Capstone Project 2: Banking Loan & Financial Transaction Automation Testing

Introduction

Banks and financial institutions manage customer accounts, loans, and transactions through online platforms. Any errors in these systems could lead to **financial frauds, incorrect interest calculations, or compliance violations**. This project focuses on automating loan management and transaction validation in a **Banking Application**.

Problem Statement

Manual verification of banking transactions, EMI schedules, and loan approvals is not scalable. A well-structured **automation testing framework** is required to validate loan applications, EMI generation, interest calculations, and fund transfers.

Objectives

- Automate **loan application processing** and EMI schedule validation.
- Perform **data-driven testing** for different loan types and customer profiles.
- Validate **fund transfers and balance updates**.
- Ensure **cross-browser compatibility testing**.
- Implement **parallel execution** and **reporting** using TestNG.

Scope

- Customer Authentication (Login, OTP simulation).
- Loan Application (Home, Personal, Education loans).
- Loan Approval/Rejection Flow.
- EMI Calculation & Payment Schedule.
- Fund Transfer between accounts.
- Transaction History Verification.

Tech Stack

- **Language:** Java
- **Automation Tool:** Selenium WebDriver
- **Testing Framework:** TestNG
- **Reporting:** TestNG Reports + Extent Report
- **Data Source:** Excel (Loan details, customer profiles)
- **CI/CD:** Jenkins

Functionalities to Automate

1. **Login & Account Dashboard** – Validate login, balance display.
2. **Loan Application Form** – Automate loan form submission for different loan products.
3. **Loan Approval/Rejection Workflow** – Validate conditions like salary range, CIBIL score.
4. **EMI Calculation Validation** – Ensure EMI schedule is calculated correctly.
5. **Fund Transfer** – Automate money transfer and validate updated balances.
6. **Transaction History** – Ensure transactions are recorded correctly.

Test Scenarios

1. Validate login with valid/invalid credentials.
2. Apply for Home Loan with salary < threshold and verify rejection.
3. Apply for Personal Loan with valid details and verify approval.
4. Validate EMI generation for 12 months loan tenure.
5. Perform fund transfer between accounts and validate debit/credit updates.
6. Execute tests in parallel for **loan workflow** + **fund transfer workflow**.
7. Generate **HTML and Extent Reports** for test execution.

Expected Outcomes

- Automated suite covering **loan lifecycle and financial transactions**.
- Regression tests for EMI and loan approval conditions.
- Reduced errors in fund transfers and balances.
- Executable reports for stakeholders.

Financial / Banking Domain – Free Apps

Here, you're in luck ☐ — several **open-source banking simulation apps** are available for automation:

☐ Options:

1. **Parabank (Highly Recommended for Financial Domain)**
   - URL: http://parabank.parasoft.com/parabank/index.htm
   - Simulates a **banking system**:
     - Login / Registration
     - Open new account
     - Transfer funds
     - Apply for loan
     - Transaction history
   - Perfect for **loan + transaction scenarios**.
   - Widely used in Selenium projects.
2. **OrangeHRM (For Workflow Approvals)**
   - URL: https://opensource-demo.orangehrmlive.com
   - Though HR-based, its **leave approvals / workflows** can simulate insurance/loan approval.
3. **Demo Blaze / Sauce Demo (E-commerce for Transactions)**
   - URL: https://www.demoblaze.com/
   - URL: https://www.saucedemo.com/
   - Can simulate **purchase transactions** → map as "premium payment" or "fund transfer".
4. **OpenCart Demo**
   - URL: https://demo.opencart.com/
   - Supports **checkout, payment gateways**. Can simulate **financial payment flow**.

3. Practical Setup for Your Capstones

- **Insurance Project:**
  Use **GitHub Insurance Management repos** or create a small mock **Insurance Portal** with policy form + claim form + payment page.
- **Financial Services Project:**
  Use **Parabank** → directly supports **loan application, approval, transactions** (perfect match).

Recommendation for You:

- Use **Parabank** for your **Banking Loan & Transaction Automation Project** (ready-to-use).