

Laboratory Practical Assessment

Topic : Functional Testing – Software Testing

Course : TESTQUA 31

Type : Laboratory Practical Assessment

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Task 1: Identify What to Test (10 points)

Functional Component to Test	Description
Valid Login	Check that a user can log in with correct username and password.
Invalid Login Handling	System displays “Invalid login credentials.” when wrong inputs are entered.
Required Fields	System shows “All fields are required.” when inputs are empty.
Password Validation	System enforces minimum 8-character password rule.
Account Lockout	After 3 failed attempts, the message “Your account is locked. Contact administrator.” Appears.

Task 2: Functional Testing Process Application (20 points)

Step	Test Case 1	Test Case 2	Test Case 3
Identify Inputs	Username: “24244766” Password: “password”	Username: “24244766” Password: “wrongpass”	Username: “” Password: “”
Expected Output	Login successful; System displays: “Logged In Successfully”	System displays: “Invalid login credentials.”	System Displays: “All fields are required”

Actual Output	Login successful	“Invalid login credentials”	“All fields are required”
Comparison (Pass/Fail)	Pass	Pass	Pass

Task 3: Create Detailed Functional Test Cases (30 points)

Test Case ID	Test Scenario	Test Steps	Test Data	Expected Results	Actual Results	Status
TC001	Valid Login	1. Open UCLM Student Portal 2. Enter valid username 3. Enter valid password 4. Click Login	Username: 24244766 Password: password	User successfully logs in and the system alerts the user with a text “Logged In Successfully!”	System performed as expected.	Pass
TC002	Invalid Login	1. Open UCLM Student Portal 2. Enter valid username 3. Enter invalid password 4. Click Login	Username: 24244766 Password: wrongpass	System displays: “Invalid login credentials.”	Message displayed	Pass
TC003	Empty Fields	1. Open UCLM Student Portal 2. Leave username empty 3. Leave password empty 4. Click Login.	Username: (<i>empty</i>) Password: (<i>empty</i>)	System displays: “All fields are required.”	Correct message displayed	Pass

TC004	Short Password	1. Open UCLM Student Portal 2. Enter valid username 3. Enter short password 4. Click Login.	Username: 24244766 Password: short	System displays password validation (minimum 8 characters)	Validation displayed	Pass
TC005	Account Lock After 3 Failed Attempts	1. Enter invalid password 3 times 2. Attempt login again	Username: 24244766 Password: wrongpasswords	System displays: "Your account is locked. Contact administrator."	Lockout message displayed	Pass

Task 4: Identify the Functional Testing Techniques Used (10 points)

Test Case ID	Testing Technique	Justification
TC001 – Valid Login	System Testing	This test checks the complete login process end-to-end, validating overall system functionality.
TC002 – Invalid Login	Sanity Testing / System Testing	Ensures the core login feature works with incorrect inputs after code changes or during basic checks.
TC003 – Empty Fields Validation	Validation Testing (under System Testing)	Confirms required-field validations work as defined in functional requirements.
TC004 – Boundary/Validation Testing	Boundary Value Testing	Password length requirement (minimum 8 characters) is a boundary/constraint check.
TC005 – Account Lock After 3 Failed Attempts	Integration Testing + System Testing	The feature involves multiple components working together (login attempt counter + lockout system).

Task 5: Compare Functional vs Non-Functional Tests (10 points)

Functional Tests

Functional Tests	Description
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Valid Login Test	Checks if the system allows access when correct username and password are entered.
Invalid Credentials Test	Verifies the system shows “Invalid login credentials.” when wrong username/password is entered.
Account Lockout Test	Confirms that the system locks the account after 3 failed login attempts.

Non-Functional Tests

Non-Functional Tests	Description
Performance Test	Measures how fast the login page loads and processes authentication.
Usability Test	Evaluates ease of use—clarity of labels, readability of error messages, and overall page layout.
Security Test	Ensures password masking, secure data transmission (HTTPS), and protects user credentials

Task 6: Benefits & Limitations Analysis (10 points)

1. How does functional testing improve software quality in the login module?

Functional testing improves software quality in the login module by ensuring that the system behaves according to its specified requirements, such as handling valid and invalid logins, displaying messages for empty fields, and enforcing password rules. It helps detect defects early in the development cycle, preventing issues from reaching end users, and verifies critical user flows like authentication to avoid access problems. Functional testing also validates error-handling behavior, ensuring that the system responds appropriately to incorrect inputs, which enhances the overall user experience by providing clear feedback. Additionally, it contributes to security by testing password constraints and lockout rules, helping to protect against brute-force attacks.

2. What limitations may affect the accuracy of your test results?

The accuracy of functional testing results can be affected by several limitations.

Incomplete or unclear requirements may cause testers to overlook important scenarios, while the

focus on expected behaviors means that performance or security issues may not be thoroughly assessed. Human error during manual test execution, particularly with repetitive test cases, can introduce inaccuracies, and limited test data might not reflect all real-world user behaviors. Differences between the test environment and the production system can also impact results. Moreover, functional testing cannot guarantee the detection of all bugs, as it does not examine every possible path or edge case in the application.

Task 7: Practical Execution (Hands-On) (10 points)

Test Case Executed 1: TC001 — Valid Login

Steps Performed

1. Opened the UC Student Portal login page
2. Entered valid username
3. Entered valid password
4. Clicked the Login button

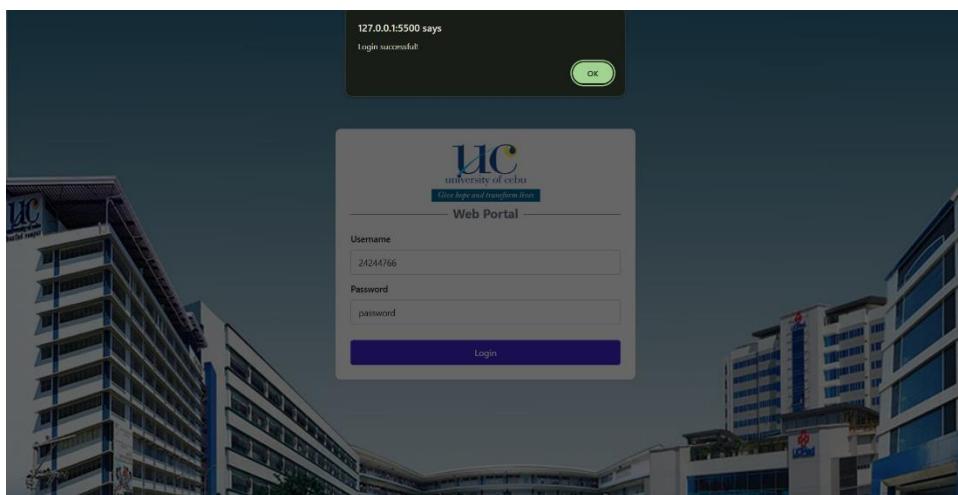
Test Data Used

- i. Username: 24244766
- ii. Password: password

Expected Result

System should display:
"Login successful!"

Actual Result (with screenshot)



System displayed the same success message.

Interpretation: PASS — The system behaved as expected.

Test Case Executed 2: TC002 — Invalid Login

Steps Performed

1. Opened the UC Student Portal login page
2. Entered valid username
3. Entered invalid password
4. Clicked the Login button

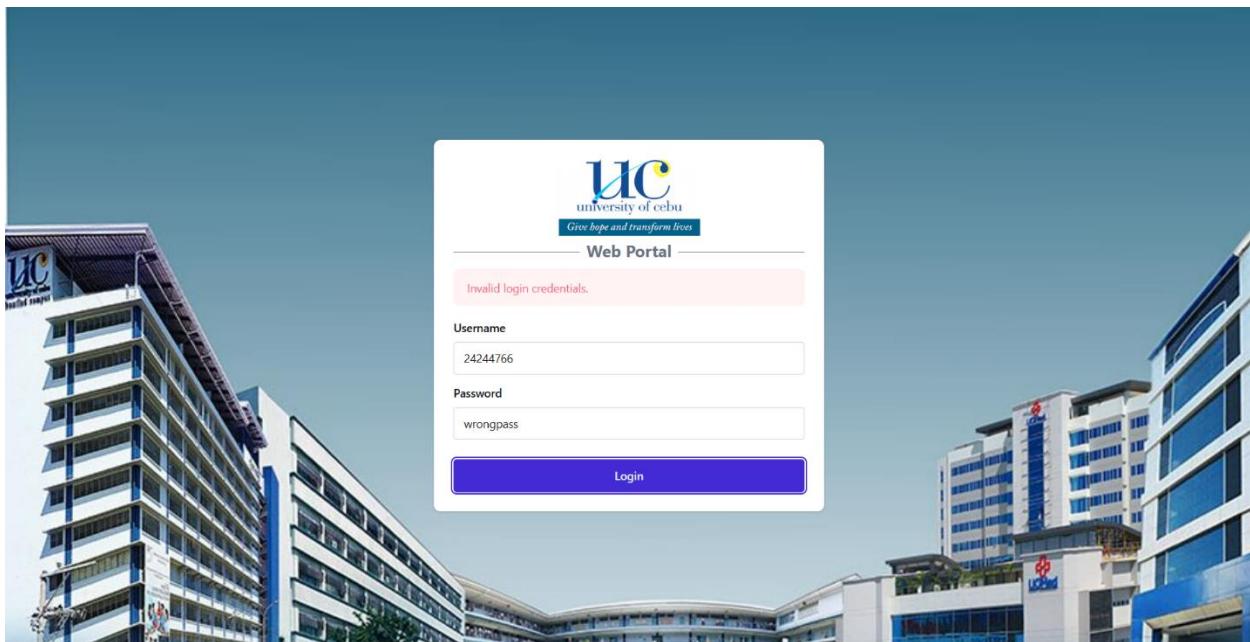
Test Data Used

- Username: 24244766
- Password: wrongpass

Expected Result

System should display:
"Invalid login credentials."

Actual Result (with screenshot)



System displayed the correct error message.

Interpretation: PASS — The system behaved as expected.