

Echo Library Software Documentation

Intro

Echo Library Software is a fully-featured tool that can be used to track data that is typically used by libraries. This includes users, books, and checkouts. In the image below, various parts of the software are shown and labelled with a number which will be used to describe said part in this document.

The screenshot displays the Echo Library Software interface, divided into three main sections: Users, Books, and Checkouts. Each section contains a search bar, a table of data, and several action buttons. The interface is dark-themed with light-colored text and buttons.

Users Panel:

- 0: Add User button
- 1: Remove User button
- 2: Search bar
- 3: Table with columns Name and Type

Name	Type
Varun Kumar	Student
Roshan Patel	Student
Albert Einstein	Teacher
Tyler Sedacca	Student
Kevin Huang	Student
Nikola Tesla	Teacher

Books Panel:

- 4: Add Book button
- 5: Remove Book button
- 6: Search bar
- 7: Table with columns Title and Author

Title	Author
The Great Gatsby	Scott F Fitzgerald
Curious George	Margaret Ray
The Count of Monte C	Alexander Dumas
A Game of Thrones	George R R Martin
To Kill a Mockingbird	Harper Lee
The Dark Tower	Stephen King
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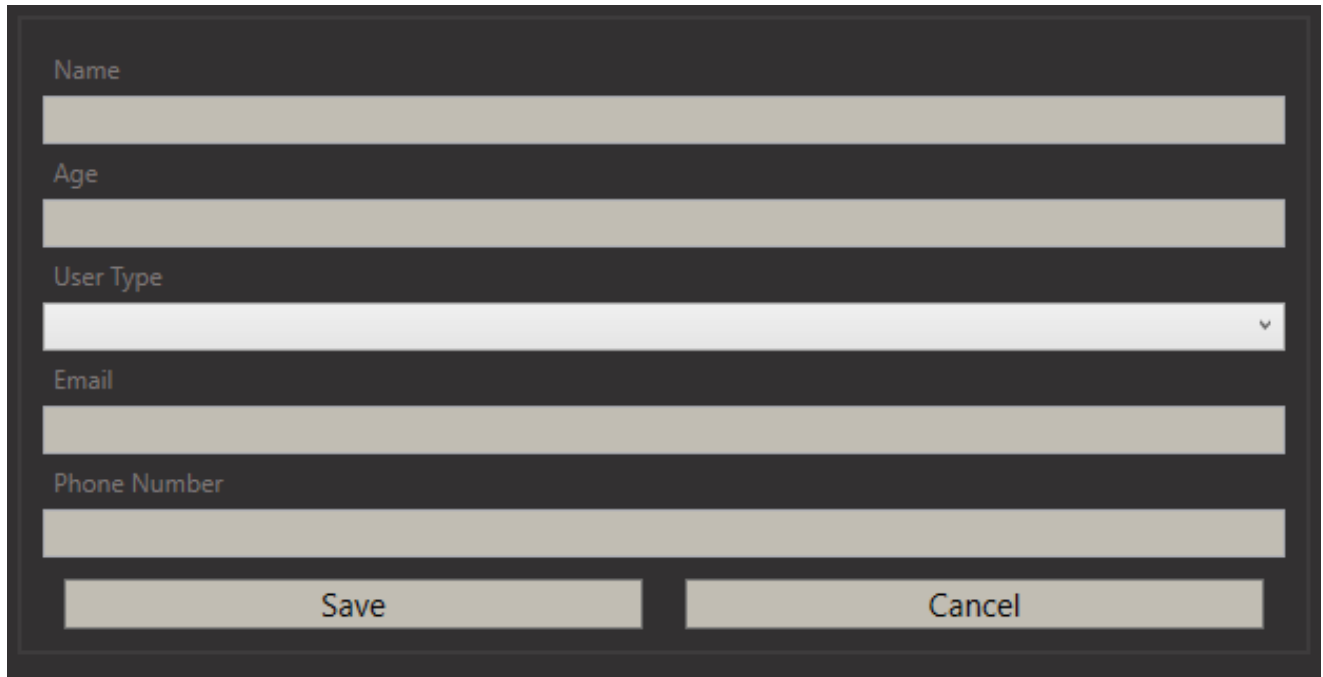
Checkouts Panel:

- 8: Add Checkout button
- 9: Remove Checkout button
- 10: Table with columns User, Book, DateOfCheckout, and DateOfReturn
- 11: Save Data button
- 12: Books Report button
- 13: Fines Report button
- 14: Tutorial button

User	Book	DateOfCheckout	DateOfReturn
Nikola Tesla	The Dark Tower	2/10/2018 7:44:39 PM	3/10/2018 7:44:39 PM
Albert Einstein	A Game of Thrones	2/10/2018 7:44:43 PM	3/10/2018 7:44:43 PM

Users

In order to create a new user, click on item 0 ('Add User' button). This will bring up the window shown below.



The image shows a dark-themed window for creating a new user. It contains five text input fields stacked vertically, each with a label to its left: 'Name', 'Age', 'User Type', 'Email', and 'Phone Number'. The 'User Type' field is a dropdown menu with a small downward arrow on the right. At the bottom of the window are two buttons: 'Save' on the left and 'Cancel' on the right.

All parts of this form must be filled out in order to successfully save a new user to the database. If they are not all filled out, the program will refuse to save the data. In addition, all data inputted must be valid ('Phone Number', for example, cannot contain any characters as it can only store a series of digits). If any data inputted is invalid, the program will refuse to save the data until the error is corrected. This, however, is typically not an issue, as the program will not allow invalid data to be typed into the corresponding text boxes ('Phone Number' will refuse to take any characters typed in as input).

Description of parameters –

- Name: The first and last name of the user.
- Age: The age of the user as an integer.
- User Type: The type of user (teacher or student) as selected from the drop-down box.
- Email: The email address of the user.
- Phone Number: The phone number of the user.

Button functions –

- Save: Saves the inputted data to a new user in the database.
- Cancel: Discards all data and closes the window.

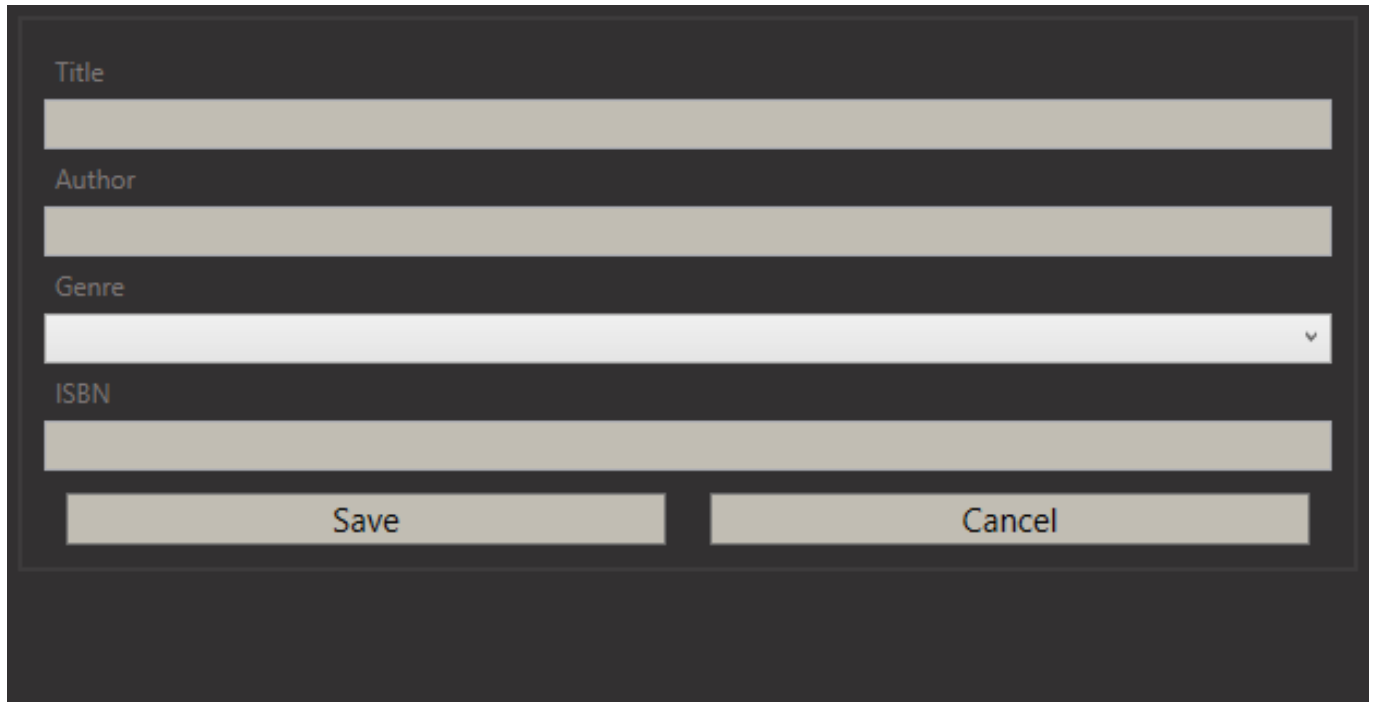
In order to remove a user, select a user by clicking on their name in item 3 (List of users) and then click on item 1 ('Remove User' button). This will remove the user from the database.

In order to search for a specific user in a large database, item 2 (Searchbar in 'Users' section of GUI) can be used. Simply type in any word(s) contained in the name of the user you are searching for, and the results will dynamically update.

Item 3 (list displaying users) is the tool used to view the database. All the users in the database can be seen there, and additional info can be found by double-clicking on any item in the list. This will create a dialog box that contains all the data stored. The list displays the names of stored users and their corresponding user type (Student or teacher).

Books

In order to create a new book, click on item 4 ('Add Book' button). This will bring up the window shown below.



The image shows a 'Add Book' form window. It has a dark gray background. The form contains four text input fields: 'Title', 'Author', 'ISBN', and 'Genre'. The 'Genre' field is a dropdown menu. At the bottom, there are two buttons: 'Save' and 'Cancel'.

All parts of this form must be filled out in order to successfully save a new book to the database. If they are not all filled out, the program will refuse to save the data. In addition, all data inputted must be valid ('ISBN', for example, cannot contain any characters as it can only store a series of digits). If any data inputted is invalid, the program will refuse to save the data until the error is corrected. This, however, is typically not an issue, as the program will not allow invalid data to be typed into the corresponding text boxes ('ISBN' will refuse to take any characters typed in as input).

Description of parameters –

- Title: The title of the book.
- Author: The author of the book
- Genre: The genre of the book as selected from the drop-down box.
- ISBN: The ISBN number of the book.

Button functions –

- Save: Saves the inputted data to a new book in the database.
- Cancel: Discards all data and closes the window.

In order to remove a book, select a book by clicking on their name in item 7 (List of books) and then click on item 5 ('Remove Book button). This will remove the book from the database.

In order to search for a specific user in a large database, item 6 (Searchbar in 'Books section of GUI) can be used. Simply type in any word(s) contained in the title of the book you are searching for, and the results will dynamically update.

The list that displays books (item 7) is the tool used to view the database. All the books in the database can be seen there, and additional info can be found by double-clicking on any item in the list. This will create a dialog box that contains all the data stored. The list displays the titles of stored books and their corresponding authors.

Checkouts

In order to create a new checkout, several steps must be taken beforehand. First, a user must be selected in item 3 (List of users) as the person checking the book out. Next, a book must be selected in item 7 (List of books) as the specific book being checked out (Each book has a unique ID, regardless of whether it is the same as another book). Finally, item 8 ('Add Checkout' button) must be clicked in order to add the new checkout to item 10 (List of checkouts).

In order to remove a checkout, select a specific checkout in item 10 (List of checkouts) and click on item 9 ('Remove Checkout' button).

Note that only one user can have a book checked out at a time, and that the program will not allow multiple users to have the same book checked out at the same time.

Note that users have a hard limit on the number of books that can be checked out, and that the program will not allow more checkouts than the amount specified by the 'UserSettings.txt' file, which is stored in the 'Data' folder under the same directory as the .exe file. The 'UserSettings.txt' file can be modified in order to change these values for all checkouts created beyond that point.

Reports

There are a few reports that can be generated based on the database. These are reports that show a list of checkouts that were completed within the past week and a report that shows a list of checkouts and a fine for overdue books.

In order to generate a text file containing a list of all checkouts completed within the past week, click on item 13 ('Books Report' button).

In order to generate a text file containing a list of all checkouts that are overdue along with calculated fines, click on item 14 ('Fines Report' button). The formula used to calculate the fine is $f(x) = 1 + 0.5x$. This means that there is a flat fee of \$1, along with \$0.50 added for the total amount of days the book is overdue.

Saving Data

In order to explicitly save your current database to the files that are loaded on startup, click on item 11 ('Save Data' button). This will store all of your data, including the database of users, books, and checkouts. The data will be placed in the directory of wherever the .exe file is stored under a new folder called 'Data'.

This software also features a dynamic backup protocol. Every 3 minutes, data is backed up. The data will be placed in the .exe file's directory inside of a folder called 'Backups' which is contained by the 'Data' folder.

In addition to backing up data every 3 minutes, data is also backed up every time the program is closed. The data is stored in folders that follow the naming scheme 'Backup####' where '####' is a number describing the time at which the data was saved. Windows also shows the time and date the backup folder was created.

Program Help System

Item 12 ('Tutorial' button) will launch a system that will describe each function of each item in the Echo Library Software. You may click on it at any time to learn how the software works without having to refer back to documentation.

User Settings

The specifics the checkouts are stored in a file called 'UserSettings.txt' in the 'Data' folder under the directory of the .exe file.

The UserSettings can be edited to –

- Modify the maximum number of books teachers can check out.
- Modify the maximum number of books students can check out.
- Modify the maximum number of days teachers can have books checked out for.
- Modify the maximum number of days students can have books checked out for.

This allows for the program to be modified to suit the needs of whatever library is using it.