record of each history action that occurs within the library system (called `LoggedAction`)

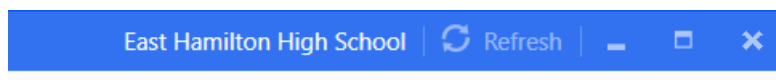
- *Configuration*: Allows for server-wide configuration of library behavior values, such as how many items can be issued concurrently or how long each type of member has until their items must be returned



Figure 2: Each tab appears at the top of the window with their corresponding icon. Here, the *Dashboard* tab is highlighted.

For advanced users, the tabs can be navigated through once focused by pressing **Ctrl + Tab**, which will go to the next tab to the right. Alternatively, tabs can be stepped backwards through by pressing **Ctrl + Shift + Tab**

2 Window Controls



At the top-right hand of the window, a handful of notable, universal controls are present which can be used regardless of the application's current state:

1. **Refresh**: This button refreshes the client application's connection to the central server and updates any out-of-date information
2. **Maximize / Minimize**: These buttons are used to control the window's position on-screen and control whether it is hidden from view in the task-bar
3. **Close**: This button closes the client application and terminates its connection to the server and can be automatically activated by pressing **Alt + F4**

2 Status Bar



The status bar displays the status of the application at any given point, such as whether it is in the process of refreshing its data cache and the date/time of its last refresh. As an additional feature, the small collection of dots on the bottom-right is called the *handle* and can be used to re-size the window:

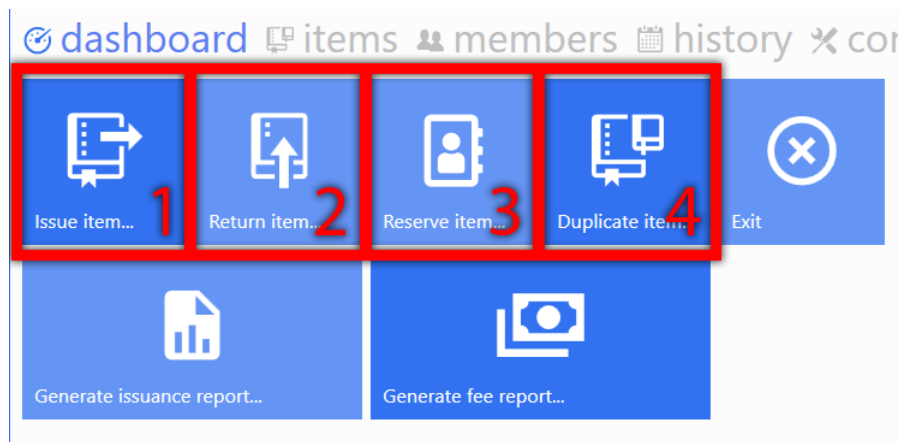


Figure 3: The handle control

3 Dashboard


The dashboard view contains a variety of *tiles* that provide access to common library actions, each of which is described in further detail below (with the only exception of the **Exit** tile, which just closes the client application and terminates its connection to the server).

3 Item Tiles



Four of the *tiles* available in the *Dashboard* deal directly with library items, such as books or movies. Specifically, they are the following *tiles*:


1. **Issue item...** Begins a wizard that first prompts the librarian to select a member, and then to select the item to issue

 When the *Select Items* wizard page appears, any items that the previously-selected member has reserved will have their title appear in **bold** followed by the tag '(Reserved).'

2. **Return item...** Begins a wizard that prompts the librarian to select the item to be returned
3. **Reserve item...** Begins a wizard that first prompts the librarian to select a member, and then to select the item to reserve
4. **Duplicate item...** Begins a wizard that first prompts the librarian to select the item to duplicate, and then to provide the **ID** of the new, duplicated item

3.1.1 Wizard Pages

The *Item Tiles* involve, for the most part, two major wizard pages for selecting library items and members:

 For advanced users, Titles (for items) and Names (for members) can be *filtered* through the use of the filter boxes provided above the list of available options. Furthermore, the current *filter* can be cleared by pressing the *clear filter* button at the far-right.

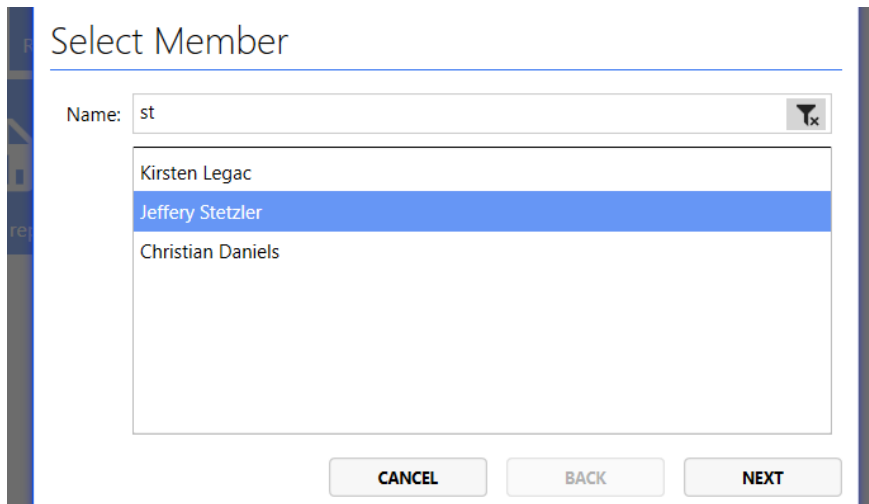


Figure 4: The *Select Member* wizard page allowing a library member to be selected. Note the use of the *Name filter* text box.

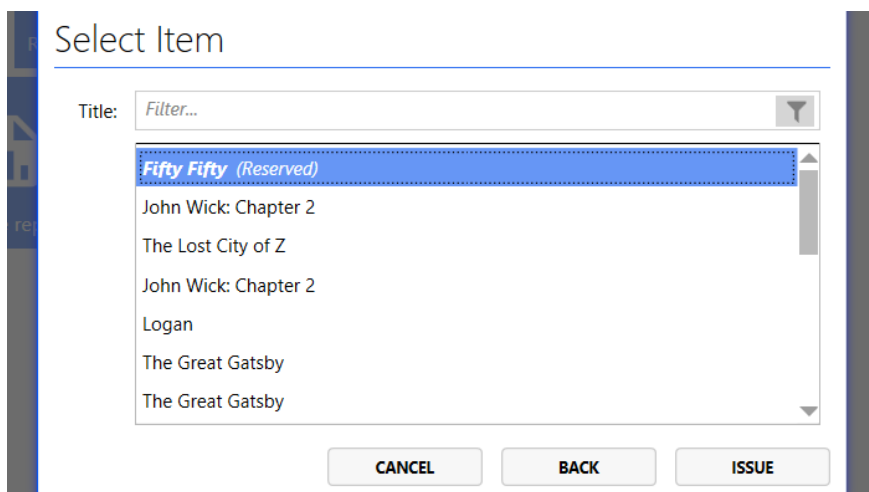
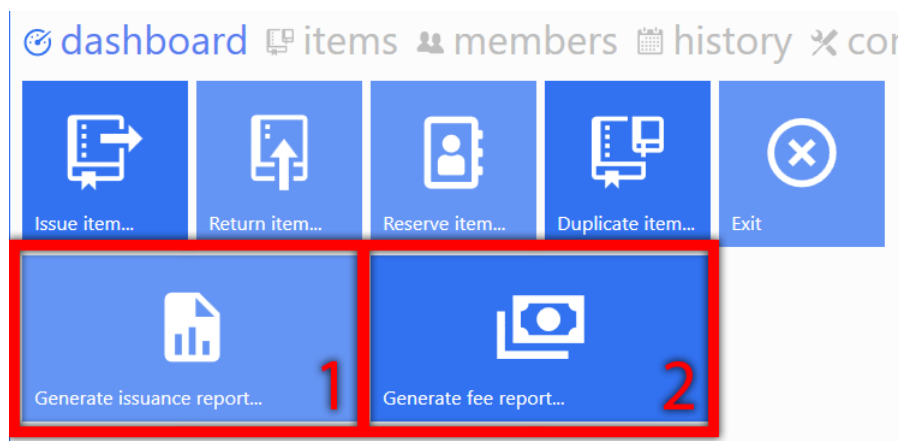


Figure 5: The *Select Item* wizard page allowing an issuable item to be selected. Note the bolded title of the first item ("*Fifty Fifty*"), which has been reserved by the previously-selected member.

3 Report Tiles



The final two *tiles* available in the *Dashboard* provide means for the librarian to generate and print weekly reports. Two types are available:

1. **Generate issuance report...** Creates a report that details the library items such as books and movies that are currently checked out
2. **Generate fee report...** Creates a report that shows the fees currently being incurred for each library member with a non-zero balance



The file location for where the reports will be placed can be set either by typing in an absolute file path or by using the **Browse** button.

Examples of each report, which are opened for printing right after they are generated, appear as follows: (Note that each field is filled with a set of sample data)

Weekly Issuance Report

East Hamilton High School - Week of (3/11/2018)

- Gina Candler (Teacher; ID:0A)

ID	Type	Title	Loan Date	Return By Date
010000	Book	Orphan Train	3/10/2018	3/31/2018
040000	Book	A Long Walk to Water	3/10/2018	3/31/2018

- Jeffery Stetzler (Teacher; ID:0C)

ID	Type	Title	Loan Date	Return By Date
070001	Book	The Woman in the Window	1/11/2018	2/1/2018

- Susan Morrison (Teacher; ID:0F)

ID	Type	Title	Loan Date	Return By Date
110007	Movie	Citizen Kane	3/10/2018	3/31/2018

- Michael Franks (Teacher; ID:0G)

ID	Type	Title	Loan Date	Return By Date
050001	Book	The Fault in Our Stars	3/10/2018	3/31/2018

Weekly Overdue Fee Report

East Hamilton High School - Week of (2/23/2018)

- Jeffery Stetzler (Teacher; ID:0C) Total Fees: \$0.91

Fee Incurred	Title	Type	Issued On	Overdue Since
\$0.91	The Woman in the Window	Book	12/27/2017	1/17/2018

- Brody Helton (Student; ID:05) Total Fees: \$2.48

Fee Incurred	Title	Type	Issued On	Overdue Since
\$1.17	The Catcher in the Rye	Book	1/24/2018	2/7/2018
\$1.31	Get Out	Movie	1/12/2018	1/26/2018

4 Items

ID	TYPE	TITLE	AUTHOR	STATUS
Books: 21				
010000	Book	Orphan Train	Christina Baker Kline	Issued for: 21 days
020000	Book	The Catcher in the Rye	J.D. Salinger	Overdue
020001	Book	The Escape Artist	Brad Meltzer	Shelved
030000	Book	The Book Thief	Markus Zusak	Shelved
030001	Book	The Great Alone	Kristin Hannah	Shelved
040000	Book	A Long Walk to Water	Linda Sue Park	Issued for: 21 days
040001	Book	Educated	Tara Westover	Shelved
050000	Book	The Giver	Lois Lowry	Shelved
050001	Book	The Fault in Our Stars	John Green	Issued for: 21 days
060000	Book	Of Mice and Men	John Steinbeck	Shelved
060001	Book	One of Us is Lying	Karen M. McManus	Issued for: 14 days
070000	Book	A Game of Thrones	George R. R. Martin	Issued for: 14 days
070001	Book	The Woman in the Window	A. J. Finn	Overdue

The items view displays each library item that is accessible to the librarian as rows in an expansive, scroll-able grid. Supporting the addition, edit, and deletion of the information stored on the database (See *Adding, Editing, and Deleting Items*), the grid also contains useful information about the status of each item and its place in the library and the world at-large (See *Item Status Details*).



Each *column* can be *sorted* in descending order (↑) or ascending order (↓) by pressing the left mouse button (Ⓛ) on the column headers, allowing specific entries to be found easily when one of their details is known.

4 Item Status Details

For each library item such as a book or a movie, its status (whether it is issued, shelved, overdue, or reserved and for how long) can be displayed by pressing the *row details* button (∨) to the right of its status summary (Figures 6 and 7):

010000	Book	Orphan Train	Christina Baker Kline	Issued for: 21 days
020000	Book	The Catcher in the Rye	J.D. Salinger	Overdue
020001	Book	The Escape Artist	Brad Meltzer	Shelved

Figure 6: The *row details* button (∨) is highlighted and can be pressed to show the row details (*below*)



The member that owns the library item can be viewed in the *Members* tab by left-clicking (Ⓛ) the hyper-link of their name in the expanded item status view (See Figure 7).

010000	Book	Orphan Train	Christina Baker Kline	Issued for: 21 days	⬆
Issued to: Gina Candler (Teacher) Issued on: 3/11/2018 1:58:11 PM Due on: 4/1/2018 1:58:11 PM Time left: 21 days					
020000	Book	The Catcher in the Rye	J.D. Salinger	Overdue	⬇

Figure 7: The expanded row details show who the item is overdue/reserved/issued to, how long it has been like that, and the time remaining on its current status, if applicable

4 Adding, Editing, and Deleting Items

On each row, the following operations can be performed to change the items present in the database:

- **Edits:** Each library item row can be edited, first by beginning the edit with a double-left-click (⌘⌘). After typing in the new row or selecting the new option, the edit can be saved by either clicking out (⌘) or by pressing .

i When changing the ID of an existing or new row, be sure to enter in a unique value that doesn't exist anywhere else. If a duplicate ID is inputted, the data will be highlighted as invalid and the edit cannot be committed (*See below*).

020001	Book	The Escape Artist	Brad Meltzer	Shelved	⬇
020001	Book	The Book Thief	Markus Zusak	Shelved	⬇

- **Additions:** By scrolling down to the bottom row of the grid with a plus icon to the left (+), the addition row can be double-clicked (⌘⌘) to begin editing by normal. Then, when the edits are committed by pressing , the new row will be added to the database.

010000	Movie	Citizen Kane	Orson Welles	Issued for: 21 days	⬇
+					⬇

i If the desire is to duplicate the item with a new ID, it is faster to use the *Duplicate item...* item tile in the *Dashboard* tab, select the item to duplicate, and enter in its new ID.

- **Deletions:** To delete a row, simply select it in the grid and press . Note that if the item is checked out with a library member, a confirmation box will display as shown below:

Delete?

The item you are attempting to delete has an owner associated with it. Continue?

5 Members

ID	NAME	TYPE	ITEMS	FEE
Students: 10				
00	Josh Park	Student	0	\$0.00
00	Joshua Lagria	Student	1	\$0.00
01	Kendall Tate	Student	0	\$0.00
02	Abbi Ellis	Student	0	\$0.00
03	Caleb Fox	Student	1	\$0.00
04	Christian Daniels	Student	0	\$0.00
05	Brody Helton	Student	2	\$2.49
06	Jared Azevedo	Student	0	\$0.00
07	Joseph Azevedo	Student	1	\$0.00
08	Andre Luo	Student	1	\$0.00
Teachers: 7				
0A	Gina Candler	Teacher	2	\$0.00

Similar to the *Items* tab, the *Members* tab provides a way to view and edit the people who are members of the library. Moreover, similar to the feature of status details in the *Items* tab, the library items that the member has checked out or reserved, such as books or movies, can be viewed by pressing the row details button (∨) at the right. **Every feature available to the *Items* tab is available to the *Members* tab**, including adding, editing, and deleting items, viewing row details, sorting by column, and validation of unique IDs.

In its default configuration, the client-server system supports two types of library members, each of which can be configured separately:

- **Student**, which represents an enrolled student of the school
- **Teacher**, which represents a staff member of the school

6 History

TIMESTAMP	TYPE	ITEM	MEMBER
3/11/2018 1:58:11 PM	Addition	<i>John Wick: Chapter 2</i>	--
3/11/2018 1:58:11 PM	Return	<i>The Outsiders</i>	Abbi Ellis
3/11/2018 1:58:11 PM	Reservation	<i>Fifty Fifty</i>	Joshua Lagria
3/11/2018 1:58:11 PM	Issuance	<i>The Catcher in the Rye</i>	Brody Helton
3/11/2018 1:58:11 PM	Issuance	<i>One of Us is Lying</i>	Joseph Azevedo
3/11/2018 1:58:11 PM	Issuance	<i>Split</i>	Andre Luo
3/11/2018 1:58:11 PM	Reservation	<i>Guardians of the Galaxy Vol. 2</i>	Jeffery Stetler

The *History* grid view provides a read-only record of each logged action that occurs within the client-server library system. Although rows can't be added, edited, or deleted, the *filtering* feature that is available with the *Items* and *Members* tabs is also available with the *History* tab.

Four different types of `LoggedAction` (the type of the history records in the data back-end) exist:

1. **Issuance:** Occurs whenever a library item, such as a book or movie, is checked out to a specific member
2. **Reservation:** Occurs whenever a library member requests that a certain issuable item be reserved to them
3. **Return:** Occurs whenever a member brings back an item and it is checked in
4. **Addition:** Occurs whenever a new issuable item is added to the library to be checked out or reserved



When an item becomes **overdue**, no action is logged, as the duration for each item is a client-side display, not a server-side, constantly updated variable. Instead, whenever the member's status is viewed, they will have a fee to their account and the item will be marked as overdue when it is brought to be returned (where payment would be expected).

Similar to the row details display in the *Members* and *Items* tabs, the Titles of items and the Names of members can be left-clicked (⓪) to follow a link that highlights the correct row in the corresponding tabs.

7 Configuration

	Students:	Teachers:
Maximum check-out duration:	14 + - days	21 + - days
Reservation duration:	5 + - days	7 + - days
Maximum simultaneous check-outs:	3 + - items	5 + - items
Maximum simultaneous reservations:	2 + - items	4 + - items
Maximum overdue fee:	1.50 + - USD	1.00 + - USD

COMMIT CHANGES

RESET CHANGES

As the last of the five tabs, the *Configuration* tab provides a means to edit server-wide library variables. With a set of configuration values for both *Students* and *Teachers*, the following entries exist:

- *Maximum check-out duration:* Represents how long an item can be checked out before it either needs to be returned or becomes overdue
- *Reservation duration:* Represents how long an item, such as a book or a movie, is reserved for

- *Maximum simultaneous check-outs*: Represents the maximum number of issuable items that can be checked out at any given time
- *Maximum simultaneous reservations*: Represents the maximum number of items that can be reserved at any given time
- *Maximum overdue fee*: Represents the maximum fee that can be incurred for a single item, given infinite time (the fee function is an inverse exponential falloff to an asymptotic value).



Values can be changed either by pressing the numerical up/down buttons to the right of their value (+/-) or by directly left-clicking (⊖) on them and typing in the new value manually.

7 Committing or Resetting Values

Once a value has been changed from its current value, both buttons below will become enabled:

The screenshot shows a configuration interface for 'Maximum overdue fee'. It contains two input fields, each with a value and a currency unit (USD). The first field has a value of 1.50 and the second has a value of 1.00. Below these fields are two buttons: 'COMMIT CHANGES' and 'RESET CHANGES'. The 'COMMIT CHANGES' button is highlighted with a red box and a red number '1' next to it. The 'RESET CHANGES' button is also highlighted with a red box and a red number '2' next to it.

1. **Commit Changes**: Applies the changes that exist in the local configuration values to the central database.
2. **Reset Changes**: Resets the changes that exist at the local level and resets the view to the server's values