

Creating steps from a gherkin using the Blackbaud UAT Automation Kit

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Why?

- Test are repeatable, consistent etc.
- Confirmation of the well worn paths through the application
- Allows testing of client customisations
- Allow pre and post upgrade testing
- Allows you to focus more on core activities
 - UK client test suite – 104 tests, run time ~2.5 hours

Behaviour-driven development (BDD)

In software engineering, behaviour-driven development (BDD) is a software development process that emerged from test-driven development (TDD).

<>
(not equal to)

System (UI) Testing using the UAT Automation Kit, the same BDD tools:

- UAT Automation Kit – abstracts BB CRM and encapsulates selenium code.
- Gherkin – the BDD language.
- SpecFlow – the .NET BDD framework.
- Selenium – the browser driver.

What is a Gherkin?

“Gherkin is the language that Cucumber understands. It is a ***Business Readable, Domain Specific Language*** that lets you describe software’s behaviour without detailing how that behaviour is implemented.

Gherkin serves two purposes — documentation and automated tests.”

(<https://github.com/cucumber/cucumber/wiki/Gherkin>)

```
Feature: IndividualConstituent
  In order to record information about alumni and supporters
  As a BBCRM user
  I want to add a new Individual constituent to the database

#Basic test to demo login and a bit of navigation
@aaa_Demo
@IndividualConstituent
Scenario: Check the ability to add new Individual Constituent record
  Given I have logged into the BBCRM home page
  When I move to the constituent functional area
  Then there is a link to "Add an individual"
  And clicking on the link loads a dialog "Add an individual"
```

Example Gherkin

Anatomy of a Gherkin:

Scenario: <Title>

Given <pre condition>

And <2nd precondition>

When <action>

Then <testable outcome>

And <2nd Testable outcome>

```
#Little more advanced again - lets deal with looping (Demo)
@aaa_Demo
@IndividualConstituent
Scenario: Add multiple new Individual Constituent records
  Given I have logged into the BBCRM home page
  When I add individual
    | Last name | First name | Title | Nickname | Information source |
    | Prospect | Bob       | Mr.   | Bobby   | Other              |
    | Prospect | William  | Mr.   | Billy   | Other              |
  Then constituent of type "Individual" is created named "Bob Prospect"
  And constituent of type "Individual" is created named "William Prospect"
```

Project Setup Overview

1. Ensure Project (.NET Unit Test Project) is set to .NET 4.5.2
2. Install packages at the package manager console in this order:
 - Install-Package Blackbaud.UAT.Core
 - Install-Package Blackbaud.UAT.SpecFlow.Selenium
 - Install-Package SpecFlow.Assist.Dynamic
3. Download and add to the project the [ChromeDriver.exe](#) from Google
4. Add the following app config settings for your environment (as needed):
 - <add key="BBCRMBaseUrl" value="" />
 - <add key="BBISBaseUrl" value="" />
 - <add key="BBCRMHomeUrl" value="" />
 - <add key="BBISHomeUrl" value="" />
 - <add key="Credentials" value="" />
 - <add key="BBISCredentials" value="" />
5. Select Tools | Options | Specflow |Disable Re-generate Feature file Popup -> set to False
6. Install the [Visual Studio SpecFlow Add-in](#) for your version of Visual Studio

(For full **UAT Automation Kit** Setup see:

<https://blackbaud-uat-kit.azurewebsites.net/walkthroughs/getting-started/>)

What do I do on a web page?

So fundamentally in the UI of a web page what operations do we perform?

1. Click
2. Write text / set control
3. Read text / control

Mostly just repetitions and sequences of the above.

Welcome to the BaseComponent Object:

Click

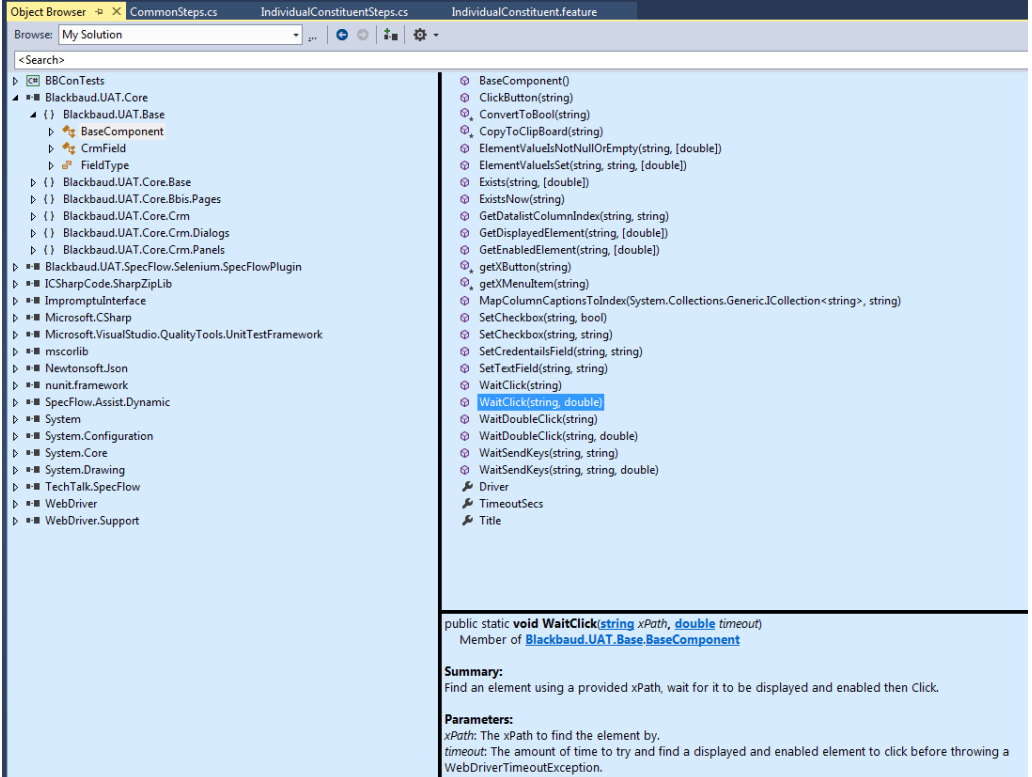
Write text / set control

Read text / control

WaitClick()

SetTextField()

GetEnabledElement()



The screenshot shows the Blackbaud Object Browser interface. The left pane displays a tree view of the project structure, with `Blackbaud.UAT.Core.BaseComponent` selected. The right pane shows the methods of the `BaseComponent` class, including `WaitClick(string, double)`, which is highlighted. Below the method list, the signature `public static void WaitClick(string xPath, double timeout)` is shown, along with a summary and parameters section.

Methods:

- `BaseComponent()`
- `ClickButton(string)`
- `ConvertToBool(string)`
- `CopyToClipboard(string)`
- `ElementValuesNullOrEmpty(string, [double])`
- `ElementValuesSet(string, string, [double])`
- `Exists(string, [double])`
- `ExistsNow(string)`
- `GetDataListColumnIndex(string, string)`
- `GetDisplayedElement(string, [double])`
- `GetEnabledElement(string, [double])`
- `GetXButton(string)`
- `GetXMenuItem(string)`
- `MapColumnCaptionsToIndex(System.Collections.Generic.ICollection<string>, string)`
- `SetCheckbox(string, bool)`
- `SetCredentialsField(string, string)`
- `SetTextField(string, string)`
- `WaitClick(string)`
- `WaitClick(string, double)` (highlighted)
- `WaitDoubleClick(string)`
- `WaitDoubleClick(string, double)`
- `WaitSendKeys(string, string)`
- `WaitSendKeys(string, string, double)`

Driver

- `TimeoutSecs`
- `Title`

Signature:

```
public static void WaitClick(string xPath, double timeout)
```

Member of: `Blackbaud.UAT.Base.BaseComponent`

Summary:
Find an element using a provided xPath, wait for it to be displayed and enabled then Click.

Parameters:
xPath: The xPath to find the element by.
timeout: The amount of time to try and find a displayed and enabled element to click before throwing a `WebDriverTimeoutException`.

Other Considerations:

Making data unique on a per run basis:

Meet `BaseSteps.uniqueStamp`

Building blocks of CRM

1. Functional Areas
2. Panel
3. Dialog

Data translation from Gherkin tables, several methods:

1. ADO.Net style `[row][column]` syntax i.e. `table.rows[0][0]`, `table.rows[0][“Title”]` etc.
2. Hydration to dynamic objects (`Specflow.Assist.Dynamic`)

xPath

1. This is how we target areas of the webpage, in developer speak this is called the document object model (DOM) – literally the model of the document the browser interacts with.
2. How do I get an XPath from the browser (Chrome)?

Other Considerations (cont.)

Date issues:

1. No hard coding of Dates in C# code!
2. Create general handler methods for these, make handling of dates easier.
3. Consider if non fixed point date formats are useful to prevent staleness of the data, i.e. date = "Today" rather than date = "2016-05-26"
4. Make these format agnostic so that they are setup by .Net culture settings of the local run

Automated test runs are fast (compared to an end user)!

1. Test the thing you need has rendered, then work on it!
2. Once you have worked on it, test what you expect to have happened to the UI has!

Things not to do!

Do not:

- Hard code dates in the code, Gherkin is situation specific!
- Make tests interact with each other, operations in one should not affect any other tests (tests should be atomic!)
- Use non unique xPaths (they should be 1 of 1 unique before use in code)
- Over complicate setup
- Over complicate tests
- Test for more than one outcome at a time (test should have single responsibility)

Ode to Code – Steps for Gherkin

Lets look at coding the following:

```
#Little more advanced again - lets deal with looping (Demo)
@aaa_Demo
@IndividualConstituent
Scenario: Add multiple new Individual Constituent records
  Given I have logged into the BBCRM home page
  When I add individual
    | Last name | First name | Title | Nickname | Information source |
    | Prospect | Bob       | Mr.   | Bobby   | Other              |
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  Then constituent of type "Individual" is created named "Bob Prospect"
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```

Questions

?

Demo Details etc.

Code at: <\\gla6rossthoms02\DEMOShare> (don't copy the packages folder, unless your NuGet fails)

BB CRM UI at: http://gla6rossthoms02/bbappfx_BlackbaudDemo (BBApPfx_BlackbaudDemo)

Login = demo.user

Password = P@ssw0rd!

xPath help: <https://blackbaud-uat-kit.azurewebsites.net/walkthroughs/xpaths/>

My IP address (you may need to add this to you host file) - **192.168.10.245**

Key UAT Framework methods:

Open a functional area:	BBCRMHomePage.Open<some>FA() i.e. BBCRMHomePage.OpenConstituentsFA();
Check something exists:	<something>.GetEnabledElement(<xpath string>, <time out>) i.e. Panel.GetEnabledElement(string.Format("//button/div[./text()='{0}']", LinkName), 60);
Click a link:	<something>.WaitClick(<xpath string>) i.e. Panel.WaitClick(string.Format("//button/div[./text()='{0}']", DialogTitle));
Set a field:	<something>.SetTextField(<xpath string>, <value>) i.e. Dialog.SetTextField("//input[contains(@id,'_LASTNAME_value')]", objectData.LastName + uniqueStamp);

Create a tablerow from a table: TableRow rowData = table.Rows[0];

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