Problem Statement 5:

Design an automated testing suite for the login and fund transfer functionalities of a banking application. Include test cases for scenarios like multiple concurrent user logins, incorrect PIN entries, and fund transfer validations.

Solution:

Automated Testing Suite for Banking Application Login and Fund Transfer

This document outlines an automated testing suite for the login and fund transfer functionalities of a banking application. It includes test cases for various scenarios, focusing on functionality, security, and performance.

Testing Tools:

- Consider using tools like Selenium, Appium, or Cucumber for test automation.

Test Data:

- Prepare diverse test data covering valid and invalid scenarios for usernames, passwords, PINs, account numbers, and transfer amounts.

Test Cases:

Login Functionality:

Positive Test Cases:

- Login with valid username and password.
- Login with different character combinations and lengths for username and password.
- Login using different supported authentication methods (e.g., fingerprint, facial recognition).
- Remember me functionality persists login on subsequent app launches.

Negative Test Cases:

- Login with invalid username or password.
- Attempt login with exceeding maximum failed attempts limit.
- Login attempt from unauthorized device or location triggers security alerts.
- Login fails gracefully when network connectivity is lost.

Multiple Concurrent Logins:

- Simulate multiple users attempting to login concurrently.
- Verify system handles concurrent logins without errors or conflicts.
- Ensure individual login sessions remain secure and isolated.

Incorrect PIN Entries:

- Enter incorrect PIN and verify error messages are accurate and informative.
- Test PIN lock functionality after exceeding maximum incorrect attempts.
- Allow PIN reset functionality after successful authentication.

Fund Transfer Functionality:

Positive Test Cases:

- Transfer funds between own accounts within valid limits.
- Schedule future fund transfers for valid dates and times.
- Add new beneficiaries with correct account details.
- Edit and delete existing beneficiaries successfully.
- Receive transfer confirmation messages accurately reflecting transaction details.

Negative Test Cases:

- Attempt transfer exceeding account balance or daily limit.
- Transfer funds to non-existent or invalid account numbers.
- Verify insufficient funds error message and transaction failure.
- Test validation rules for transfer amount formats and beneficiary details.
- Simulate network interruption during transfer and verify graceful handling.

Performance Testing:

- Measure login and transfer response times under various network conditions and user loads.
- Identify performance bottlenecks and optimize system resources for efficiency.

Additional Considerations:

- Include security testing for potential vulnerabilities like SQL injection and data breaches.
- Design test cases for accessibility compliance, ensuring usability for users with disabilities.
- Schedule regular regression testing to ensure functionality remains intact after updates.
- Integrate automated testing into the development pipeline for continuous feedback and improvement.

By implementing this comprehensive automated testing suite, you can ensure the login and fund transfer functionalities of your banking application are secure, reliable, and performant, enhancing user trust and confidence.