

Quality Assurance Test Plan

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A. Overview

1. Software design plan summary

Endothon Finance's applicant-facing web application is experiencing a logic flaw that causes it to request the first five years of fiscal data instead of the most recent five. This issue is halting the loan application process and preventing the accurate generation of loan profiles for companies that are older than five years. To resolve the ticket, the software design document outlines a plan to revise the year selection logic so that the correct fiscal years are requested. Although not directly related to the primary issue, the plan also calls for reviewing the applications' forecasting logic. This revision is to ensure that acceptance criterion #2 of the ticket is met and that the forecasting logic is functioning as expected.

2. Functional requirements objective

The overall objective of testing the functional requirements is to revise the application's year selection logic so that it functions as originally intended. Testing these requirements verifies that the application adheres to the business rules defined in the software design document. The goal ensures that the system will generate complete and accurate loan profiles.

- For companies more than five years old, the application is expected to request the five most complete years of fiscal data.
- For companies less than five years old, the application is expected to request the most complete years of fiscal data and forecast the remaining years to reach a total of five.
- The current year is expected to be disregarded when determining completed years.

2a. Functional requirements objective metrics

- Year Selection Accuracy Rate: This metric measures the rate at which the system accurately requests the correct, complete fiscal years. This metric is relevant because it is the primary issue of the ticket, and once the year selection logic has been resolved, the accuracy rate is expected to improve.
- Forecast Accuracy Rate: This metric measures the rate at which the system accurately requests the correct forecasted years. It is relevant because it measures a key function of the system's ability to generate complete and accurate loan profiles. Forecast accuracy is expected to be high, as the forecasting logic is not the primary issue of the ticket; however, unidentified problems may still exist.
- Input Validation Success Rate: This metric measures the rate at which inputs are successfully processed, meaning that valid inputs are accepted and invalid inputs are



rejected. Inputs are validated against formatting, completeness, and future date restrictions. This metric is relevant because incorrect input handling would directly affect the system's ability to calculate which years to request, ultimately affecting loan profile generation. Input validation success is expected to be high due to the input validation module described in the software design plan.

3. Non-functional requirements objective

The overall objective of the non-functional requirements is to ensure that the application is secure, reliable, and capable of supporting growth. This enhances usability and effectiveness for both the user and Endothon. Testing these requirements verifies that the application meets industry standards and maintains performance.

- The application must protect sensitive financial data by restricting access to authorized users. These restrictions prevent unauthorized users from viewing or modifying confidential data. Security measures include authentication and role-based access.
- The application must maintain performance as Endothon Finance grows and the volume of loan applications increases. The system is expected to handle growth in the user base and the amount of stored data without degradation in speed or responsiveness.

3a. Non-functional requirements objective metrics

- Security Compliance: This metric measures the number of times unauthorized users are blocked from attempting to access or modify private data. In addition to Endothon's internal metrics, third-party cybersecurity consultants will conduct inspections to ensure the system meets industry standards. This metric is relevant because it verifies that the system is actively protecting sensitive data.
- Scalability Performance: This metric measures the system's ability to maintain an acceptable speed and responsiveness under varying user and data loads. This includes response times, processing speeds, and database stability. This metric is relevant because it ensures the application can grow with the user base and the corresponding amount of data without impacting its users' experience.



B. Scope

1. In-scope functional requirements

- Recent Years for Established Companies: The quality assurance process will test the application's ability to request the five most recently completed years of financial data for companies that have been in business for more than five years. This functional requirement is in scope because it is the key issue described in the ticket.
- Forecasting Years for Newer Companies: The quality assurance process will test the application's ability to identify and request the correct mix of completed and forecasted years for companies that have been in business for less than five years. This functional requirement is in scope because it is one of the acceptance criteria outlined in the ticket.

These functional requirements support the application's goal of generating complete and accurate loan profiles by ensuring that the system requests the correct completed fiscal years and accurately identifies when and if forecasted years are needed.

2. In-scope non-functional requirements

- Security: The quality assurance process will test the application's security safeguards to ensure that sensitive data is protected. Security measures to be tested include authentication and role-based access controls. This non-functional requirement is in scope because it supports the application's goal of providing a secure environment and meeting industry standards.
- Scalability: The quality assurance process will test the application's ability to scale without experiencing degradation in performance. Performance features to be tested include response times, processing speeds, and database stability under varying user and data loads. This non-functional requirement is in scope because it supports the application's goal of maintaining reliable performance and supporting growth.

These non-functional requirements support the application's goal of enhancing usability and effectiveness of the system for both the user and Endothon Finance.

3. Out-of-scope functionalities

Importable Forecasting Data

- Description: This functionality allows the user to import forecasted data instead of entering it manually. This aligns with the application's business requirements because it will help generate accurate loan profiles and complete the second acceptance criterion of the ticket.
- Reasoning: This functionality is out of scope because it does not address the primary issue of incorrect year selection. It also does not verify that the correct forecasted years are being requested.



Confirmation Prompt

- Description: This requirement would present the user with confirmation prompts throughout the loan application process. Examples include providing the user with a preview of the fiscal data entered for the requested years or confirming the business establishment date to prevent inaccurate year requests. This aligns with the application's business requirements because it provides an additional layer of validation to ensure that loan generations are accurate.
- Reasoning: This functionality is out of scope because, even though it may inform the user if the system is requesting the incorrect years, it does not fix the year selection logic. It could also uncover unrelated bugs in the system that would divert focus and resources away from the primary issue.



C. Test Strategy

1. Testing overview

Test Case Table				
Test Type	Description of Test	Objective	Test Owner	Environment
Unit Test	<p>This test will verify that the system correctly requests the five most recently completed fiscal years for companies older than five years. The input for the test will be a company's establishment date (input by the tester) and the current year (input by the system).</p> <p>-----</p> <p><u>Sample input:</u></p> <p>Business Establishment Date = 01/01/2010</p> <p>Current Year = 2025</p> <p><u>Expected Output:</u></p> <p>The system requests fiscal data for the years 2020, 2021, 2022, 2023, and 2024</p>	Ensure the application's year selection logic, for companies more than five years old, requests the correct years for input.	Developer	Development Environment
Unit Test	<p>This test will verify that the system correctly identifies and generates the correct number of forecasted years for companies less than five years old. The total number of completed and forecasted years requested is expected to be five. The input for this test will be a company's establishment date (input by the tester) and the current year (input by the system).</p> <p>-----</p>	Ensures the application's forecasting logic, for companies less than five years old, identifies and requests the correct mix of complete and forecasted years for input.	Developer	Development Environment



	<p><u>Sample input:</u></p> <p>Business Establishment Date = 01/01/2023</p> <p>Current Year = 2025</p> <p><u>Expected Output:</u></p> <p>The system identifies 2023 and 2024 as completed and 2025, 2026, and 2027 as forecasted. The system then requests fiscal data from the aforementioned years.</p>			
Security Test	<p>This test will verify that the system protects sensitive data utilizing authentication and role-based access controls. Simulated user accounts will be used to test authentication, and simulated employee accounts will be used to test role-based access.</p> <p>-----</p> <p><u>Sample Input:</u></p> <p>1. Authentication: Username: testuser123 Password: wrongpass123</p> <p>2. Role-Based Access: Role: Intern Action: Delete an existing loan profile</p> <p><u>Expected Output:</u></p> <p>1. Authentication: The user is not granted access to the testuser123 account. System Response: "Invalid Credentials: Username or password is incorrect".</p> <p>2. Role-Based Access: The intern's account is blocked from the action, and the attempt is logged.</p>	<p>Ensure that the system utilizes authentication and role-based access controls to safeguard sensitive data while adhering to industry standards.</p>	Security Analyst	<p>Staging Environment (Security Testing Tools)</p>



	System Response: "Access Denied: You do not have permission to delete profiles".			
Performance Test	<p>This test will verify that the system's performance, including response times, processing speed, and database stability, under varying load conditions. Simulate many concurrent users submitting loan profiles using performance testing tools.</p> <p>-----</p> <p><u>Sample Input:</u></p> <ol style="list-style-type: none"> 1. Simulate 500 concurrent users accessing the system. 2. Simulate 100 simultaneous loan profile generations. <p><u>Expected Output:</u></p> <ol style="list-style-type: none"> 1. The page loads successfully within 3 seconds, with no server errors. 2. All calculations are completed within 5 seconds, and all loan profiles are generated within 30 seconds, with no server or database errors. 	Ensure that the system can scale without experiencing degradation in performance.	Performance Engineer	Staging Environment (Performance Testing Tools)

2. Sequence of testing

1. Unit Test – Year Selection Logic

Justification: This test addresses the key issue in the ticket.

2. Unit Test – Forecasting Logic

Justification: This test does not address the key issue, but it is still an acceptance criterion in the ticket.



3. Security Test – Authentication & Role-Based Access

Justification: This test does not address any key issues outlined in the ticket. However, it is still an essential feature for the application to have.

4. Performance Test – Scalability

Justification: This test does not address any current issues and is an evaluation of the system's readiness for growth.

The sequence of testing is as follows: unit testing, then security testing, and finally performance testing. Unit tests are first because they verify the system's logic before it interacts with other modules. This way, critical failures are identified and addressed early in the process. The year selection test is performed first because it addresses the primary issue of the ticket, followed by the forecasting test, which aligns with the second acceptance criterion. The security test is next, because although it does not address any key issues, it is still important to verify that the application protects sensitive data. The performance test is last because its purpose is to evaluate the system's scalability rather than address any current issues.

