**Testing Approach Documentation for SDLMS Login and User Authentication**

**Introduction**

This document outlines the testing approach, test cases, and challenges faced during the testing of the login and user authentication process for the Software Development Learning Management System (SDLMS).

**Testing Objectives**

The primary objectives of testing the SDLMS login and user authentication process are as follows:

Validate successful login with valid credentials.

Verify appropriate error messages for invalid login attempts.

Ensure consistent behavior across different browsers.

Confirm redirection to the dashboard screen upon successful login.

Testing Tools

The testing was conducted using TestCafe, a JavaScript-based end-to-end testing framework.

**Test Cases**

Test Case 1: Successful Login - Redirect to Dashboard

Description: Validate that users can log in successfully with valid credentials and are redirected to the dashboard screen.

Steps:

Enter valid username and password.

Click the login button.

Expected Outcome: User is greeted with a welcome message, and the dashboard screen is displayed.

Test Case 2: Failed Login - Invalid Credentials

Description: Validate that appropriate error messages are displayed for invalid login attempts.

Steps:

Enter invalid username and password.

Click the login button.

Expected Outcome: An error message indicating invalid credentials is displayed.

Test Case 3: Failed Login - Empty Fields

Description: Validate that an error message is displayed when attempting to log in with empty username and password fields.

Steps:

Leave both username and password fields empty.

Click the login button.

Expected Outcome: An error message indicating required fields are empty is displayed.

Test Case 4: Failed Login - Locked Account

Description: Validate that an error message is displayed when attempting to log in with a locked account.

Steps:

Enter username and password for a locked account.

Click the login button.

Expected Outcome: An error message indicating that the account is locked is displayed.

Test Case 5: Cross Browser Test - Consistent Behavior

Description: Validate consistent behavior across different browsers (Chrome and Firefox) for successful and failed login attempts.

Steps: Similar to Test Cases 1 to 4, executed on both Chrome and Firefox.

Expected Outcome: Consistent behavior and error messages across both browsers.

**Challenges Faced**

Dynamic Elements: Dealing with dynamic elements on the login page posed a challenge, as selectors needed to be adjusted to ensure stability across different test runs.

Timeouts: Ensuring appropriate timeouts for elements to load and actions to complete across different browsers required fine-tuning.

Browser Compatibility: Some elements behaved differently between Chrome and Firefox, requiring adjustments to the test scripts to ensure consistent behavior.

Account Locking: Testing the locked account scenario required coordination with the development team to provide test accounts with locked status.

**Lessons Learned**

Proper synchronization and timeouts are crucial for stable test execution across different browsers.

Collaboration with the development team is essential for handling specific scenarios like locked accounts.

**Conclusion**

Thorough testing of the SDLMS login and user authentication process using TestCafe revealed consistent behavior and highlighted areas for improvement. By documenting test cases and challenges faced, we aim to improve the testing process for future iterations and ensure a robust user authentication experience.