Quality Assurance Test Plan

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A. Overview

1. Software design plan summary

The design plan outlined in this document will address the issue from ticket #D480-AEN1. In short, the loan application page is prompting applicants with well-established businesses for the *first* 5 years of historical fiscal data, rather than the *latest* 5 years of fiscal data.

2. Functional requirements objective

As outlined in the design plan, the main 2 functional requirements that need to be tested are gathering the proper fiscal data during the loan application process and generating a correct loan profile after the loan application is submitted.

2a. Functional requirements objective metrics

Quality metrics associated with these requirements are primarily correctness and trustworthiness. The fact that the form is asking for and collecting the wrong data is resulting in incorrect loan profiles. The fact that this issue is so visible to end users reflects poorly on the organization in general and could cast doubt on the integrity of the organization as a whole.

These metrics are extremely relevant to the software design solution. If the application is collecting incorrect data, the loan applications can't be used. If the end users don't trust the integrity of the software, they won't use it and the organization loses potential clients.

3. Non-functional requirements objective

2 non-functional requirements to be tested in this QA plan are that the site needs to have a proper implementation of authentication and authorization and that the overall speed of the site should be reasonably quick. The site should restrict access to admin functions to internal organization members, integrated with our current OIDC user policies. The site should be reasonably performant and not take more than 5 seconds to load pages.

3a. Non-functional requirements objective metrics

Quality metrics related to these non-functional requirements include compliance and performance. The data this application deals with is extremely sensitive and it is important to comply with established security standards and governmental regulations. Failing to meet these metrics could result in a security breach which would kill organizational reputation and result in legal action. On the performance side, a performant application is critical to maintaining a healthy customer base. It is also a reflection of the quality of the organization in general.

B. Scope

1. In-scope functional requirements

Two in-scope requirements to be tested in this QA plan are that the loan application page and the resulting loan profile that gets produced have the correct fiscal data (fiscal data from the previous 5 years, rather than the first 5 years of the business' history).

After the fix is developed the full loan application process will be tested. The displayed controls on the loan application page will be observed to check if they are prompting for the last 5 years of fiscal data, and the backing methods and event handlers will be stepped through to ensure they're calculating the required fiscal years properly. After the loan application process has been tested and verified correct, the resulting loan profile that gets generated from these inputs will be tested and checked to ensure that the profile contains the fiscal data from the previous 5 years for the business, rather than the first 5 years of the business' history.

These requirements are in the scope of the design plan as they are directly related to the functional requirements outlined in the software design plan, as they govern the process of acquiring loan application data and processing it into a loan profile from start to finish.

2. In-scope non-functional requirements

2 in-scope non-functional requirements that will be tested during this QA process are that the pages on the site load in less than 5 seconds overall performance of the site, and that the site properly limits access to users, both logged-in and not yet logged-in.

Since a user must first log in to apply for a loan, we can observe that the authentication and authorization system is working properly. Attempting to apply for a loan before logging in should prompt the user to first log in, and once logged in, the application should update to display the proper user profile for that user. Furthermore, at no point through the application process should the user have access to internal admin-only portions of the site, and once logged in the user should only have access to their own loan applications and saved fiscal data. Finally, throughout the entire testing process, the performance of the site can easily be observed and it can be noted if any page takes longer than 5 seconds to load.

These requirements are in scope with the previously described non-functional requirements of security and performance. Proper functionality of the log-in process, application access control, and segregation of loan application data are of the utmost importance with regard to organizational security, user privacy, and compliance with governmental regulations and well-established security standards.

Observing the overall site performance throughout the log-in and loan application process directly aligns with the need for the web application to provide a smooth and non-aggravating experience. While it is not currently an issue, it is easy to keep an eye on and we should always be on the lookout for unexpected slow performance, 5 seconds is a very lenient requirement for such a simple form to be loaded.

3. Out-of-scope functionalities

The following functionalities are considered out of scope and will not be addressed during this QA process:

- Automatic fiscal performance projection for businesses established within the past 5 years
- Redesigning the look and feel of the loan application form

3a. Out-of-scope functionalities explanation

Automatic fiscal performance projection for newly established businesses could be a very attractive feature and could draw in more business for the organization. It could guide newer entrepreneurs, and help develop long-term business relationships where both the customer and our organization could thrive together.

However, fixing the actual application process has a much higher priority, and requires much less development time. Trying to implement a brand-new feature while such an urgent and easily fixed bug is pending would not be an efficient use of our time.

Upgrading the look and feel of the loan application form is also directly related to the loan application process. Having an interface that implements the newest technologies, and has the nicest UX features presents a professional face to our clients. Furthermore, making sure to implement things like accessibility features for differently abled users could even open up our business to clients that we would otherwise miss out on.

However, our UX is already built on a relatively modern tech stack, and usability testing of the application in general has been very positive. Again, the scope of this fix is very narrow, we simply need to address the bug affecting the loan application form. Deployment of this fix is a high priority and does not require a lot of time to develop. Delaying this fix to redesign the UX doesn't make sense in this scenario, as the development time and priority do not align.

C. Test Strategy

1. Testing overview

Test Case Table

Test Type	Description of Test	Objective	Test Owner	Environment
Usability	The loan application page will be examined and checked to see if it asks for the correct fiscal data as the established business date changes. Sample inputs: Est. date 2014, est. date 2022 Expected results: The form requests fiscal data for 2019-2023, the form requests fiscal data for 2022-2023 and projections for 2024-2026	To test the site's ability to gather the correct fiscal data when users apply for loans.	QA Tester	Any modern web browser with access to the deployed testing site.
Usability	Loan profiles will be checked to see if they have the correct fiscal data. Sample inputs: A loan profile for a business est. in 2014, a loan profile for a business est. in 2022. Expected results: The loan profile shows fiscal data from 2019-2023, the loan profile shows fiscal data from 2022-2023 and fiscal projections for 2024-2026	To test the site's ability to generate correct loan profiles from submitted loan applications	QA Tester	Any modern web browser with access to the deployed testing site
Usability	User authentication, access control, and segregation of data will be checked. Sample input: User logs in with a client account Expected results: Only loan applications/profiles for the logged-in user are displayed. The logged-in can't see or directly access any admin pages on the site.	To test the site's authentication and authorization implementations	QA Tester	Any modern web browser with access to the deployed testing site
Usability	The general performance of the site will be checked. Sample inputs: The user loads the FAQ page Expected results: Page loads within 5 seconds	To test the overall performance and speed of the site.	QA Tester	Any modern web browser with access to the deployed testing site and a non-degraded internet connection (20 Mbps or more)

2. Sequence of testing

All 4 tests can be accomplished in a single streamlined, repeatable process. Throughout the process, if any page takes longer than 5 seconds to load the performance test should be considered a failure.

Test process

1. Clear all stored browser data for the site to clear any previous login sessions
2. Load the deployed testing site and click around on a few pages of your choosing
3. Try to access admin pages on the site (via visually searching the site for links to admin pages, and via direct admin page URLs, which will be provided). If any admin pages are accessible, the authorization and authentication test fails.
4. Attempt to access loan data and loan applications
5. Log in to the site
6. Repeat step 3
7. Go to the loan application form and begin filling out a loan application
8. Select a random year before 2018 to simulate a well-established business and put it into the form for business established date. If the form does not request fiscal data from 2019-2023 at minimum the loan application test fails. Continue to fill out and submit the loan application. Additional historical business data can be included if the tester chooses, but it is not necessary.
9. Select a random year after 2018 to simulate a newly established business and put it into the form for business established date. If the form does not request fiscal data from 2022-2023 and projections for 2024-2026 the loan application test fails. Continue to fill out and submit the loan application.
10. Load the loan profiles page. If loan profiles for any other user are shown the authentication and authorization test fails.
11. Check the loan profile for the 2014 business. If the profile does not have fiscal data from years 2019-2023 at minimum the loan profile generation test fails
12. Check the loan profile for the 2022 business. If the loan profile does not have the fiscal data from 2022-2023 as well as the projections for 2024-2026, the loan profile generation test fails.
13. Any tests that have not failed at this point should be considered a pass

Justification

The above process is easily repeatable and leverages the overlapping scope of the requirements outlined in the software design process to make it streamlined and efficient. The performance of the site can be observed and tested throughout the testing of the loan application and loan profile generation, as can the segregation of user data.

If simplicity and speed of testing are of the utmost concern, specifically testing the restriction of admin functions on the site can be removed by omitting steps 3 and 6. However, this is not recommended as the additional tasks do not take a long time and it is important to not only test user data segregation but also site authentication for admin functions. Unintended access to these admin functions can also lead to user data breaches and compromised site integrity.