BNFIN Automated Testing Documentation

Robot Framework, Selenium

This documentation will outline the testing procedure for the automated testing suites used to test the BNFIN platform and its functionality.

Technologies used: Robot Framework, Selenium, Python.

**Robot Framework** is an open-source automation testing framework that uses a keyword-driven approach for acceptance testing and acceptance test-driven development (ATDD). It's designed to be easy to use by allowing users to write tests in a natural language-like syntax using keywords. Making for a flatter learning curve and easier for all stakeholders (whether competent programmers or not) to be able to read and understand the testing process.

**Selenium** is a widely used automation and test writing tool widely used for web browser automation. While Selenium itself can be integrated and used with a wide variety of programming languages (Python, Java, and C# being the most commonly used), it can be imported and integrated with Robot Framework via the **SeleniumLibrary** plugin, which allows the user to access the Selenium functionalities (such as clicking buttons, entering text, navigating through pages etc.) but using the simple Keyword syntax provided by Robot. Essentially eliminating the need to use any of the abovementioned programming languages.

Example of Selenium Syntax:

A black background with white text

Description automatically generated

Example of Robot Syntax for comparison:

A screen shot of a computer

Description automatically generated

**Python** will be integrated with Selenium for certain tests which may be difficult to achieve using Robot Framework alone. (Such as spell checker, file saving mechanisms, or complex conditional statements).

Features that will be tested:

* Login/Logout/Password reset
* Registration
* Navigation between links

Testing Limitations:

Due to the nature of Robot script and Selenium, and the use of “locators” (elements that tell the framework where to find specific elements on a web page, those could be a CSS element, a text element, xpath, link, ID etc...), the tests in this system heavily rely on the structure of the HTML in the source code of the original application. Should that source code change, some of the tests in this system may be rendered unusable or require an update.

Robot Framework does not deal very well with Dynamic content. It needs explicit instructions of locators and if those locators do not yet exist – the tests may fail or need updating.

Due to the above reason, certain test elements may need to be modified during the course of development. For instance, if a test currently has to navigate to the last page to see the newest grants in order to select one; when this issue is fixed (i.e. the newest grants will show on the first page, as per industry standards), the test code will need to be modified to reflect that.

Slow in testing dynamic content. Due to the various loading times of dynamic site content and the time it takes for items to appear on the screen, the testing speed needs to be manually adjusted (i.e “set selenium speed 1s” in Common.robot) which greatly slows down the testing process. A single test suite containing 20+ tests may take up to 20-25minutes to run. Further steps that slow down the testing speed (such as setting keywords to the likes of “Unselect Frame”, “Wait Until Element Is Visible” etc.) are also required when moving between certain testing fields, otherwise the tests may fail.

System is slightly finicky and inconsistent. A test that could be ran consecutively without any changes to the inner working of the web-app and the tests could produce different results with each run.

Running the tests:

While the tests can be ran using a variety of means, from individual tests to group runs using a selected Tag, to scheduling specific tests using the task scheduler, the method chosen for this system is through the running of batch files that contain groups of related tests.

Clicking on each batch file will run the tests defined in it and open the “log.html” report that would display the test results.

**The contents and tests that can be found in each file are as follows:**

|  |  |  |
| --- | --- | --- |
| File Name | Overview of included tests | Detailed tests |
| {Sign in, sign out, registration, forgot password.bat}    **Total test cases: 23** | This testing suite will check for the user’s ability to Login, Logout, Reset Password and Register | * Login in as: Reviewer BBI-1, BBI-2. Reviewer Tropicana-1, Tropicana-2. Applicants 1,2 and 3.  Lead reviewers- BBI, Tropicana.  Admin. * Login with invalid fields. * Logout. (As admin) * Successful password reset with valid fields. * Unsuccessful password reset with empty fields. * Unsuccessful password reset with invalid fields. * Unsuccessful password reset with invalid format fields. * Navigation from “forgot password” back to “login” page. * Sign up with empty form fields. * Sign up with invalid form fields. * Sign up with valid form fields. |
| {Public Page Navigation.bat}  **Total test cases: 16** | This testing suite will check for the user’s ability to reach all the publicly available links on the website while logged out | * Test links for * Top nav menu:   Homepage,  About Us,  Contact Us,  Sign Up,  Grants.   * Footer links:   Cookie policy,  Privacy Policy,  Disclaimer,  Terms of use,  Join now.   * Social networks:   Facebook,  Twitter/X  Instagram   * Language toggle * Navigation between “Sign In” and “Sign Out” pages and vice versa. |
| {Grants main page, Lead Reviewer 1.bat}  **Total test cases: 22** | This testing suite will test for the functionalities of the main page displaying the grants as seen on the Lead Reviewer’s account. | * Display Grants page * Choose how many grants to display per page: 6,12,24 * Pagination, flipping from first page to last * Archiving grants * Searching grants, valid and invalid values * Filtering grants by each filter * Creating new grants (of both types) with valid values. * Creating a draft * Editing a draft * Creating new grant with invalid values:   Empty fields.  Max length check.  Text data entered into numeric fields.  Relationships between amounts (i.e. min amount not higher than max, max not higher than budget).  Date field relationships (Finish date cannot be before start date). |
| {Submitted Grants page, Lead Reviewer.bat}  **Total test cases: 12** | This testing suite will test for the functionalities of the “submitted” section of the application stage, where the submitted applications can be viewed, an eligibility test completed to mark as eligible or declined, filter through the applications and search for applications. | * Navigation to page * Filtering (By Intermediary, Region, Organizational Area Of Focus, Task/Stage Completion) * Submission of Eligibility quiz both valid and declined. * Check that eligibility quiz is disabled after submission so it cannot be edited. * Search in search bar for valid and invalid terms. * Assigning reviewers. * Check that reviewers can only belong to the selected intermediary. |