

Library Management System

Group Members :

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1. Introduction

Library management system is a web application which helps librarians at school level or college level to manage the books. It has been developed using html, css, python, sql, and jinja templates. I found this project online and downloaded it. After downloading the code. I had to do some migrations. In python migration is a very important thing, if it is not done properly then some content of the website may not load properly.

After these steps I spent some time on deciding what types of testing I want to perform on the project. And I came to the conclusion that I want to perform system testing, usability testing, compatibility testing, functional testing and manual testing, i didn't use any automated testing tools for this project.

Then based on these testing types I developed 23 test cases. Which covers every aspect of the website and they come under testing types which I just mentioned above. and it involves testing of user login with correct and incorrect credentials to, dashboard, how adding books into software works, adding students data, editing or deleting students data, issuing book to students id, searching books.

Based on the test cases designed I performed tests on the software and documented my findings about software and also reported defects in the software and areas of improvement in the software and prepared the detailed report.

2. Software Under Test

A list of features that are tested

- Login/Signup on the website
- Adding Books Data
- Editing Books Data
- Adding Students to the system
- Editing Students Data
- Searching Book

- Searching Student
- Issuing a Book
- Accessing Issued Books Status
- Returning Book
- logout

3. Test Design

There is no specific approach used to design test cases, but when I used the system as a whole, I found too many things were missing on the software and then I thought of starting from scratch. so i designed test cases, which covers most of the missing things in the web application, which involves login issues, signup issues, navigation and accuracy of the content on the software. so the test cases and types of testing, which i have designed for this software are mentioned below.

These test cases cover four types of testing : 1. usability testing, 2. compatibility testing, 3. system testing, 4. functional testing.

1. functional testing : this testing covers different functions of the website working properly or not. just make sure it is working as expected.
2. system testing : this testing covers testing of a system as a whole, connection between various functions and how the data is shown.
3. compatibility testing : this type of testing involves testing websites in different browsers and different screen sizes.
4. usability testing : this type of testing involves testing of the software usability, how easy it is to use software if any user comes to the website for the first time.

4. Test Case Specifications

A complete list of all test case specifications, each with a unique ID

Test Case Identifier	TC 001
Test Items/feature	Whole System
Preconditions	Precondition would be that the website should load properly.

Test Steps	<ol style="list-style-type: none"> 1. Open command prompt. 2. Enter necessary commands to run server and web application. 3. Visit the localhost url.
Output Specifications	Expected output is that the website should load on the local server.
Test Result	Pass

Test Case Identifier	TC 002
Test Items/feature	Checking Usability of the Website
Preconditions	Website should be running on localhost and all the requirements need to be fulfilled, in this case all migration of the files need to be completed before running a website.
Test Steps	<ol style="list-style-type: none"> 1. Click on different tabs. 2. Go to various links across the website. 3. Report how long it takes to load the data and accuracy of the page supposed to open after clicking.
Output Specifications	Expected output should be smooth navigation through website, and relevant content should open.
Test Result	Fail

Test Case Identifier	TC 003
Test Items/feature	Login

Preconditions	Try to login without entering any kind of username and password.
Test Steps	<ol style="list-style-type: none"> 1. Clicking on the “Login” button. 2. Leave username empty 3. Leave password empty 4. Click on the “Submit” button.
Output Specifications	Websites should throw an error saying enter valid data.
Test Result	Pass

Test Case Identifier	TC 004
Test Items/feature	Login
Preconditions	Entering random username and password to login.
Test Steps	<ol style="list-style-type: none"> 1. Click on the “Login” button. 2. Enter random username 3. Enter a random password. 4. Click on the “Submit” button.
Output Specifications	Users can’t login with random username and password.

Test Result	Pass
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Test Case Identifier	TC 005
Test Items/feature	Login
Preconditions	Entering proper username and password.
Test Steps	<ol style="list-style-type: none"> 1. Click on the “Login” tab. 2. Enter valid username means user created when signing up for the first time. 3. Enter valid password which is used when signing up for the first time. 4. Click on the login button.
Output Specifications	Expected outcome would be to let admin enter in to library management system home page in order to access other modules of the software.
Test Result	Pass

Test Case Identifier	TC 006
Test Items/feature	Navigation to Books tab
Preconditions	Admin should be seeing the home page of the library management system after login.

Test Steps	<ol style="list-style-type: none"> 1. Click on books tabs. 2. Click on “Dashboard” to access the books.
Output Specifications	After clicking on “Dashboard” it should show all the books available in the library.
Test Result	Pass

Test Case Identifier	TC 007
Test Items/feature	Scrolling through the books
Preconditions	Admin should be at “Dashboard” where list of books is visible.
Test Steps	<ol style="list-style-type: none"> 1. Click on the “Dashboard” tab. 2. Check all available books.
Output Specifications	Admin of the library management system could see the books by scrolling on the page.
Test Result	Fail

Test Case Identifier	TC 008
Test Items/feature	Searching Books
Preconditions	Admin should be able to add “Dashboard” where he/she can access the list of books.

Test Steps	<ol style="list-style-type: none"> 1. Click on “Search Books”. 2. Enter any available book id.
Output Specifications	Adminr could reach out to the book he/she entered id for.
Test Result	Pass

Test Case Identifier	TC 009
Test Items/feature	Searching Book with the book name.
Preconditions	Admin should be at “Dashboard” where he/she can access the list of books.
Test Steps	<ol style="list-style-type: none"> 1. Click on “Search Books”. 2. Enter Book Name. 3. Click on “Search”
Output Specifications	Website should load the show books, that user entered.
Test Result	Fail

Test Case Identifier	TC 010
Test Items/feature	Adding Books to the Library Management System
Preconditions	Admin should be at “Dashboard”.

Test Steps	<ol style="list-style-type: none"> 1. Click on “Add Book”. 2. Enter “Unique Book Id”. 3. Enter “Book Name”. 4. Enter “Subject” 5. Enter Status “Issued/Not-Issued”. 6. Click on “Submit”. 7. Check in “Dashboard” by entering book id, if is added or not.
Output Specifications	Expected outcome will be that the user can see the newly added book.
Test Result	Pass

Test Case Identifier	TC 011
Test Items/feature	Editing Books
Preconditions	Admin should be at “Dashboard” at the list of books.
Test Steps	<ol style="list-style-type: none"> 1. Click on “Edit”. 2. Change information about books needs to be edited. 3. Click on “Submit”. 4. Check if it is edited or not.
Output Specifications	Expected outcome will be the edited information of the books, which the admin just added to the library management system.
Test Result	Pass

Test Case Identifier	TC 012
Test Items/feature	Changing Status of Books to “Not-Issued” to “Issued”.
Preconditions	Admin should be at editing books screen.
Test Steps	<ol style="list-style-type: none"> 1. Click on “Add Books” 2. Change the Status of the Book. 3. Enter “Issued”.
Output Specifications	Expected outcome is book’s status should change in the books list.
Test Result	Fail

Test Case Identifier	TC 013
Test Items/feature	Change “Book” status from “Issued” to “Not-Issued”
Preconditions	Admin should be at “Edit” Books Section.
Test Steps	<ol style="list-style-type: none"> 1. Click on “Edit” 2. edit the status of the book from “Issued” to “Not-Issued”. 3. Check in the book's list, status is changed or not.
Output Specifications	Book Status should be “Not-Issued” from “Issued”.
Test Result	Pass

Test Case Identifier	TC 014
Test Items/feature	Adding Student to the Library Management System
Preconditions	Precondition would be user must logged in with username and password. and should be at Dashboard.
Test Steps	<ol style="list-style-type: none"> 1. Click on “Add Books”. 2. Enter “student id” 3. Enter “student name” 4. Click on submit and check in “View Student” if added or not.
Output Specifications	Information of the student should be added into the library management system.
Test Result	Pass

Member Module

Test Case Identifier	TC 015
Test Items/feature	Accessing Student List
Preconditions	Admin should be at “View Student” tab.
Test Steps	Viewing all students' lists which are added by the user.
Output Specifications	Admin should look at the list of students.
Test Result	Pass

Test Case Identifier	TC 016
Test Items/feature	Searching Student Information with Student Id
Preconditions	Admin should be at the “View Student” tab.
Test Steps	Enter student id number in search bar and click on search.
Output Specifications	Admin could see the name of the student of which they have entered id.
Test Result	Pass

Test Case Identifier	TC 017
Test Items/feature	Searching with Student Name.
Preconditions	Admin should be at the “View Student” tab.
Test Steps	Enter student name in search bar and click on search.
Output Specifications	Admin could see the name of the student of which they have tried to search for.
Test Result	Fail

Test Case Identifier	TC 018
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Test Items/feature	Adding More details about students
Preconditions	Admin should be at the “Add Student Tab”
Test Steps	<ol style="list-style-type: none"> 1. Click on “Add Student” 2. Try to Add More information about Student, for example department of the student, year of study etc.
Output Specifications	Website should allow add more information about students to library management system.
Test Result	Fail

Test Case Identifier	TC 019
Test Items/feature	Issuing Books to Student
Preconditions	Admin should be at “Issue Book” tab.
Test Steps	<ol style="list-style-type: none"> 1. Click on “Issue Book”. 2. Enter “Student Id”. 3. Enter “Book Id”.
Output Specifications	After clicking on the submit button at “Issue Book” , it should issue a book on student id.
Test Result	Pass

Users Module

Test Case Identifier	TC 020
Test Items/feature	Viewing Issued Books List
Preconditions	Admin should be at the dashboard of the library management system.
Test Steps	<ol style="list-style-type: none">1. Click on the “Issued Book” tab.2. check the list of issued books.
Output Specifications	Admin should see the list of issued books.
Test Result	Fail

Test Case Identifier	TC 021
Test Items/feature	Return Books, if issued to the student
Preconditions	Admin should have access to the dashboard..
Test Steps	<ol style="list-style-type: none">1.Click on “Return Book”2. enter book id.
Output Specifications	Admin should easily return the book by entering the id number of the book, and book’s status also need to be changed from issued to not issued by itself.
Test Result	Fail

Test Case Identifier	TC 022
Test Items/feature	Compatibility Test in Computer
Preconditions	a website should work properly for example, it's fonts and images should load properly in one browser.
Test Steps	<ol style="list-style-type: none"> 1. Since it is hosted on a local server, I opened the website on chrome. 2. Then I opened a website on Microsoft edge.
Output Specifications	Expected outcome would be loading images and fonts should support a variety of browsers.
Test Result	Pass

Test Case Identifier	TC 023
Test Items/feature	Compatibility testing in different sizes.
Preconditions	Precondition would be that the website should work on different browsers first

Test Steps	1. It was hosted on a local server so i could not test it on the phone screen size and ipad. but i tried minimizing the size of the browser to different sizes as ipad and phone.
Output Specifications	Websites loaded properly it was reactive, user can easily use it on their phone and ipad.
Test Result	Pass

8. Test Results

Summary of the results (how many executed, passed, failed, etc.)

A table like the following that shows

Pass or fail for each and every test case

For each failed test case, identifying the corresponding defect report

Test Case ID	Result	Defect Report
TC001	Pass	
TC002	Fail	Navigation in the website is not that accurate and relevant even after finishing all necessary migrations and linking of the pages. and data on the website is also not accurate.
TC003	Pass	
TC004	Pass	
TC005	Pass	
TC006	Pass	
TC007	Fail	No scrolling available, admin

		can't scroll to access list of books. it just shows one status page, even after adding 15 books. if shows only the first 10 books.
TC008	Pass	
TC009	Fail	Users can't search any books with the name of the book, whenever the user wants to search for a book, they have to remember the book id, because they can't scroll through the list of books as well.
TC010	Pass	
TC011	Pass	
TC012	Fail	After changing the status of the book from "Not-Issued" to "Issued", the book disappeared from the list of books.
TC013	Pass	
TC014	Pass	
TC015	Pass	
TC016	Pass	
TC017	Fail	the website only allows searching of the student information by entering id number only, not name, so whenever someone wants to look for the student information they need to remember the student id number.
TC018	Fail	Website only allows you to add a student's name and id number, no more information about students can be added.
TC019	Pass	

TC020	Fail	when the user clicks on “Issued Books” tab to check the list of issued books, but no books are visible. even after issuing a few books on student id.
TC021	Fail	The Return of books page opens up and it asks the user to enter the book id which they want to return but after entering the id number, there is no accuracy in whether that book is returned or not.
TC022	Pass	
TC023	Pass	

9. Summary or Conclusion

After the testing is done, I have found a few areas where this web application can be improved and after these changes this web application will be complete.

1. User interface of this web application can be improved, color combination, background image, login and signup page. it just looks very simple and not attractive and relevant data is not loading.
2. Anyone can be allowed to signup on the web application who provides proper credentials, that they are working with the admin department, for now only super users can login, it has to be created by the developer or who knows how to create super user for a web application. There is a signup page but it doesn't respond as expected.
3. Filtering or a certain number of books should be allowed on one page and the next page button also can be provided, so admin can look at all the books added by them. Users don't need to remember the book id in order to search for it. The same goes for students' data as well, everytime admin has to remember the student id number to look for any student's information.
4. Editing and deleting of students data features can be provided, it is provided for books but not for students data. and adding more information about students' features can also be provided.
5. Books issued to the student page can be made more accurate. At the current stage it is not that accurate. I tested issuing a book to a student feature using student id and book id, but the status of the book doesn't change.
6. Issued book section is not relevant, after issuing book on student id, it is not shown on the issued book section.

7. Return book section is also not working as expected, i tried to return the book by entering the book id number, it's status should change from "Issued" to "Not-Issued" but it is not updating any information by itself.

Link for the project : [Library Management System In Python \[Source Code Included\] - TechVidvan](#)