

# Project Name

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## IT Practical Assessment Task

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## Problem Summary

A library system that keeps a record of all books available in the library.

The user can either log in as an employee, or a member, or register as a member. Employees will be able to add or delete books from the database and manage the members. Members can access the details of the book they have taken out, return the book, or search for a new book to take out. Members can also cancel their membership to the library.

Members can log in with their username and unique passcode. If the user does not have a membership already, they can create a new account. Once logged in, members will be given the option to either take out a new book, return their current book, cancel their current membership, or update their password.

Members are permitted to take out a book for any amount of time, with there being no due date or overdue books. However, they are only able to take out one book at a time. If the member wishes to take out a new book, their current book will be returned first.

In order to take out a book, the member will first be given two options to find a book. The first option is to manually search for a specific book out of the list of available books, either by author, book title, year published, or ISBN number. The search will return all the books that match the search, with the ISBN number being the most accurate search. The second option is to find a book from a set of different genres. The user will be able to choose a genre, and then be shown the title, author and cover page of about 6 books that are under that genre. Once the member has found a book that they would like to take out, they will be able given the option to enter the title and author of that book in order to take it out.

Employees will be able to login with their employee ID and password. Once logged in, they will be presented with the option to add or delete books, manage the current member of the library, adding or deleting members from the system, or update their password. The library is a non-profit organisations and all its employees are volunteers. Employees will be able to delete their own account, should they be leaving the system permanently.

## Motivation and Research

The purpose of the system is to manage the members, employees, and books of the library more efficiently. The computer systems at my local library are outdated and inefficient to manage the large number of books and members. This system could replace the old one, benefitting the employees in terms of easier management, as well as the members in terms of accessing the available books.

There are online computer systems that are similar to this system.

1. Project Gutenberg: Similar to my computer system, this system allows for an advanced search through a wide range of available books, such as genre, author, and title. My project differs in the way that my system allows for employees to login and manage books, as Project Gutenberg does not have such an option.
2. Follett Destiny Library Manager: This system is very similar to mine, such as providing management for librarians and providing access for students. The main difference between our systems, however, is that mine provides more local books by sourcing books written by South African writers, from a wider range of cultures.

The major difference between my system and others found online is that my system allows for members to take out a book for as long as they could possibly need, as the time to finish a book greatly differs from person to person. The lack of a time limit allows for members to take their time when reading their book, creating a more relaxed and enjoyable experience.

## Specification of Program Function

### Main Specifications:

- Users can login as a member or an employee
- Users can register as a member
- Users can read, add, update, and delete from a database that stores books (title, author, year published, ISBN, genre)
- Users can read, add, update, and delete from a database that stores members' passwords, IDs, and usernames
- Users can read, add, update, and delete from a database that stores employee's name, employee ID, their password, and their contact details (phone number)
- Users can read, add, update, and delete from a database that stores the books that are taken out by members, including the author and title of the book, as well as the date on which the book was taken out
- Users can access a 'Help' option (textboxes to explain the system) on every screen

### Member Section:

- Members are presented with the option to find a book
  - Members can find a book by its genre
    - Shown title and author of a set of books under that genre
  - Members can search for a book, either by author, title, year published or ISBN
  - Members are shown an option to return to their home screen
- Members can take out a new book
  - Members must search for the book using its author and title
  - If found, the member's current book will be updated, and the date recorded
  - The member will be shown an error message if the book is not found in the system

- Members can return their current book
  - Note: the members current book will automatically be returned if they choose to take out a new book
  - Returning their book will remove the member from the member-book database
- Members can cancel their membership
  - Returns the user to the main screen
  - Removes member's name and password from database
  - Deletes any record from member-book database
- Members can update their password
  - The member will have to input their new password twice (both inputs match) before updating their password in the member database
- Members can view their current book (if they have one currently out)
  - The member will be shown the title and author of their current book as well as the date on which they took it out
- Members will be able to log out of their account
  - The member will be returned to the main screen

### Employee Section:

- Employees will be able to add, update or delete books
- Employees can add members or cancel members' subscriptions
  - To add a member: need to input member's name and a password
    - The members information will be added to the member database
  - To cancel subscriptions: need to input member's username OR member's ID (deletes member from main member database)
    - Deletes member's information from main member database and member-book database
- Employees can access the current members
  - Search for a member by their username or their ID
  - Displays that member's current book out (book title and author)
- Employees can update their password or delete their own account

### Specification of Interface

- Welcome screen
  - Inviting message
  - Option to enter system
- Main menu
  - Fun background, e.g. image of a library, bookshelves
  - Option to login as an employee, a member or register as a member
    - Screen for employees and screen for members
    - Input boxes for usernames and unique ID's/passwords
  - Question mark option in the corner: HELP option
    - Screen displaying information about what each option entails

- Designed for use on a PC, not a mobile device

### Member section

Members are presented with the following options, in the form of buttons:

1. Find a book
  2. Take out a new book
  3. Return current book
  4. View account
  5. Delete account
  6. HELP
  7. Logout
- Screen 1: Find a book
    - Two option buttons: search via genre or search manually
    - HELP option
    - Screen 1a: Option to search via genre
      - Screen that displays about 6 books (book covers, titles, and authors)
      - Note: these books are available in the main book table
      - HELP option
    - Screen 1b: Option to search via manual, more specific searching
      - Input boxes for author, title, year published and ISBN (can input any one/multiple)
      - Display all results that match search
      - HELP option
  - Screen 2: Take out a new book
    - Input author and title of the book
    - Option to click 'OK' and take out that book
    - Message displaying confirmation OR an error message (if book not found)
    - HELP option
  - Button 3: Return their current book
    - No screen
      - Returns current book without changing screens
  - Screen 4: View their account details
    - Screen 4a: Change password
      - Input new password twice
      - Message confirming update or displaying error message (if password invalid)
      - HELP option
    - Screen 4b: View current book
      - Displays author, title and date-taken out of book connected to ISBN
      - HELP option

- Button 5: Delete account
  - o No screen
    - Returns user to main screen
- Button 6: HELP option
  - o Message explaining what member section entails
    - Meaning of searching for, taking out or returning a book, as well as viewing their account or deleting it.
- Logout Option 7:
  - o No Screen
    - Returns user to main screen and logs out of their account

### Employee section

Employees are presented with the following options, in the form of buttons:

1. Manage books
    - a. Add a book
    - b. Delete a book
    - c. Access books
  2. Manage members
    - a. Add a member
    - b. Cancel a member's subscription
    - c. Access current members
  3. Manage account
    - a. Update their password
    - b. Delete their account
    - c. Logout
  4. HELP option
- Screen 1: Manage books
    - o Screen 1a: Add a book
      - Input boxes for title, author, year published and ISBN
      - Displays message confirming insert
    - o Screen 1b: Delete a book
      - Input box for ISBN of book
      - Displays message confirming deletion or error message (if book not found)
    - o Screen 1c: Access books
      - Input box for title, author, or ISBN of a book
      - Displays any books that match search
  - Screen 2: Manage members
    - o Screen 2a: Add a member
      - Input boxes for member username, phone number and password
    - o Screen 2b: Cancel a member's subscription

- Input box for member's ID
  - Displays message confirming the cancellation or an error message (if member not found)
- Screen 2c: Access current members
  - Input box for username of member
  - Displays username, contact details and ID of members that match search
- Screen 3: Manage account
  - Screen 3a: Update password
    - Input boxes to input new password twice
    - Displays message confirming update or an error message (if password invalid i.e. inputs do not match)
  - Button 3b: Delete their account
    - No screen: Deletes employee's account
    - Returns to main screen
  - Button 3c: Logout
    - No screen: Logs employee out of account
    - Returns to main screen
- Button 4: HELP option
  - Message explaining what employee section entails

## Specification of Help

Help provided by message dialogs

### Main screen

Explains members and employees, and what they should do if they do not have an account – register.

- Employee login screen: Explains requirements needed to login and why they might be unable to login
  - Requirements: Employee ID and password
  - Possible reason for error: the user is a member, not an employee
    - Contact details to contact the manager if they think they have accidentally deleted their employee account
- Member login screen: Explains requirements to login and what they should do if they cannot
  - Requirements: Username and password
  - Alternative: Register
- Register screen: Explains requirements needed to register
  - Password, and a username

### Member section

The main member screen has a HELP option (button 6) that explaining viewing books, taking out a book, returning their book, viewing account details, and deleting their account

- Screen 1: Viewing books



- Message explaining difference between searching via genre and searching manually
- Screen 1a: Search via genre
  - Message explaining what the different genres are and what each one shows
- Screen 1b: Search manually
  - Message explaining how to best use the manual search system by using the most accurate value, the ISBN
- Screen 2: Take out a book
  - Message explaining the requirements: The author and title of their book
  - Also explains that clicking “Ok” takes away any current book they had out
- Screen 4: View account details
  - Screen 4a: Change password
    - Message explaining how to ensure that their password is valid – input the same password twice accurately
  - Screen 4b: View current book
    - Message explaining that they can keep this book out for as long as they wish to, but may only have one at a time

## Employee section

The main employee screen has a HELP option (option 4) explaining managing books (adding and deleting), managing members (adding, deleting, and accessing current members), managing their account (updating password, deleting their account, and logging out).

- Screen 1: Manage books
  - Message explaining adding and deleting books, and accessing books
- Screen 1a: Add books
  - Requirements: Title, author, ISBN, and year published
  - Message explaining that all fields need to be filled in
- Screen 1b: Delete books
  - Requirements: ISBN
  - Message explaining why ISBN is needed (prevent deletion anomalies)
  - Message explaining that certain books are not to be deleted
- Screen 1c: Access books
  - Requirements: Input either the title, author, or ISBN of a book
  - Message explaining what results are returned and why ISBN is the most efficient search field (unique code for books)
- Screen 2: Manage members
  - Message explaining adding, deleting, and accessing members
- Screen 2a: Add members
  - Message explaining requirements: username, phone number and password of member
- Screen 2b: Cancel members' subscriptions

- Message explaining requirements: member ID
- Also explains how to find the ID should the employee not know (access current members option)
- Screen 2c: Access current members
  - Message explaining how to search for a member: use username
  - Explains usefulness: find ID of a certain member or access contact details
- Screen 3: Manage account
  - Message explaining updating password, deleting their account, and logging out
- Screen 3a: Update password
  - Message explaining requirements: input of new password twice
  - Explains possible errors: Invalid passwords

## Specification of Permanent Data Storage

### Library Database

- Member table
  - Member ID – unique code that identifies member
  - Username – member’s name, used to login
  - Password – member’s chosen unique password, used to login or change password
  - Contact details – member’s phone number
- Book table
  - Title – name of book
  - Author – name of author of book
  - Year published – year in which book was published
  - ISBN – unique code identifying each book
  - The genre of books does not need to be stored as the books available via the genre option are already available in the table and the genre-search is a special, smaller option. Employees will be made aware that these books are not to be deleted or updated.
- Employee table
  - Employee ID – unique code identifying each employee, used to login
  - Name – name of employee
  - Password – employee’s password, used to login
- Member-book table
  - Member ID – unique code of member who has a book out
  - ISBN – unique code of book taken out
  - Date – the date on which the book was taken out

## Hardware and Software Requirements

### Software:

- Windows 11

- Microsoft Office Access 2013
- Apache Netbeans IDE 12.5
- JDK Windows x64

### Hardware:

Processor Intel(R) Core(TM) i5-8250U CPU @ 1.60GHz 1.80 GHz

Installed RAM 8,00 GB (7,88 GB usable)

Device ID E6B6AF31-FA6C-4BBB-A0AC-11CE19DF581C

Product ID 00327-30741-73844-AAOEM

System type 64-bit operating system, x64-based processor

Pen and touch No pen or touch input is available for this display

### References

- *Project gutenber* (created 1971) *Project Gutenberg*. Available at: <https://www.gutenberg.org/> (Accessed: March 3, 2023).
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