

Incourage Insurance Ltd

# Load/Performance Test Plan

Version 2.0.2

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**Audit Trail:**

Date	Version	Name	Comment

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### 1. Reference Documents

Reference information used for the development of this plan includes:

- Business requirements
- Technical requirements
- Test requirements

### 2. Scope

This document defines the testing objectives, requirements, designs, and procedures for load and performance testing of the Loan Management System.

The system features include:

- Loan Management: Update payments or approve loans.
- Client Management: Contact clients through the app.
- Payments Management: Notify managers about loan payments to avoid delays.

Tech Stack:

- Frontend: React with MUI Material and Tailwind.css
- Backend: PostgreSQL
- Communication: EmailJS for client notifications

The objective is to:

- Ensure system reliability under anticipated and peak workloads.
- Validate the core features: loan management, client management, and payments management.
- Identify performance bottlenecks and validate system scalability.

### 3. Approach

The testing approach will focus on:

- Identifying real-world test scenarios.

- Executing manual and automated tests to validate functional and non-functional requirements.
- Using tools for load testing, monitoring, and reporting to evaluate performance and system reliability.

#### **4. Load Test Types and Schedules**

The following tests will be executed:

- Acceptance Test
- Baseline Test
- Goal-reaching Test
- Spike Test
- Stress Test
- Scalability Test
- Regression Test
- Benchmark Test

##### **Test Schedule:**

- Test Cycle 1: Initial baseline testing (Week 1)
- Test Cycle 2: Goal-reaching and scalability tests (Week 2)
- Test Cycle 3: Spike and stress tests (Week 3)
- Test Cycle 4: Regression and benchmark tests (Week 4)

Criteria for System Under Test (SUT) readiness will include:

- Successful completion of acceptance tests
- Database setup validation
- Frontend and backend connectivity confirmation

#### **5. Performance/Capability Goals**

Performance goals include:

- 90% of static pages must meet an acceptable response time of 1 second.
- System must handle a baseline multiplier of 4x.
- Spike ratio tolerance at x3 and burstiness ratio at x5.
- Metrics to collect include:
  - Response times
  - Error rates
  - Resource utilization

#### **6. Load Testing Process, Status Reporting, Final Report**

- Scripts will be executed thrice against the SUT.
- Baseline metrics include:
  - Response times
  - Web and database server errors
  - Failed transactions
- Reports:
  - Status Reports: Weekly, including test progress and preliminary findings.
  - Final Report: Delivered at the end of all test cycles, containing:
    - Summary of executed tests
    - Performance metrics analysis
    - Identified bottlenecks
    - Recommendations for improvements

#### **7. Bug Reporting and Regression Instructions**

Bugs will be reported via Jira. Regression tests will follow after fixes and updates.

## 8. Tools Used

Tools include:

- Load testing: Apache JMeter, LoadRunner
- Monitoring: New Relic, Datadog
- Automated testing: Cypress, Selenium for UI; Postman, Jest with Supertest for APIs
- Database testing: pgAdmin, custom SQL scripts
- Email testing: EmailJS

## 9. Training Needs

Training programs will cover:

- Tool usage
- Test plan implementation
- Handling EmailJS notifications and database validation

## 10. Load Descriptions

**Server-Based:**

- Number of users: [X]
- Average session time: [Y minutes]

**User-Based:**

- Number of activities per session: [X]
- Validate user interactions on:
  - Loan management (approval, updates)
  - Client communications
  - Payment notifications

## 11. System Under Test Environment

- Network access: [Details]
- Client configurations: [Details]
- Database: PostgreSQL with constraints and triggers validation

## 12. Exclusions

The following are excluded:

- Content accuracy testing
- In-depth third-party component testing
- Internationalization

## 13. Test Deliverables

Deliverables include:

1. Comprehensive test cases document with priority levels.
2. Bug report with reproduction steps and screenshots.
3. Repository with automated test scripts for UI and APIs.
4. Database testing results for CRUD operations and consistency.
5. (Bonus) Reports on performance and security testing plans.

## 14. Budget/Resource

[Insert monetary and personnel requirements]

## 15. Team Members and Responsibilities

Name	Role	Contact Info
Ann Njoki	Test Engineer	annj@mail.com

## 16. Test Plan Approval

Name	Title	Date
Jane Smith	Test Manager	24-01-2025

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Appendices:

- Appendix 1: User Scenario Test Suite
- Appendix 2: Concurrency Load Testing Suite
- Appendix 3: Data Elements from Load Test
- Appendix 4: Test Scripts
- Appendix 5: Error Reports