

>CONFESS_2011

CONference For
Enterprise Software
Solutions_

Functional Web Tests with **Geb**

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GROOVY MAG
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Functional Web Testing

Model	View	Controller
Domain Class	JSP/GSP/Template	Controller Class
Unit Test	 A graphic logo featuring the word "PAIN" in large, jagged, black letters. The letters are set against a blue background that has been torn or shredded at the edges. There are two orange bandages on the letter 'A' and a small skull and crossbones icon to the right of the letter 'I'.	Unit/Integration Test

Selenium Web Application Testing System

- tool suite for testing web applications
- ThoughtWorks



- **2004:** JavaScript-based Selenium Core (Jason Huggins)
- **2006:** Google introduces WebDriver (Simon Stewart)
- **2008:** Selenium & WebDriver => „Selenium 2“

Selenium Tool Suite

- Selenium 2 (aka Selenium Web Driver)
 - Browser Support
 - Firefox, Chrome, IE
 - Pure Java
 - HtmlUnit <http://htmlunit.sourceforge.net/>

```
WebDriver driver = new HtmlUnitDriver();
```


<http://code.google.com/p/selenium/wiki/HtmlUnitDriver>
 - iOs/Android
 - Experimental

Selenium Tool Suite

- Selenium 2 (aka Selenium Web Driver)
 - supports the WebDriver API
 - supports Selenium 1 Tests using WebDriver API underneath

```
WebDriver driver = new FirefoxDriver();

driver.get("http://www.google.com");

WebElement element = driver.findElement(By.name("q"));
element.sendKeys("Con-fess 2011");
element.submit();

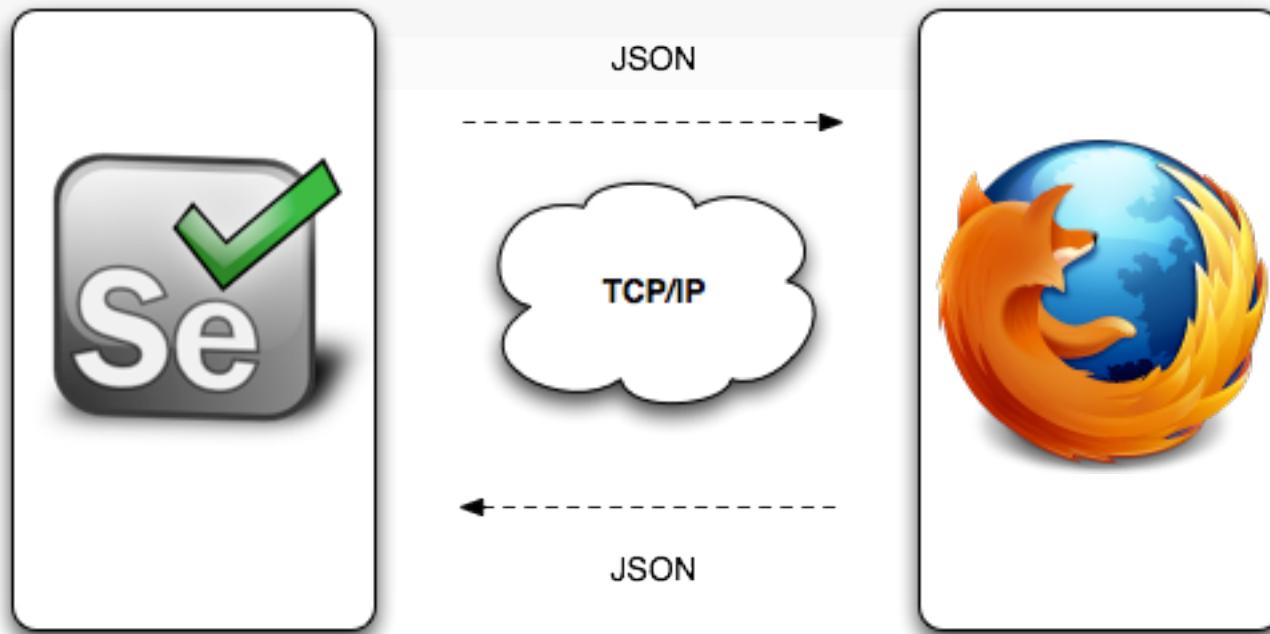
System.out.println("Page title is: " + driver.getTitle());

driver.quit();
```

Selenium 2 API - Quick Overview

- All RemoteWebDriver descendants implement
 - JavaScriptExecutor
 - executeScript(String script, Object... args)
 - executeAsyncScript(String script, Object... args)
 - FindsById
 - findElementById(String using)
 - FindsByName
 - findElementsByName(String using)
 - FindsByClassName
 - ...
 - FindsByCssSelector
 - ...
 - FindsByLinkText
 - ...

FirefoxDriver



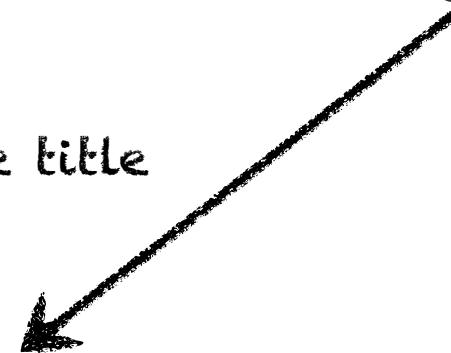
- FirefoxDriver extends RemoteWebDriver
- FirefoxDriver works with
 - FirefoxCommandExecutor
 - FirefoxBinary
- *Example*

call to String getTitle()

ChromeDriver

```
WebDriver driver = new FirefoxDriver();  
// ...  
System.out.println("Page title is: " + driver.getTitle());
```

Get the current page title



```
public String getTitle() {  
    return execute(„getTitle“).getValue().toString();  
}
```

FirefoxDriver

```
// ...  
executor.execute(command);  
// ...
```



Let's connect using a Firefox extension

```
JsonCommand commandToPopulate = nameToJson.get(command.getMethodName());
```

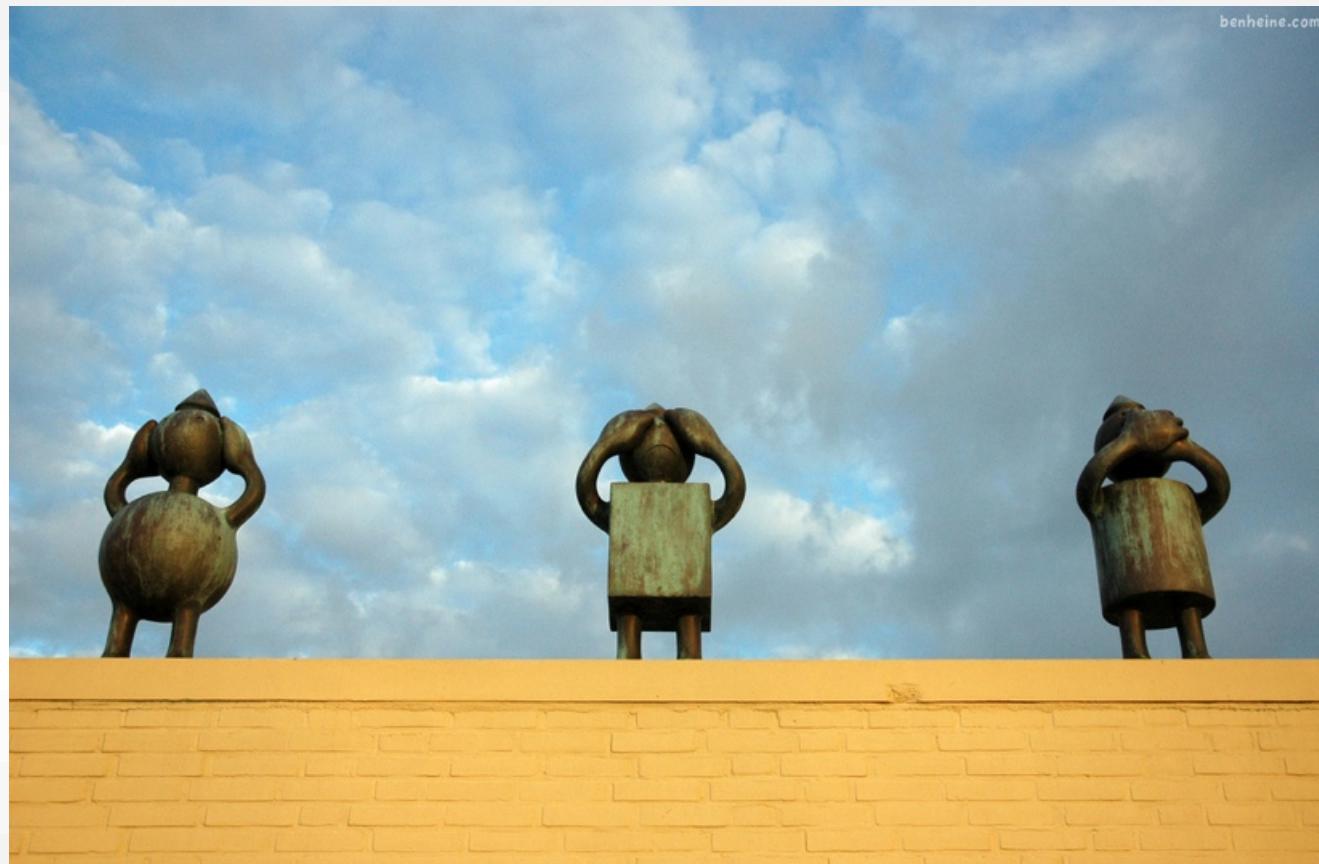
```
String commandStringToSend = commandToPopulate.populate  
(command.getParameters());  
socket.getOutputStream().write(fillTwoHundredWithJson  
(commandStringToSend));  
socket.getOutputStream().flush();
```

InternetExplorerDriver

How does InternetExplorerDriver work?

InternetExplorerDriver

You don't wanna know. Trust me.



Introduction to Geb (it's „Jeb“)

- <http://geb.codehaus.org/>
- <https://github.com/geb/geb>
- Apache 2 License
- Version (08.04.11): **0.5.1**



Introduction to Geb



Introduction to Geb





- **dynamic jvm language**
- **reducing Java „boilerplate“ code**

- **DSL friendliness** with **closures**
- **seamless integration** with **Java libraries** and **classes**



- **dynamic jvm language**
 - **reducing Java „boilerplate“ code**
-
- **DSL friendliness with closures**
 - **seamless integration with Java libraries and classes**

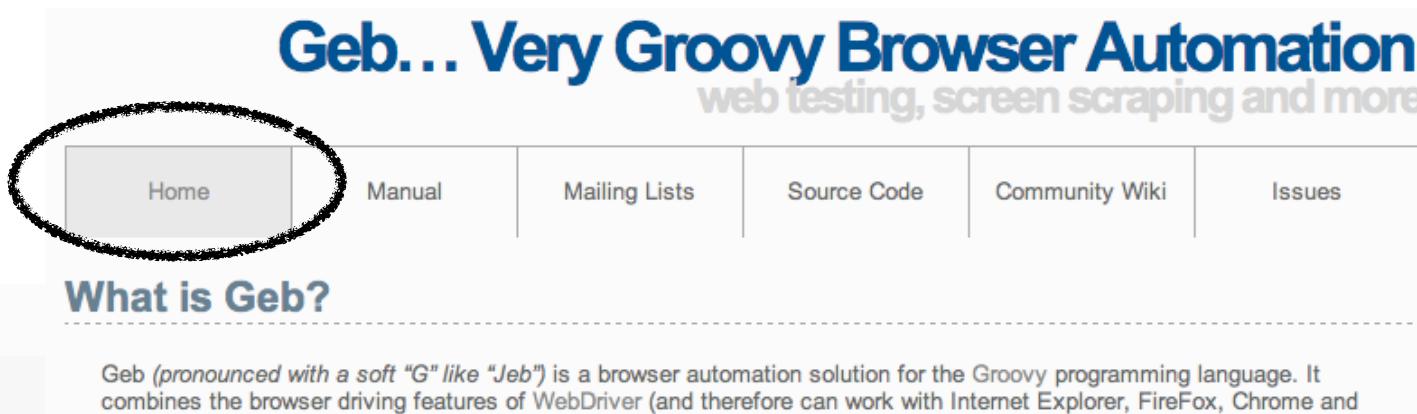


„A domain-specific language is a language dedicated to a particular problem domain.“

DEMO

A Simple Content Test

- Content Testing
 - „execute tests on the static content of a web page“
- e.g.: a single click on a menu item has to activate that menu item



The screenshot shows the homepage of the Geb website. At the top, the title "Geb... Very Groovy Browser Automation" is displayed in blue, with the subtitle "web testing, screen scraping and more" in a smaller, gray font below it. Below the title is a horizontal navigation bar with six items: "Home", "Manual", "Mailing Lists", "Source Code", "Community Wiki", and "Issues". The "Home" item is circled in black, indicating it is the target for a content test. Below the navigation bar, the section "What is Geb?" is visible, followed by a descriptive paragraph about the tool.

Geb... Very Groovy Browser Automation
web testing, screen scraping and more

Home Manual Mailing Lists Source Code Community Wiki Issues

What is Geb?

Geb (*pronounced with a soft "G" like "Jeb"*) is a browser automation solution for the Groovy programming language. It combines the browser driving features of WebDriver (and therefore can work with Internet Explorer, FireFox, Chrome and

A Simple Content Test

DEMO

Writing Functional Tests

- Functional Testing
„execute tests on a specific functionality of the web application“
- Examples
 - Login
 - Registration
 - User Account Settings
 - Permissions
 - etc.

Testing Web Forms

- Set Input Fields

```
$(‘input’, name: ‘query’).value(‘test’)
```

- Read Input Fields

```
$(‘input’, name: ‘query’).value()
```

What about checkboxes, radio and select?

checkbox: value() is true or false

radio: value() is the radio button String value

select: value() has one or more (multi-select) String values

Testing Web Forms

- Submit

```
$('input[value=Search]').click()
```

Testing Ajax

- Browser exposes a js object reference
 - implements the `JavaScriptExecutor` interface
 - access to global JS variables
 - call to JS functions
 - execute arbitrary JS code
- Helper methods for waiting

```
def waitFor(Double timeoutSeconds, Double intervalSeconds, Closure condition)
def waitFor(Double timeoutSeconds, Closure condition)
def waitFor(Closure condition)
```

```
waitFor { $("p.statusMsg").text() == "Asynchronous Operation Success!" }
```

The Page Object Pattern

- Definition

„encapsulates and centralises page content structure,
allowing tests to focus on behaviour.“

- geb.Page

```
// ...
def menu_elements = $("div#navigation ul li a")
// ...
def active_menu_elements = menu_elements.filter(".active")
//...
def active_menu_element = active_menu_elements[0]
//...
```

How to reuse this stuff?

The Page Object Pattern

- Definition

„encapsulates and centralises page content structure,
allowing tests to focus on behaviour.“

- geb.Page

```
// ...
def menu_elements = $('div#navigation ul li a')
// ...
def active_menu_elements = menu_elements.filter('.active')
//...
def active_menu_element = active_menu_elements[0]
//...
```

How to reuse this stuff?

The Page Object Pattern

```
class GebHomepage extends geb.Page {  
  
    static url = "http://geb.codehaus.org"  
  
    static content = {  
        menu_elements {  
            $("div#navigation ul li a")  
        }  
  
        active_menu_element {  
            $("div#navigation ul li a[class=active]", 0)  
            // better menu_elements.filter(".active")  
            // groovier menu_elements.find { it.hasClass("active") }  
        }  
    }  
}
```

The Page Object Pattern

```
Browser.drive(GebHomePage) {  
    assert active_menu_element.text() == 'Home'  
}
```

or

```
Browser.drive {  
    to GebHomepage  
  
    assert active_menu_element.text() == 'Home'  
}
```

The Page Object Pattern

- Content DSL
- Inheritance
- LifeCycle Hooks
 - onLoad
 - onUnload

Modules

- Definition

„Re-usable definitions of content that can be used across multiple pages.“

- geb.Module

Modules

```
class ExampleModule extends Module {  
    static content = {  
        button { $("input", type: "submit") }  
    }  
}
```

Module

```
class ExamplePage extends Page {  
    static content = {  
        theModule { module ExampleModule }  
    }  
}
```

Page

Modules

```
Browser.drive {  
    to ExamplePage  
    theModule.button.click()  
}
```

CRUD Example

- <https://github.com/geb/geb-example-grails>

DEMO

Summary

- Version **0.6** will be out soon :)
- Clone Geb from Github
 - <https://github.com/geb/geb/downloads>
- The Book of Geb
 - <http://geb.codehaus.org/manual/latest/>
- Grab it! @Grapes([
 @Grab("org.codehaus.geb:geb-core:latest.release"),
 @Grab("org.seleniumhq.selenium:selenium-firefox-
 driver:latest.release")
])

Any Questions?



Thank you!

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