

Software Testing LO2: Test Plan

Priority and Pre-Requisites

(System) Requirement R1: Member Access Control

Description – Only registered members with correct login details should gain access to member-specific functionality.

Priority – High. This is a security-critical core feature as unauthorized access can pose a security risk.

Verification – Early inspection of member login and file-based data persistence to ensure correct implementation.

Validation – Use several input scenarios to ensure that access to member menu is only allowed to members with valid credentials.

(Integration) Requirement R2: Data Persistence of Member Records

Description – Member data should be saved to a file (members.txt) and retrieved when the system restarts so an existing member can log-in successfully in a new session.

Priority – Medium. Essential for usability, however it's not a security risk if it doesn't function.

Verification – Check that data is written to members.txt correctly after member registration.

Validation – Ensure the data read from members.txt matches the original registration input from members.

(Unit) Requirement R3: Member Registration Input Validation

Description – The system must validate user inputs during the member registration process to ensure the following is satisfied:

- *Username must not be empty and unique*
- *Password must meet minimum strength requirements*
- *Full name must not be empty*

Priority – High. Input validation is critical for system stability, security and data integrity. If I leave any vulnerabilities to be exploited, then this may result in unauthorized access to the system.

Verification – Ensure input validation code logic is reflected at runtime for a member signing-up.

Validation – Confirm input validation works as expected by presenting invalid and valid inputs and observing the respective outputs that should follow. This can be done through unit tests.

Scaffolding and Instrumentation

R1: Scaffolding – N/A. Testing login behavior will be done using unit tests with either mock data or existing member data.

Instrumentation – A log can be made of successful sign-in attempts to analyze log-in success rate.

R2: Scaffolding – Create mock files with pre-defined member data to simulate different states/scenarios (empty file, corrupted data). This would leave the system unaffected as the original members.txt file is untouched.

Instrumentation – N/A.

R3: Scaffolding – a test harness can be used to simulate invalid and valid user inputs and check responses without requiring manual input at the console.

Instrumentation – rejected inputs and their reason for rejection can be logged for analysis (i.e. empty fields).

Process and Risk

The Process

Task Schedule: R3 -> R1 -> R2

Member registration input validation should be implemented early in the development lifecycle. The core member sign-in functionality should be finished before the data persistence (file handling) of member records can be tested.

Concurrent Activities: Scaffolding development

I plan on using simulated or mock data alongside the implementation of input validation and login functionality to allow for earlier testing without having to finish data persistence to be fully operational. This means I can have a sufficient system built to carry out testing without interfering with development.

Dependence: Testing member login is dependent on implemented data persistence to be able to load up saved member data from members.txt. Input data validation for member registration needs clear specification on requirements for username, password and full name.

The Risks

- **Weak member sign-up input validation** – this may allow faulty member data to be stored leading to corrupted records. This can be mitigated by ensuring boundary testing for all fields such that they must meet requirements.
- **Incomplete member data storage** – there's a possibility that file operations may fail without being explicitly stated (error message may not be sent). This can be mitigated by implementing error handling for I/O exceptions.