

Test Plan Document

LIBRARY MANAGEMENT SYSTEM

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TEST PLAN DOCUMENT

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1. Introduction

This test plan outlines the strategies, scope, objectives and activities for testing the Library Management System (LMS) to ensure that it meets the defined requirements and functions effectively.

2. Test Objectives

Functional Requirements

	Specification	Report
1	Book Management	CRUD operations successfully performed with implementation of data validation.
2	Member Management	CRUD operations successfully performed with implementation of data validation and dynamic filtering.
3	Circulation	Fee implementation upon circulation of a book.
4	Reports	Reports generated providing data on demographics and more.

Non-functional Requirements

	Specification	Report
1	Performance	The application performs all tasks with no runtime errors.
2	Security	Implementation of hashing techniques are used for extra security.
3	Reliability	Consistency in performance of intended functions without failures.
4	Usability	Easy and convenient for users to learn, understand and operate.
5	Scalability	Handles an increasing workload or number of users without significant performance degradation.
6	Maintainability	Can be easily modified, updated and maintained over its lifecycle.

3. Scope

The Library Management System includes the following functionalities:

- Book management (add, edit, delete, search books).
- Member management (register, update and search members).
- Book circulation (issue, return, calculate fines).
- Report generation.
- Authentication and role-based access control.

Exclusions: Integration with external systems and e-book management are out of scope.

4. Test Environment

Hardware: Devices meeting minimum requirements (e.g., PCs).

Software:

Operating System	Windows
Database	JDBC
Tools	JDBC Driver

Test Data: Sample datasets for books, members and transactions.

5. Types of Tests

	Test Type	Report
1	Functional Testing	<ul style="list-style-type: none">○ Successful issuing of books○ Successful capturing of book information○ Successful altering of book information○ Successful recording of new members (administrative & customers)○ Successful capturing of customer information○ Successful altering of customer information
2	Performance Testing	System runs required tasks with accuracy and efficiency.
3	Security Testing	<ul style="list-style-type: none">○ Protection against data breaches

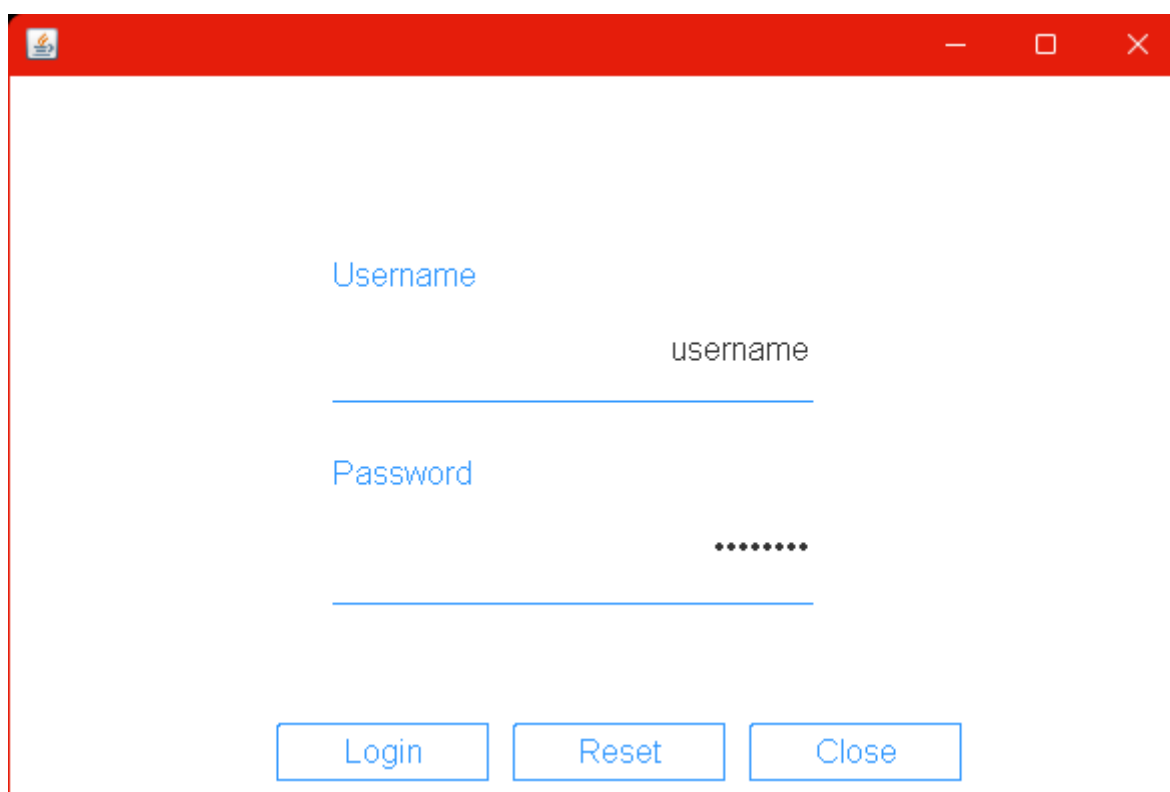
6. Test Cases

Test Case ID	Test Case Description	Pre-conditions	Steps	Expected Result
TC-1	Add a new book	Admin logged in	Navigate to 'Add Book' page, fill details, save	Book added successfully
TC-2	Issue a book	Member exists, book available	Search for book and member, click 'Issue'	Book issued, loan recorded
TC-3	Calculate overdue fines	Book overdue	Check loan details	Correct fine displayed
TC-4	Generate overdue report	Overdue books exist	Select report criteria, generate report	Accurate report displayed
TC-5	Login with invalid credentials	None	Enter wrong username/password, click 'Login'	Error message shown
TC-6	Test role-based access	Different user roles exist	Log in with each role	Role-appropriate access granted

7. Screenshots for Testing

During testing, screenshots were taken at the following stages:

- Upon login in
- At the various menus and sub-menus
- Upon filing in the various forms
- Upon performing search operations



The screenshot shows a login window with a red title bar. Inside, there are two input fields: 'Username' with the placeholder text 'username' and 'Password' with masked characters '.....'. Below the fields are three buttons: 'Login', 'Reset', and 'Close'.

Figure 1: Login frame

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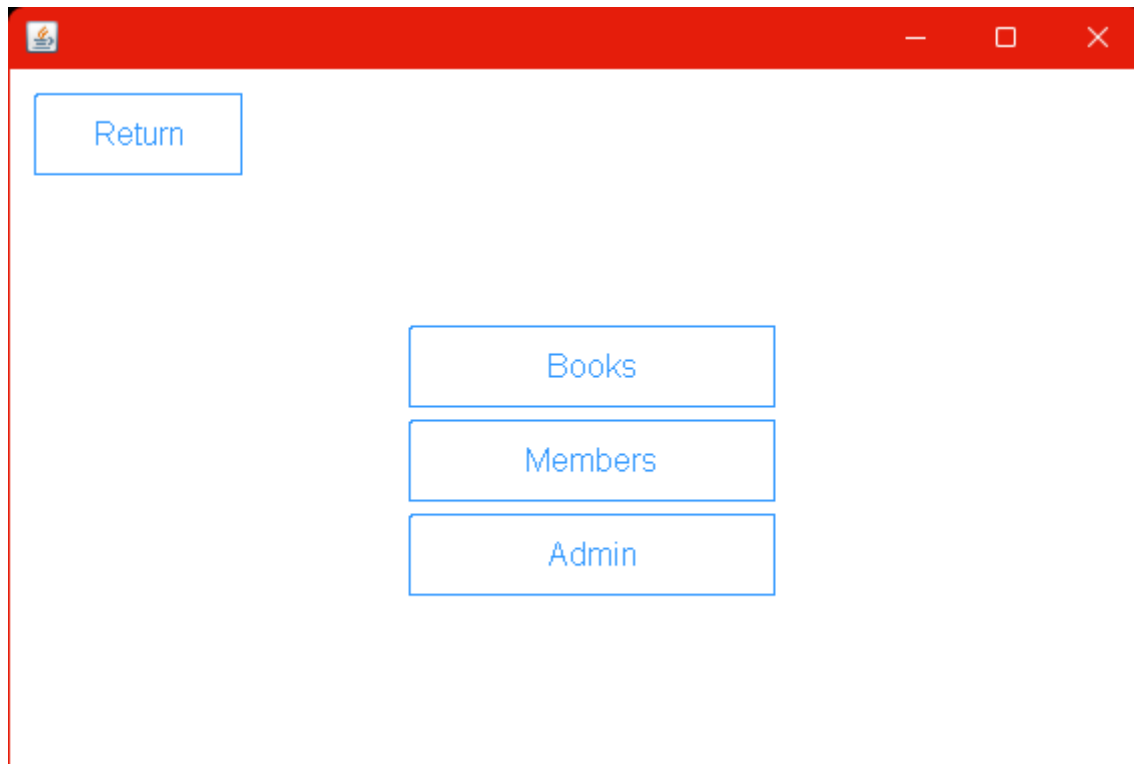


Figure 2: Main Menu

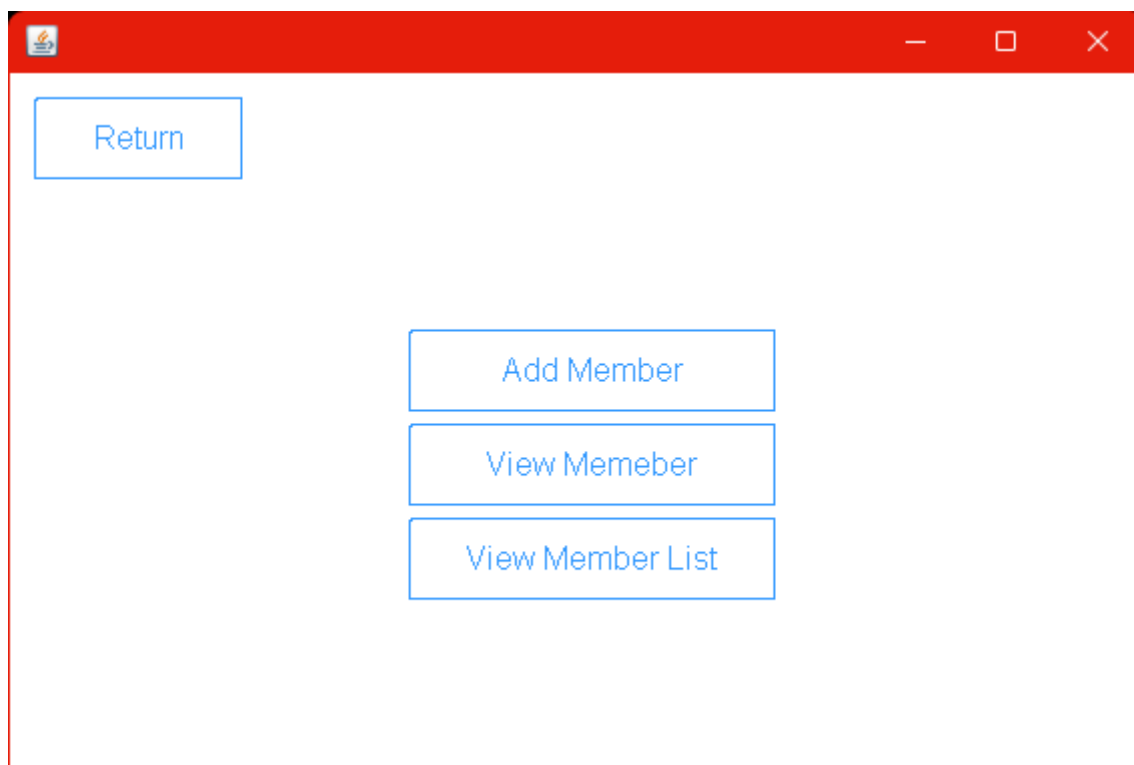
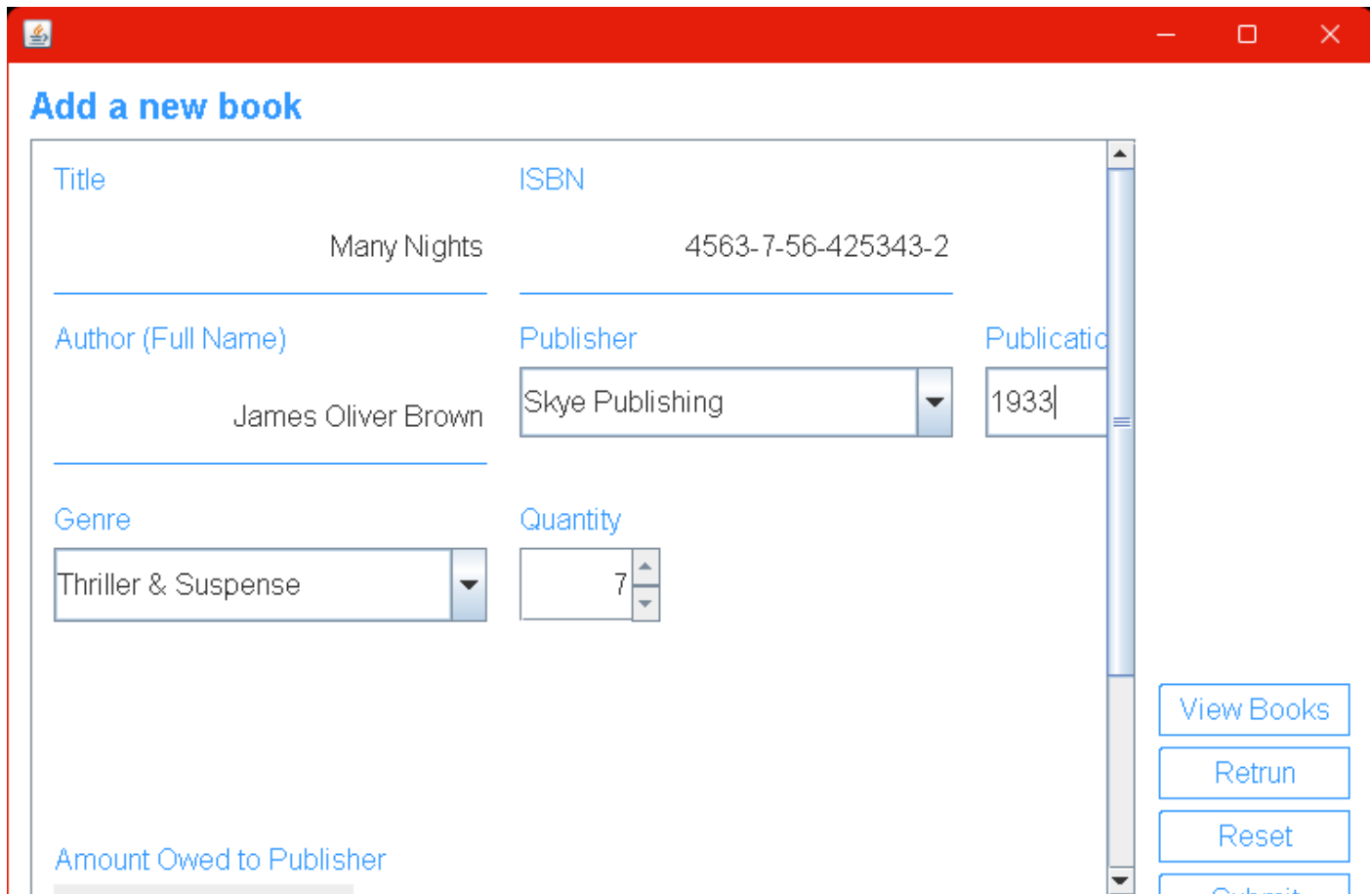


Figure 3: Member Menu

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The screenshot shows a web application window with a red title bar. The main content area is titled "Add a new book" in blue. It contains a form with the following fields and controls:

- Title:** Text input field containing "Many Nights".
- ISBN:** Text input field containing "4563-7-56-425343-2".
- Author (Full Name):** Text input field containing "James Oliver Brown".
- Publisher:** Dropdown menu showing "Skye Publishing".
- Publication Year:** Text input field containing "1933".
- Genre:** Dropdown menu showing "Thriller & Suspense".
- Quantity:** Spin box showing the value "7".
- Amount Owed to Publisher:** Text input field at the bottom left.

On the right side of the form, there are four buttons stacked vertically: "View Books", "Retrun", "Reset", and "Submit".

Figure 4: Book frame

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Search book

Title	Phantom's Promise		ISBN	2025-2-02-777701-0	
Author (Full Name)	E. U. Okhue		Publisher	Skye Publishing	Publication Year
Genre	Mystery	Quantity	10		
Estimated Rent Price	33.7575 0		Estimated Selling Price	4050900 0	

Search by Title

Phantom's Promise

Update Retrun Remove Submit Changes

Figure 5: Book information frame

Add a new member

Personal Details

Name	Lethabo		Last Name	Malema	
ID Number	041221-432-743-2				
Contact Number	+27-72-324-2209		Email	lethabo@skye.com	
Address	12 Skye Avenue Pretoria 0181				

Retrun Reset Submit

Figure 6: Member frame

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The screenshot shows a web application window titled "View member" with a red header bar. The main content area is divided into two sections. The left section, titled "Personal Details", contains a form with the following fields: "Name" (James), "Last Name" (Williams), "ID Number" (081219-497-678-2), "Contact Number" (+27-78-239-9886), "Email" (williams@yahoo.com), and "Address" (23 Jannet Street Skyeville). The right section contains a "Search (Name/ ID Number)" field with the value "James", a "Search" button, a "Current Book" dropdown menu showing "2083-2-38-530928-2", and a grid of buttons: "Issue Book", "Return Book", "Retrun", and "Delete".

Personal Details	
Name	James
Last Name	Williams
ID Number	081219-497-678-2
Contact Number	+27-78-239-9886
Email	williams@yahoo.com
Address	23 Jannet Street Skyeville

Search (Name/ ID Number)

James

Search

Current Book

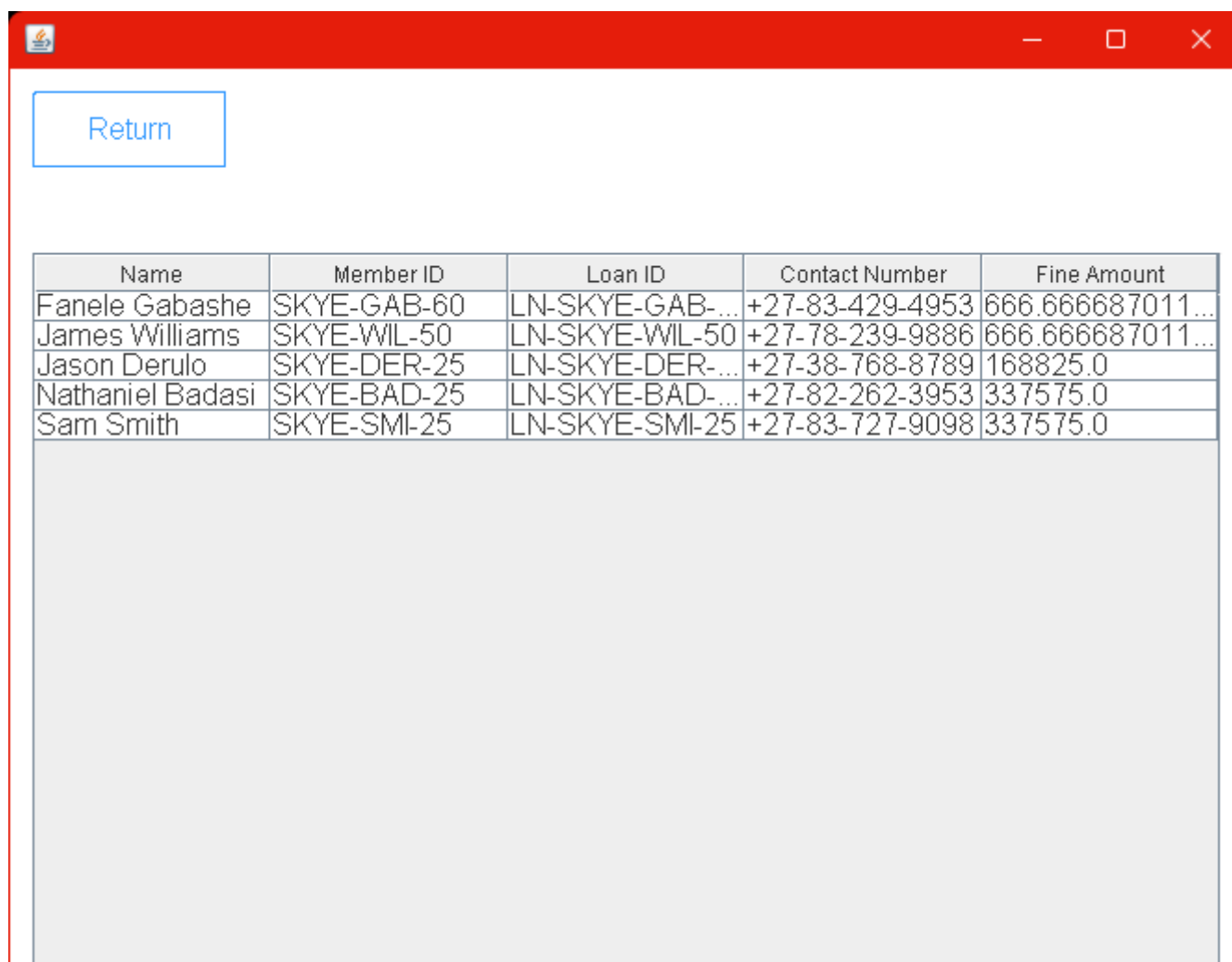
2083-2-38-530928-2

Issue Book Return Book

Retrun Delete

Figure 7: Member information frame

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Name	Member ID	Loan ID	Contact Number	Fine Amount
Fanele Gabashe	SKYE-GAB-60	LN-SKYE-GAB-...	+27-83-429-4953	666.666687011...
James Williams	SKYE-WIL-50	LN-SKYE-WIL-50	+27-78-239-9886	666.666687011...
Jason Derulo	SKYE-DER-25	LN-SKYE-DER-...	+27-38-768-8789	168825.0
Nathaniel Badasi	SKYE-BAD-25	LN-SKYE-BAD-...	+27-82-262-3953	337575.0
Sam Smith	SKYE-SMI-25	LN-SKYE-SMI-25	+27-83-727-9098	337575.0

Figure 8: Member list frame

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Add a new administrator

Personal Details

Name: Gabriel Last Name: Daniels

ID Number: 000823-785-390-9

Contact Number: +27-12-345-6789 Email: gabriel@skye.com

Address: 12 Helvector Rd Germiston 018

Retrun Reset Save

Figure 9: Administrative Member Frame

#	USERNAME	PASSWORD	BLOCKED	USERTYPE
1	user1	ywiv1	<input type="checkbox"/>	LA
2	user2	ywiv2	<input type="checkbox"/>	LU
3	SKYE-WIL-50	neqiw	<input type="checkbox"/>	LU
4	ADMIN-DIK-448	kefvnip	<input type="checkbox"/>	LA
5	SKYE-DER-25	newsr	<input type="checkbox"/>	LU
6	SKYE-GAB-60	jeripi	<input type="checkbox"/>	LU
7	SKYE-SMI-25	weq	<input type="checkbox"/>	LU
8	ADMIN-JOH-301	oecpe	<input type="checkbox"/>	LA
9	SKYE-BAD-25	rexlermip	<input type="checkbox"/>	LU

Figure 10: Login table (tblAdmin)

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