Web Functional Testing

The following exercises demonstrate how to use SOAtest to perform functional testing on the Web interface. It covers:

Introduction

Web interface testing is difficult to automate. Teams often abandon automated testing in favor of manual testing due to too many false positives or too much effort required to maintain the test suites.

SOAtest facilitates the creation of automated test suites that are reliable and dependable. Its ability to isolate testing to specific elements of the Web interface eliminates noise and provides accurate results.

SOAtest isolates and tests individual application components for correct functionality across multiple browsers without requiring scripts. Dynamic data can be stubbed out with constant data to reduce test case noise. Validations can be performed at the page object level as well as the HTTP message level. SOAtest also verifies the client-side JavaScript engine under expected and unexpected conditions through asynchronous HTTP message stubbing.

Cross-browser Testing and Validation Video Overview

<h1 id="WebFunctionalTesting-RecordinginaBrowser">Recording in a Browser</h1> Before performing the following exercises, ensure that you have started the ParaBank Server (as described in Setting Up ParaBank) and that you can navigate successfully to the default address (localhost:8080/parabank). Close the browser window after you verify this. To record in a browser: Right-click the project from the previous exercises, then choose Add New> Test (.tst) File from the shortcut menu.

<img class="confluence-embedded-image" src="/download/attachments/33857293/TestCaseExplorer.png?version=1&modificationDate=1524517672800&api=v2" data-image-src="/download/attachments/33857293/TestCaseExplorer.png?version=1&modificationDate=1524517672800&api=v2" data-unresolved-comment-count="0" data-linked-resource-id="33857318" data-linked-resource-version="1" data-linked-resource-type="attachment" data-linked-resource-default-alias="TestCaseExplorer.png" data-base-url="https://docs.parasoft.com" data-linked-resource-content-type="image/png" data-linked-resource-container-id="33857293" data-linked-resource-container-version="5">

Enter a name for the file, then click Next.
Select Web> Record web scenario and click Next.

<img class="confluence-embedded-image" src="/download/attachments/33857293/RecordWebScenario.png?version=1&modificationDate=1524517672711&api=v2" data-image-src="/download/attachments/33857293/RecordWebScenario.png?version=1&modificationDate=1524517672711&api=v2" data-unresolved-comment-count="0" data-linked-resource-id="33857313" data-linked-resource-version="1" data-linked-resource-type="attachment" data-linked-resource-default-alias="RecordWebScenario.png" data-base-url="https://docs.parasoft.com" data-linked-resource-content-type="image/png" data-linked-resource-container-id="33857293" data-linked-resource-container-version="5">

In the first Record Web Scenario wizard page, ensure that Record new web scenario is selected, then click Next.

<img class="confluence-embedded-image" src="/download/attachments/33857293/RecordNewWebScenario.png?version=1&modificationDate=1524517672693&api=v2" data-image-src="/download/attachments/33857293/RecordNewWebScenario.png?version=1&modificationDate=1524517672693&api=v2" data-unresolved-comment-count="0" data-linked-resource-id="33857312" data-linked-resource-version="1" data-linked-resource-type="attachment" data-linked-resource-default-alias="RecordNewWebScenario.png" data-base-url="https://docs.parasoft.com" data-linked-resource-content-type="image/png" data-linked-resource-container-id="33857293" data-linked-resource-container-version="5">

Complete the next Record Web Scenario wizard page as follows:
Enter <code>Web Functional Testing </code> in the Test Suite Name field. Enter <code>localhost:8080/parabank</code> in the Start Recording From field. <h3 id="WebFunctionalTesting-InternetExplorerNote">Internet Explorer Note</h3> If you will be using Internet Explorer to record/playback this test, use the name of the local machine instead of <code>localhost</code>—here and throughout this tutorial lesson. Ensure that the following options are checked, and the others are not:
Generate Functional Test
Generate Asynchronous Request Tests.

<img class="confluence-embedded-image" src="/download/attachments/33857293/RecordFromAStartingTesting.png?version=1&modificationDate=1524517672674&api=v2" data-image-src="/download/attachments/33857293/RecordFromAStartingTesting.png?version=1&modificationDate=1524517672674&api=v2" data-unresolved-comment-count="0" data-linked-resource-id="33857311" data-linked-resource-version="1" data-linked-resource-type="attachment" data-linked-resource-default-alias="RecordFromAStartingTesting.png" data-base-url="https://docs.parasoft.com" data-linked-resource-content-type="image/png" data-linked-resource-container-id="33857293" data-linked-resource-container-version="5">

Click the Finish button. The test will begin, and a browser window will open.
Within the browser window that opens, perform the following actions:
Type <code>john</code> in the Username field.
Type <code>demo</code> in the Password field.
Click Log In.

<img class="confluence-embedded-image" src="/download/attachments/33857293/login.png?version=1&modificationDate=1524517672588&api=v2" data-image-src="/download/attachments/33857293/login.png?version=1&modificationDate=1524517672588&api=v2" data-unresolved-comment-count="0" data-linked-resource-id="33857306" data-linked-resource-version="1" data-linked-resource-type="attachment" data-linked-resource-default-alias="login.png" data-base-url="https://docs.parasoft.com" data-linked-resource-content-type="image/png" data-linked-resource-container-id="33857293" data-linked-resource-container-version="5">

Click the first account number listed in the Accounts Overview page (12345).

<img

class="confluence-embedded-image" src="/download/attachments/33857293/12345.jpg?version=1&modificationDate=1524517672372&api=v2" data-image-src="/download/attachments/33857293/12345.jpg?version=1&modificationDate=1524517672372&api=v2" data-unresolved-comment-count="0" data-linked-resource-id="33857294" data-linked-resource-version="1" data-linked-resource-type="attachment" data-linked-resource-default-alias="12345.jpg" data-base-url="https://docs.parasoft.com" data-linked-resource-content-type="image/jpeg" data-linked-resource-container-id="33857293" data-linked-resource-container-version="5">

Click Log Out.

<img class="confluence-embedded-image" src="/download/attachments/33857293/logout.png?version=1&modificationDate=1524517672604&api=v2" data-image-src="/download/attachments/33857293/logout.png?version=1&modificationDate=1524517672604&api=v2" data-unresolved-comment-count="0" data-linked-resource-id="33857307" data-linked-resource-version="1" data-linked-resource-type="attachment" data-linked-resource-default-alias="logout.png" data-base-url="https://docs.parasoft.com" data-linked-resource-content-type="image/png" data-linked-resource-container-id="33857293" data-linked-resource-container-version="5">

Close the browser to end recording. In the Test Case Explorer view, SOAtest creates a new .tst file and a test suite that contains the scenario that you just recorded.
Expand the new test suite node in the Test Case Explorer to view the tests created for each user action taken during the recording.

<img class="confluence-embedded-image" src="/download/attachments/33857293/Test.png?version=1&modificationDate=1524517672780&api=v2" data-image-src="/download/attachments/33857293/Test.png?version=1&modificationDate=1524517672780&api=v2" data-unresolved-comment-count="0" data-linked-resource-id="33857317" data-linked-resource-version="1" data-linked-resource-type="attachment" data-linked-resource-default-alias="Test.png" data-base-url="https://docs.parasoft.com" data-linked-resource-content-type="image/png" data-linked-resource-container-id="33857293" data-linked-resource-container-version="5">
<h1 id="WebFunctionalTesting-AddingaDataSource">Adding a Data Source</h1> To add a data source: Right-click the Scenario: Web Functional Testing node, then choose Add New> Data Source from the shortcut menu.

<img class="confluence-embedded-image" src="/download/attachments/33857293/DataSource.png?version=1&modificationDate=1524517672500&api=v2" data-image-src="/download/attachments/33857293/DataSource.png?version=1&modificationDate=1524517672500&api=v2" data-unresolved-comment-count="0" data-linked-resource-id="33857301" data-linked-resource-version="1" data-linked-resource-type="attachment" data-linked-resource-default-alias="DataSource.png" data-base-url="https://docs.parasoft.com" data-linked-resource-content-type="image/png" data-linked-resource-container-id="33857293" data-linked-resource-container-version="5">

In the New Project Data Source wizard, select Table and click Finish.

<img class="confluence-embedded-image" src="/download/attachments/33857293/TableCreate.png?version=1&modificationDate=1524517672762&api=v2" data-image-src="/download/attachments/33857293/TableCreate.png?version=1&modificationDate=1524517672762&api=v2" data-unresolved-comment-count="0" data-linked-resource-id="33857316" data-linked-resource-version="1" data-linked-resource-type="attachment" data-linked-resource-default-alias="TableCreate.png" data-base-url="https://docs.parasoft.com" data-linked-resource-content-type="image/png" data-linked-resource-container-id="33857293" data-linked-resource-container-version="5">

A new Data Sources node is added to the Scenario: Web Functional Testing branch.
In the New Datasource table configuration panel that is opened in the right side of the GUI, make sure the First row specifies column names check box is checked.
Enter <code>Account Number</code> in the top cell in column A. In the same column, enter <code>12345</code> in row 1 and <code>13344</code> in row 2.

<img class="confluence-embedded-image" src="/download/attachments/33857293/NewDatasource.png?version=1&modificationDate=1524517672620&api=v2" data-image-src="/download/attachments/33857293/NewDatasource.png?version=1&modificationDate=1524517672620&api=v2" data-unresolved-comment-count="0" data-linked-resource-id="33857308" data-linked-resource-version="1" data-linked-resource-type="attachment" data-linked-resource-default-alias="NewDatasource.png" data-base-url="https://docs.parasoft.com" data-linked-resource-content-type="image/png" data-linked-resource-container-id="33857293" data-linked-resource-container-version="5">

Click Save to save the changes.
<h1 id="WebFunctionalTesting-ParameterizingaFormInput">Parameterizing a Form Input</h1> To parameterize an action: Expand the Scenario: Web Functional Testing branch to view the recorded actions related to clicking the account number.
Double-click the Test 3: Click “12345" node to open the test configuration panel.
Note that the Pre-Action Browser Contents tab shows what the page looked like before the test action (clicking ‘12345’) was performed. It uses a blue border to highlight the user actionfor this test.

<img class="confluence-embedded-image" src="/download/attachments/33857293/AccountsOverview.png?version=1&modificationDate=1524517672415&api=v2" data-image-src="/download/attachments/33857293/AccountsOverview.png?version=1&modificationDate=1524517672415&api=v2" data-unresolved-comment-count="0" data-linked-resource-id="33857296" data-linked-resource-version="1" data-linked-resource-type="attachment" data-linked-resource-default-alias="AccountsOverview.png" data-base-url="https://docs.parasoft.com" data-linked-resource-content-type="image/png" data-linked-resource-container-id="33857293" data-linked-resource-container-version="5">

In the test configuration panel, open the User Action tab.
Under the Element Locator section, change Attribute value from Fixed to Parameterized.
Select Account Number from the menu that appears to the immediate right.

<img class="confluence-embedded-image" src="/download/attachments/33857293/Parametrized.png?version=1&modificationDate=1524517672636&api=v2" data-image-src="/download/attachments/33857293/Parametrized.png?version=1&modificationDate=1524517672636&api=v2" data-unresolved-comment-count="0" data-linked-resource-id="33857309" data-linked-resource-version="1" data-linked-resource-type="attachment" data-linked-resource-default-alias="Parametrized.png" data-base-url="https://docs.parasoft.com" data-linked-resource-content-type="image/png" data-linked-resource-container-id="33857293" data-linked-resource-container-version="5">

Click Save to save the changes.
Run the test. It will now click on the <a> element that has been parameterized with the account number entered in the data source.
<h1 id="WebFunctionalTesting-ConfiguringValidationonaPageElement">Configuring Validation on a Page Element</h1> To configure a validation on a page element: Fully expand the Scenario: Web Functional Testing branch.
Double-click the Browser Contents Viewer node under Scenario: Form login> Test 3: Click ‘Log In’.

<img class="confluence-embedded-image" src="/download/attachments/33857293/BrowserContents.png?version=1&modificationDate=1524517672447&api=v2" data-image-src="/download/attachments/33857293/BrowserContents.png?version=1&modificationDate=1524517672447&api=v2" data-unresolved-comment-count="0" data-linked-resource-id="33857298" data-linked-resource-version="1" data-linked-resource-type="attachment" data-linked-resource-default-alias="BrowserContents.png" data-base-url="https://docs.parasoft.com" data-linked-resource-content-type="image/png" data-linked-resource-container-id="33857293" data-linked-resource-container-version="5">

In the Browser Contents Viewer configuration panel, right-click the dollar amount text that appears next to account 12345 (-$2300.00) and select Extract Value from <TD> element from the shortcut menu.

<img class="confluence-embedded-image" src="/download/attachments/33857293/ExtractValue.jpg?version=1&modificationDate=1524517672519&api=v2" data-image-src="/download/attachments/33857293/ExtractValue.jpg?version=1&modificationDate=1524517672519&api=v2" data-unresolved-comment-count="0" data-linked-resource-id="33857302" data-linked-resource-version="1" data-linked-resource-type="attachment" data-linked-resource-default-alias="ExtractValue.jpg" data-base-url="https://docs.parasoft.com" data-linked-resource-content-type="image/jpeg" data-linked-resource-container-id="33857293" data-linked-resource-container-version="5">

In the dialog that opens, ensure that the text property is selected in the Property name box, then click Next.

<img class="confluence-embedded-image" src="/download/attachments/33857293/ChooseTheHTML.jpg?version=1&modificationDate=1524517672477&api=v2" data-image-src="/download/attachments/33857293/ChooseTheHTML.jpg?version=1&modificationDate=1524517672477&api=v2" data-unresolved-comment-count="0" data-linked-resource-id="33857300" data-linked-resource-version="1" data-linked-resource-type="attachment" data-linked-resource-default-alias="ChooseTheHTML.jpg" data-base-url="https://docs.parasoft.com" data-linked-resource-content-type="image/jpeg" data-linked-resource-container-id="33857293" data-linked-resource-container-version="5">

Complete the next page as follows:
Check Isolate partial value using text boundaries box.
In the Left-hand text field, enter <code>-$</code>. You will see that the ‘Preview of Value to

Validate…' text now contains only the dollar amount. The Left-hand text that you added removes the dollar sign from the validation, allowing you to focus on validating the actual amount.

<img class="confluence-embedded-image" src="/download/attachments/33857293/IsolatePartial.png?version=1&modificationDate=1524517672571&api=v2" data-image-src="/download/attachments/33857293/IsolatePartial.png?version=1&modificationDate=1524517672571&api=v2" data-unresolved-comment-count="0" data-linked-resource-id="33857305" data-linked-resource-version="1" data-linked-resource-type="attachment" data-linked-resource-default-alias="IsolatePartial.png" data-base-url="https://docs.parasoft.com" data-linked-resource-content-type="image/png" data-linked-resource-container-id="33857293" data-linked-resource-container-version="5">

Click Next.
Ensure that Validate the value is selected, and that the expected text is displayed on the rendered page.

<img class="confluence-embedded-image" src="/download/attachments/33857293/Validate.png?version=1&modificationDate=1524517672818&api=v2" data-image-src="/download/attachments/33857293/Validate.png?version=1&modificationDate=1524517672818&api=v2" data-unresolved-comment-count="0" data-linked-resource-id="33857319" data-linked-resource-version="1" data-linked-resource-type="attachment" data-linked-resource-default-alias="Validate.png" data-base-url="https://docs.parasoft.com" data-linked-resource-content-type="image/png" data-linked-resource-container-id="33857293" data-linked-resource-container-version="5">

Click Finish. A Browser Validation Tool will be added to this test. As the red highlight indicates, it is set up to check that the element you selected remains the same as the application evolves.

<img class="confluence-embedded-image" src="/download/attachments/33857293/PostAction.png?version=1&modificationDate=1524517672655&api=v2" data-image-src="/download/attachments/33857293/PostAction.png?version=1&modificationDate=1524517672655&api=v2" data-unresolved-comment-count="0" data-linked-resource-id="33857310" data-linked-resource-version="1" data-linked-resource-type="attachment" data-linked-resource-default-alias="PostAction.png" data-base-url="https://docs.parasoft.com" data-linked-resource-content-type="image/png" data-linked-resource-container-id="33857293" data-linked-resource-container-version="5">
<h1 id="WebFunctionalTesting-ConfiguringaBrowserStub">Configuring a Browser Stub</h1> A stub is static data that SOAtest saves when recording a web scenario. Stubbing helps to verify that any changes to the client-side code do not affect the final resultant html page by feeding unchanging data to the client in place of the actual server response. To configure a browser stub: Expand the Scenario: Web Functional Testing branch.
Right-click Scenario: Form login> Test 3: Click 'Log In' and choose Add Output from the shortcut menu.

<img class="confluence-embedded-image" src="/download/attachments/33857293/AddOut.png?version=1&modificationDate=1524517672431&api=v2" data-image-src="/download/attachments/33857293/AddOut.png?version=1&modificationDate=1524517672431&api=v2" data-unresolved-comment-count="0" data-linked-resource-id="33857297" data-linked-resource-version="1" data-linked-resource-type="attachment" data-linked-resource-default-alias="AddOut.png" data-base-url="https://docs.parasoft.com" data-linked-resource-content-type="image/png" data-linked-resource-container-id="33857293" data-linked-resource-container-version="5">

In the Add Output wizard that opens, choose HTTP Traffic, then click Next.

<img class="confluence-embedded-image" src="/download/attachments/33857293/HTTPtraffic.png?version=1&modificationDate=1524517672555&api=v2" data-image-src="/download/attachments/33857293/HTTPtraffic.png?version=1&modificationDate=1524517672555&api=v2" data-unresolved-comment-count="0" data-linked-resource-id="33857304" data-linked-resource-version="1" data-linked-resource-type="attachment" data-linked-resource-default-alias="HTTPtraffic.png" data-base-url="https://docs.parasoft.com" data-linked-resource-content-type="image/png" data-linked-resource-container-id="33857293" data-linked-resource-container-version="5">

Select http://localhost:8080/parabank/overview.htm and click Next.

<img class="confluence-embedded-image" src="/download/attachments/33857293/ChooseRequest.png?version=1&modificationDate=1524517672462&api=v2" data-image-src="/download/attachments/33857293/ChooseRequest.png?version=1&modificationDate=1524517672462&api=v2" data-unresolved-comment-count="0" data-linked-resource-id="33857299" data-linked-resource-version="1" data-linked-resource-type="attachment" data-linked-resource-default-alias="ChooseRequest.png" data-base-url="https://docs.parasoft.com" data-linked-resource-content-type="image/png" data-linked-resource-container-id="33857293" data-linked-resource-container-version="5">

In the left panel, select Both> Stub Request/Response.
In the right panel, select any Browser Stub.
Click Finish.

<img class="confluence-embedded-image" src="/download/attachments/33857293/Finish.png?version=1&modificationDate=1524517672539&api=v2" data-image-src="/download/attachments/33857293/Finish.png?version=1&modificationDate=1524517672539&api=v2" data-unresolved-comment-count="0" data-linked-resource-id="33857303" data-linked-resource-version="1" data-linked-resource-type="attachment" data-linked-resource-default-alias="Finish.png" data-base-url="https://docs.parasoft.com" data-linked-resource-content-type="image/png" data-linked-resource-container-id="33857293" data-linked-resource-container-version="5">

In the Response Body section of the Browser Stub configuration view (opened on the right side of the GUI), change the dollar amount in the table from its existing value of -$2300 to $1000.00.
The easiest way to do this is to copy the entire text in the Response Body into a text editor (e.g. Notepad), use its search capability to find the previous dollar amount, modify the value, and then copy all the text from the editor and replace the current contents in the Response Body.
This response body will be provided in place of the actual server response when the recorded scenario is run later in this example.

<img class="confluence-embedded-image" src="/download/attachments/33857293/ResponseBody.png?version=1&modificationDate=1524517672729&api=v2" data-image-src="/download/attachments/33857293/ResponseBody.png?version=1&modificationDate=1524517672729&api=v2" data-unresolved-comment-count="0" data-linked-resource-id="33857314" data-linked-resource-version="1" data-linked-resource-type="attachment" data-linked-resource-default-alias="ResponseBody.png" data-base-url="https://docs.parasoft.com" data-linked-resource-content-type="image/png" data-linked-resource-container-id="33857293" data-linked-resource-container-version="5">

Click Save to save the changes.
<h1 id="WebFunctionalTesting-PlayingaRecordedScenarioinaBrowser">Playing a Recorded Scenario in a Browser</h1> To playback the recorded scenario in a browser: In the Test Case Explorer, select the Scenario: Web Functional Testing node.
Click the Test toolbar button. The recorded scenario will now be played back in your browser, once for each search value that we parameterized in a previous section of this example. Please wait for each action to be played out in your browser. Note if you have been following the complete tutorial, errors will be reported due to the Browser Stub tool that was previously added. This is expected. <h1 id="WebFunctionalTesting-PerformingStaticAnalysisDuringWebScenarioExecution">Performing Static Analysis During Web Scenario Execution</h1> To configure SOAtest to perform static analysis on the Web pages that the browser downloads as web scenarios execute: In the Test Case Explorer, select the Scenario: Web Functional Testing node.
Open the Test toolbar button's pull-down menu, then choose one of the available static analysis configurations.

<img class="confluence-embedded-image" src="/download/attachments/33857293/Accessibility.png?version=1&modificationDate=1524517672400&api=v2" data-image-src="/download/attachments/33857293/Accessibility.png?version=1&modificationDate=1524517672400&api=v2" data-unresolved-comment-count="0" data-linked-resource-id="33857295" data-linked-resource-version="1" data-linked-resource-type="attachment" data-linked-resource-default-alias="Accessibility.png" data-base-url="https://docs.parasoft.com" data-linked-resource-content-type="image/png" data-linked-resource-container-id="33857293" data-linked-resource-container-version="5">

 When SOAtest is finished performing static analysis, static analysis violations are shown in the Quality Tasks view. To facilitate review of these results: Open the pull-down menu on the top right of the Quality Tasks view.

<img class="confluence-embedded-image" src="/download/attachments/33857293/SOAtestStatic.png?version=1&modificationDate=1524517672745&api=v2" data-image-src="/download/attachments/33857293/SOAtestStatic.png?version=1&modificationDate=1524517672745&api=v2" data-unresolved-comment-count="0" data-linked-resource-id="33857315" data-linked-resource-version="1" data-linked-resource-type="attachment" data-linked-resource-default-alias="SOAtestStatic.png" data-base-url="https://docs.parasoft.com" data-linked-resource-content-type="image/png" data-linked-resource-container-id="33857293" data-linked-resource-container-version="5">

Choose Show> SOAtest Static Analysis for Functional Tests Layout.   </body> </html>