

DSA OEL REPORT

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DEPARTMENT: COMPUTER AND
INFORMATION SYSTEMS
ENGINEERING

PROJECT: IMPLEMENT A LIBRARY
MANAGEMENT SYSTEM

REPORT:

PROBLEM DESCRIPTION: -

We are asked to create a Library Management System with the exquisite features:

- ➡ User can Register or Sign up or cancel membership.
- ➡ User can Search Books on the basis of:
 - Author
 - Title
 - Subject
 - Publication Date.
- ➡ User can add, delete or modify a book.
- ➡ User can reserve a book.
- ➡ User can checkout from library.
- ➡ User can renew a book.
- ➡ User can reserve a book.
- ➡ User can see whole collection of books.
- ➡ User can see sorted collection of books on the basis of Title of book.

Our Online Library is named “Classic Library” in which each function is created in order to enhance the ability of program to interact with user sufficiently and become more user-friendly.

REGISTER:

In Register function, we have taken details of Username, Age, Password, and Email Id from the user and then a txt file named “Registered_Accounts” is created. The information of the user then added to txt file and then the user is registered. If a user is already registered with Email Id, it cannot again register with the same Email Id.

This function has used the Filing Appending methods of python in order to save the user data and also the check is implemented for the emails if the email is already registered.

CANCEL MEMBERSHIP:

In order to use this feature, the user has to enter the Email Id and Password which he/she has used in registering the account. After checking the details by the system and approved, the membership of the user to the library will be cancelled. Otherwise, it will give error message to user.

LOGIN:

In order to issue the book, the user has to login via entering his registered Email Id and Password. After checking, a login message will be displayed and the user can now issue, return and check out.

This function has used Filing Reading methods in order to check the validity of data entered by the user.

Another feature is introduced that after logging, the user will be welcomed by his username throughout all the online process.

ADD BOOK:

Using the add book feature, the user can add book to the cart by entering the name of the book which is available in the library and can issue it when checking out.

DELETE BOOK:

Using the delete book feature, the user can delete book from the cart by entering the name of the book which is present in your cart. Otherwise, it will display the message of the book not present in your cart.

MODIFY BOOK:

Using the modify book feature, the user can modify book to the cart by entering the 2 names of the book, one is the book which you want to place in your cart which is available in the library and second is the book which you want to replace from your cart and can issue it when checking out.

- **Main Point:**

In the Delete Book and Modify Book feature, an additional feature is introduced in both of them that if the cart is empty, the user cannot proceed further.

SEARCH BOOK:

Using the feature, the user can search the book on the basis of Author name, Title of Book, subject and Publication Date by selecting the suitable key and the result will be according to successful search in a beautifully designed and aligned UI.

RESERVE BOOK:

Using the feature, the user has to enter the name of the book and the book name is save to the txt file named according to “(User Email Id)_Reservation”.

Each user has its own Book Reservation file.

RETURN BOOK:

Using the feature, the user can return the book which he/she had issued earlier and the book is being searched in the system in the txt file named “(User Email_Id)_Books_Issue”. After the checking the details, the book will return and will be removed from the record of the user.

RENEW BOOK:

In this feature, the user can reborrow the book by entering the name of the book which he/she has already checkout it.

CHECKOUT:

Using this feature, the user can now checkout from library and the details of book name, issued date and issued time will be displayed to the user.

Before Checking out, the user is asked for a confirmation if he/she wants to checkout.

On confirmation, the user will be checked out and the title of the books issued to the user along with the issued date and issued time will be saved to the txt file named “(User Email_Id)_Books_Issue”.

Otherwise, the program will return to the main program.

SEE WHOLE COLLECTION OF BOOKS:

Using this feature, user can see the whole collection of books with the details of Title of book, author name, subject and publication date.

This function has used a formatted string method in order to display the result in a beautifully designed and aligned UI.

MERGE SORT:

Using the algorithm Merge sort, a sorting function is created in order to sort the list of books alphabetically on the basis Title of the book and then displays the result to the user.

In this function, the list of books is passed and then it recursively calls the function until the size of list is reduced to one like in sorting in algorithm and left and right pointers are used to indicate the position. And then another function calls “merging” in order to sort

the elements. Then, the list of elements is sorted and append to a list named “result” and then, the sorted list is returned and a function is called to display the result to the user.

SOME IMPORTANT POINTS:

- ✓ The user cannot further proceed without logging except Searching the book, See collection of books and sorted collection of books.
- ✓ The program is CASE SENSITIVE like in adding a book, deleting a book and in other options.
- ✓ The app is made user interactive and user friendly in such a way to help the user to issue the book from our online library as much as possible.