

An Introduction to UI web testing using SWAT

Ultimate Software: Mission Statement

To provide United States and Canadian businesses with 200 or more employees the highest quality, most complete, and well-integrated suite of strategic human resources, payroll, and talent management solutions.

Goals for this session

- Attendees should be able to create and update UI tests

Syllabus

- Introduction to SWAT
- Running tests against different browsers (IE\Firefox)
- Navigating
- Bread and Butter Commands
- The concept of expressions
- Variables
- Command Modifiers
- Macros
- SWAT Editor
- Where to get help
- Questions?

Tools for viewing HTML

- IE
 - IE Developer Toolbar
- Firefox
 - Firebug
- Can find via google
- Reads the real time HTML of the page

- SWAT
 - Simple Web Automation Toolkit
 - Meant to provide a simple way to test the UI of a website
- Library of commands
 - UI
 - Database
- Not tied to the included editor or fitnessse
- Internally
 - SWAT uses fitnessse but fitnessse is **NOT** SWAT
- Open Source
 - Anyone can download the program and the source

- SourceForge
 - <http://ulti-swat.wiki.sourceforge.net/>

Browsers

- SWAT currently supports 2 browsers
 - IE
 - Firefox

- How the test determines what browser its testing against
 - `!|InternetExplorerSWATFixture|`
 - `!|FireFoxSWATFixture|`

- Add that line under the import statement to determine what type of test is being created

Where we are now

!|InternetExplorerSWATFixture|

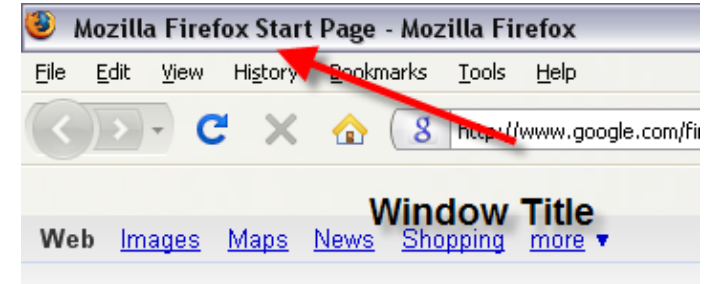
How commands are entered

- All test blocks start with `!|SWATFixture|`
- Commands come underneath
- Example:
 - `!|SWATFixture|`
 - `|OpenBrowser|`
 - `|NavigateBrowser|www.google.com|`

Navigation

- Open Browser
 - |OpenBrowser|
- Navigate Browser
 - Syntax
 - |NavigateBrowser|url|
 - Example
 - |NavigateBrowser|www.google.com|

- **Attach to Window**
 - Used to attach to an open browser or popup
 - Does not need to be exact
 - |AttachToWindow|WindowTitle|
- **Close Browser**
 - |CloseBrowser|



Where we are now

!|InternetExplorerSWATFixture|

!|SWATFixture|

|OpenBrowser|

|NavigateBrowser|www.google.com|

|CloseBrowser|

Bread and Butter

- Setting the value of an attribute
 - SetElementAttribute
 - Could be used to set a textbox
 - |SetElementAttribute|IdentifierType|identifier|attributeName|attributeValue|tagName(optional)
 - Identifier Type
 - http://ulti-swat.wiki.sourceforge.net/QS_Fitnessse_IdentifierTypes
 - ID
 - Name
 - InnerHTML
 - Expression (we will get to this one in a moment)
 - Identifier
 - Example <label id="myID">my label</label>
 - |id|myID|
 - |InnerHTML|my label|
 - NOTE* when using an identifier other than Expression must be exact
 - Attribute
 - The Attribute that will be set
 - Could be value,class,style
 - Attribute Value
 - Whatever you want to set it to
 - Tagname
 - Optional
 - Speeds up tests
 - Recommended

Bread and Butter con't

- StimulateElement
 - Could be used to click a button or change a drop down
 - |StimulateElement|IdentifierType|identifier|eventName|tagName(optional)|
 - EventName
 - Onclick
 - OnChange
 - Work with dev to determine which is best event to use
- AssertElementExists
 - Used to determine if an element is on the screen
 - |AssertElementExists|IdentifierType|identifier| tagName(optional)

Where are we now

```
!|InternetExplorerSWATFixture|
```

```
!|SWATFixture|
```

```
|OpenBrowser|
```

```
|NavigateBrowser|www.google.com|
```

```
!|SWATFixture|
```

```
|SetElementAttribute|name|q|value|Ultimate Software|input|
```

```
|StimulateElement|name|btnG|onclick|input|
```


Expressions

- Allow more powerful searches
- http://ulti-swat.wiki.sourceforge.net/QS_Fitnessse_IdentifierTypes
- Can string together multiple attributes
- : VS =
 - : means contains
 - = means exact
- ‘;’ used to break up attributes
- Example
 - `<label id="myId">my label</label>`
 - `Expression|id=myID;innerHTML:my lab|`
- Uses regular expressions
 - Dev can help
- NOTE
 - Period ‘.’ is a wild card, can mean anything

Expressions con't

- Matchcount
 - Check for multiple instances
 - Example: innerHTML#2:ulti
 - Reads as, “ulti” must be contained twice in the HTML
- ParentElement
 - Can use the parent element
 - Example parentElement.id:pid;class:hide
 - `<tr id="pid"><td class="hide"></td></tr>`

- Styles
 - Slightly different syntax
 - style: border: 2px solid #000000; background-color: #ffffff
 - Notice style is called, and then individual styles are found

Where we are now

```
!|InternetExplorerSWATFixture|
```

```
!|SWATFixture|
```

```
|OpenBrowser|
```

```
|NavigateBrowser|www.google.com|
```

```
!|SWATFixture|
```

```
|SetElementAttribute|name|q|value|Ultimate Software|input|
```

```
|StimulateElement|name|btnG|onclick|input|
```

```
|AssertElementExists|Expression|href:UltimateSoftware|A|
```

Variables

- Can be used as part of an expression or as an identifier
- Design time
 - Used to create a variable when your writing the tests
 - When to use
 - When something is likely to change
 - When something is repeated often
 - To Set
 - !define loginUserName (atnipj)
 - To Use
 - \${loginUserName}
 - Expression|id:\${myID}
- Run Time
 - Variables that are populated when running the test
 - When to use
 - When a variable is needed that can only be set at the time of running
 - To Set
 - |GetElementAttribute|IdentifierType|identifier|attributeName|YourVariableName|tagName|
 - To Use
 - >>YourVariableName<<
 - Expression|id:>>myID<<

Command Modifiers

- http://ultimate-software.com/wiki/sourceforge.net/QS_Fitnessse_CommandModifiers
- Allows users to change or alter how a command works
- How to use (@)
 - |@AssertElementExists|id|myID|

Command Modifiers con't

- @ - this tells SWAT that the command can fail, and the test should continue.
- @@ - this tells SWAT that if a command has failed, it cannot ignore this command and must execute it anyway.
- @@@ - this tells SWAT that if a command has failed, it cannot ignore this command and must execute it anyway, and if it fails (and were not in a failed state), don't ignore the rest of the test. It is basically a combination of "@" and "@@"

Command Modifiers con't

- ? – This tells SWAT to only execute the next SWAT command if this command passes.
- ?? - This tells SWAT to execute the remaining commands if the command passes. It will skip the remaining commands for a block if the command fails.
- ?! – This tells SWAT to only execute the next SWAT command if this command fails.
- ??! - This tells SWAT to execute the remaining commands if the command fails. It will skip the remaining commands for a block if the command passes.

Macros

- Very powerful
- In fitness each test can be used in any other test
- Macros can take in variables
- Reasons to use
 - Make tests less brittle
 - Any time an action is done in multiple tests, if the action changes can break all the tests
 - Example: log in
 - Make tests more readable
 - Can turn 5-30 lines of code into a single readable line
 - Example : loginToEverest macro
 - Make tests more easily updatable
 - Turn the InternetExplorerSWATFixture line into a macro
 - Changing this to Firefox will update all tests to run in firefox

Macro con't

- How to call a macro
 - !include .SwatMacros.Login
- *Macros are VERY Important and Useful*

- SWAT has a host of SQL functions built in
- Connecting to a SQL Server

!|SWATFixture|

|ConnectToMssql|dbServer|username|password|

|SetDatabase|dbName|

- **SetQuery**
 - Used to run a query against the sql server
 - Results are stored in memory
- **Assert Record Count**
 - Verifys how many rows were returned against an expected result
 - |AssertRecordCount|ExpectedNumber|
- **AssertRecordValuesByColumnName**
 - Used to verify values in the database
 - |AssertRecordValuesByColumnName|[RowIndex]|ColumnName|ExpectedValue|
- **GetDbRecordByColumnName**
 - Used to place the value of a sql check into a variable
 - |GetDbRecordByColumnName|VariableName|[RowIndex]|ColumnName|

- Table Checks

- Compare Data

- Example Syntax

- |SetQuery|Select column 1|

- |BeginCompareData|

- |Column1|Column2|Column3|

- |a|c|D|

- |Q|W|x|

- |EndCompareData|

The SWAT Editor

- Included in SWAT download from sourceforge
- Up to date walk-throughs here:
 - http://ulti-swat.wiki.sourceforge.net/QS_SwatEditor
- Tests can be run\written in the editor
- SQL checks can also be created here
- UI recorder is contained in the editor
- Initially no test is opened when SWAT Editor is opened
 - Can be changed in options

Editor – Features

- To create a new file
 - In the file menu choose new file
 - Ctrl – N
 - File explorer ‘+’ button
- Autocomplete
 - In the editor when you start typing a command it will autocomplete for you
 - Can be turned off in options

- To Run

- F5



- Breakpoints

- Can set breakpoints during a test

- Test will pause at that point

- To set a breakpoint, click on the line number and a little red dot will be created

- Breakpoints enabled in the run menu

Editor – Selecting a browser

- SWAT defaults to the Browser setting in the test and NOT the “Run” menu
- In options setting the “Override test browser” flag overrides any browser invocations in your test

Editor – Being able to run macros

- To run macros you need to set the fitness root in the options menu
 - This is the standard root directory from where all tests are saved.
- Naming convention
 - Folder name is the name of the test
 - Test is saved in content.txt file

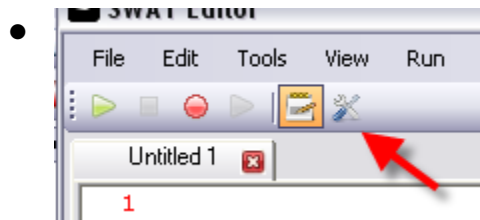
Editor – Database Editor

- Database Editor

- http://ulti-swat.wiki.sourceforge.net/QS_SwatEditor_DB+Access+Editor

- How to open

- Ctrl-Alt-D
 - Choosing it the tools menu



- Allows you to create SQL checks
 - To create a test
 - Create the SQL
 - Choose the rows you want
 - Copy the SQL to your window

- Automatically creates:
 - SQL checks
 - Table view
 - Row view
 - Inserts
 - Deletes

- Recorder
 - http://ultiswat.wiki.sourceforge.net/SWAT_Editor_RecordingA_Test
 - Should only be used to help write tests
 - Should NOT be used to just record the whole test
 - Your test will be brittle and break easily

Creating SWAT Tests in Fitnessse

- What to Import
 - SWAT
 - SWAT.Fitnessse
- Example

```
!|Import|
|SWAT|
|SWAT.Fitnessse|
```

Final Words

- Couple additional hints
 - When testing in IE run fitnesses in Firefox
 - The recorder is meant to help, not to do all the work

Where to get help

- Questions
 - Open forum on sourceforge
- Websites
 - <http://ulti-swat.wiki.sourceforge.net/>

Questions

- Questions????

