

Robotframework

自动化测试介绍

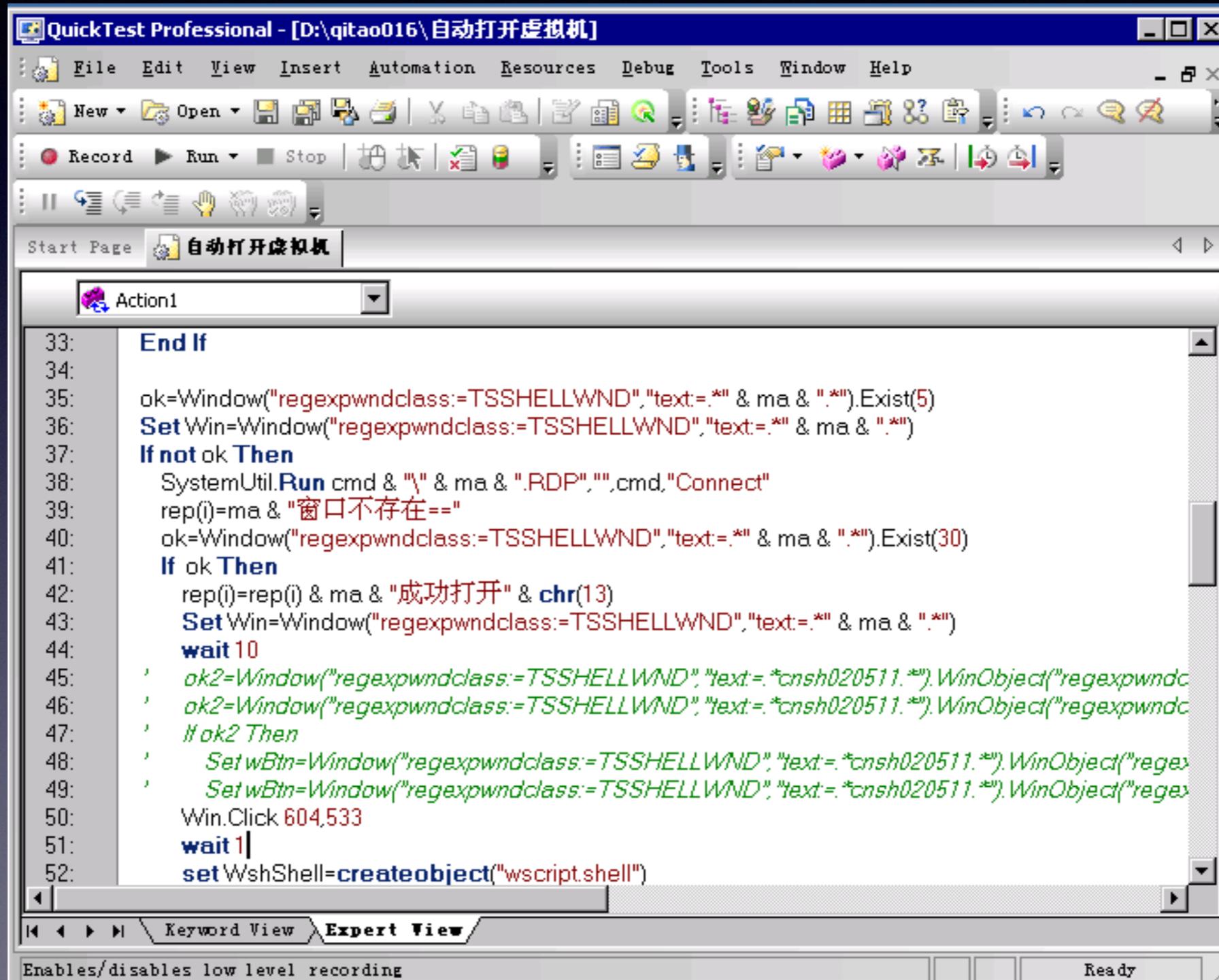
@齐涛-道长

个人介绍



- @齐涛-道长
- 平安科技资深测试工程师
- 毕业于东北大学，市场营销专业；
- **Robotframework**自动化测试先行者。2011年开始接触**Robotframework**自动化测试，进行敏捷试点。2012年在敏捷项目中应用**Robotframework+selenium2library**进行自动化测试。
- 现在主要负责在公司内维护扩展**Robotframework**、**selenium**、**QTLibrary**等相关自动化测试库。

QTP



Selenium-Python

Example 1:

- open a new Firefox browser
- load the Yahoo homepage
- search for “seleniumhq”
- close the browser

```
from selenium import webdriver
from selenium.webdriver.common.keys import Keys

browser = webdriver.Firefox()

browser.get('http://www.yahoo.com')
assert 'Yahoo!' in browser.title

elem = browser.find_element_by_name('p') # Find the search box
elem.send_keys('seleniumhq' + Keys.RETURN)

browser.quit()
```

Selenium-Java

```
import junit.framework.Assert;
import junit.framework.TestCase;
import org.openqa.selenium.firefox.FirefoxDriver;
import org.openqa.selenium.htmlunit.HtmlUnitDriver;
import org.openqa.selenium.By;
import org.openqa.selenium.WebDriver;
import org.openqa.selenium.WebElement;

public class TestGoogle extends TestCase{
    WebDriver driver;

    public void setUp() {
        driver = new FirefoxDriver();
        //driver = new HtmlUnitDriver();
    }

    public void tearDown() {
        driver.close();
    }

    public void testCheckGoogleTile() {
        driver.get("http://www.google.cn");
        WebElement element = driver.findElement(By.name("q"));
        element.sendKeys("test");
        element.submit();
        System.out.println("Title of this page: " + driver.getTitle());
        //Assert.assertEquals("test - Google 搜索", driver.getTitle());

        Assert.assertTrue(driver.getTitle().contains("Google"));

        WebElement res = driver.findElement(By.xpath("//div[@id='ires']/ol/li[1]/h3/a"));
        Assert.assertTrue(res.getText().contains("test"));
    }
}
```

Robotframework

购买流程

Settings >>

1	打开浏览器	<code>\${url}</code>	
2	输入购买产品	<code>\${setpr}</code>	
3	输入购买数量	<code>\${setqn}</code>	
4	点击提交		
5	Wait Until Page Contains	<code>\${setpr}</code>	
6	<code>\${getpr}</code>	获取产品名称	
7	<code>\${getqn}</code>	获取数量	
8	验证是否一致	<code>\${setpr}</code>	<code>\${getpr}</code>
9	验证是否一致	<code>\${setqn}</code>	<code>\${getqn}</code>
10	关闭浏览器		

目录

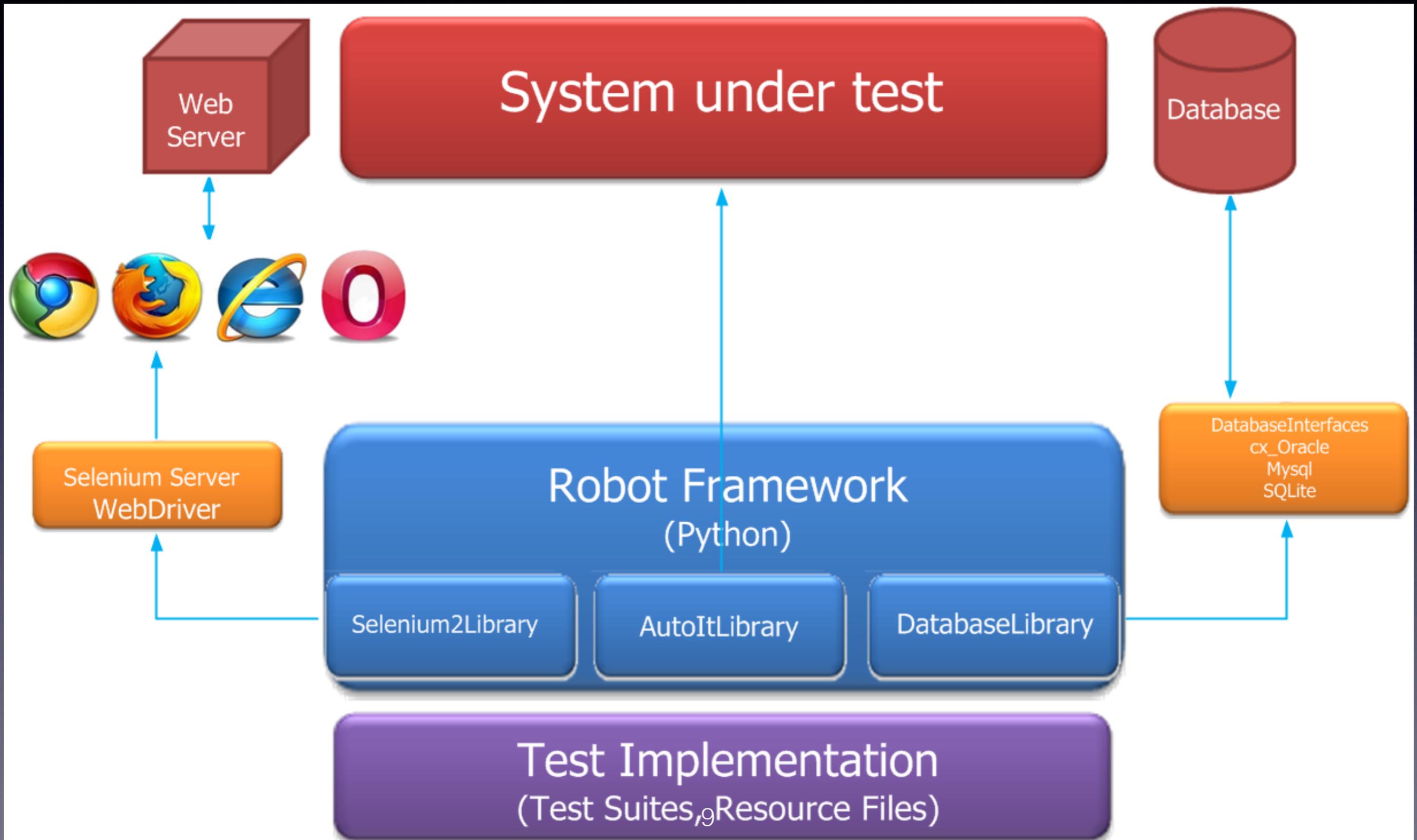
- **RF框架介绍**
- **测试案例 & 关键字**
- **Selenium2Library测试web演示**
- **AutoltLibrary测试演示**
- **DatabaseLibrary测试演示**
- **AppiumLibrary移动测试演示**
- **RF和敏捷测试**
- **其他及答疑**

RobotFramework的特性

- 易于使用，采用表格式语法，统一测试用例格式
- 可以使用关键字驱动（**keyword-driven**）、数据驱动（**data-driven**）和行为驱动开发（**BDD**）完成。
- 重用性好，可以利用现有关键字来组合新关键字；
- 结果报告和日志采用**HTML**格式，易于阅读；
- 平台和应用无关联性；
- 模块结构支持使用不同的接口来测试你的应用；
- 易于扩展，提供了简单**API**，用户可以自定义的基于**Python**或者**Java**的测试库；
- 易于集成，提供了命令行接口和基于**XML**的输出文件；
- 功能全面，支持**WEB**测试（**Selenium**）、**Java GUI** 测试，启动线程、**Telnet**、**SSH**等；
- **RemoteLibrary**接口可以支持分布测试和使用其他编程语言实现测试库；
- 提供**tag**标签来分类和选择案例执行；
- 内置支持变量**variables**，支持不同的环境进行测试。

- 易于与版本管理集成；

RF框架架构图



目录

- **RF框架介绍**
- **测试案例 & 关键字**
- **Selenium2Library测试web演示**
- **AutoltLibrary测试演示**
- **DatabaseLibrary测试演示**
- **AppiumLibrary移动测试演示**
- **RF和敏捷测试**
- **其他及答疑**

测试案例

购买流程

Settings >>

1	打开浏览器	<code>\${url}</code>	
2	输入购买产品	<code>\${setpr}</code>	
3	输入购买数量	<code>\${setqn}</code>	
4	点击提交		
5	Wait Until Page Contains	<code>\${setpr}</code>	
6	<code>\${getpr}</code>	获取产品名称	
7	<code>\${getqn}</code>	获取数量	
8	验证是否一致	<code>\${setpr}</code>	<code>\${getpr}</code>
9	验证是否一致	<code>\${setqn}</code>	<code>\${getqn}</code>
10	关闭浏览器		

用户关键字

验证是否一致

Settings <<

Documentation

Arguments `${ver1} | ${ver2}`

Teardown

Timeout

Return Value `!${verifv}`

1	<code>\${verify}</code>	Should Be Equal	<code>\${ver1}</code>	<code>\${ver2}</code>
2		Variable assignment		
3				
4				
5				

测试日志

- 测试日志按树形组织
- 可自动提供错误步骤的屏幕截图

Sample Test Log

Generated: 20110902 15:00:50 GMT +09:00
11 seconds ago

Test Statistics

Total Statistics	Total	Pass	Fail	Graph
Critical Tests	1	0	1	<div style="width: 100%; height: 10px; background-color: red;"></div>
All Tests	1	0	1	<div style="width: 100%; height: 10px; background-color: red;"></div>

Statistics by Tag	Total	Pass	Fail	Graph
No Tags				<div style="width: 0%; height: 10px; background-color: red;"></div>

Statistics by Suite	Total	Pass	Fail	Graph
Sample	1	0	1	<div style="width: 100%; height: 10px; background-color: red;"></div>
Sample.Suite1	1	0	1	<div style="width: 100%; height: 10px; background-color: red;"></div>

Test Execution Log

TEST SUITE: Sample

Full Name: Sample
 Source: <d:\python27\scripts\sample>
 Start / End / Elapsed: 20110902 15:00:36.203 / 20110902 15:00:50.140 / 00:00:13.937
 Overall Status: **FAIL**
 Message: 1 critical test, 0 passed, 1 failed
 1 test total, 0 passed, 1 failed

SETUP: SeleniumLibrary.Start Selenium Server
TEARDOWN: SeleniumLibrary.Stop Selenium Server

TEST SUITE: Suite1

Full Name: Sample.Suite1

TEST SUITE: Suite1

Full Name: Sample.Suite1
 Source: <d:\python27\scripts\sample\suite1.txt>
 Start / End / Elapsed: 20110902 15:00:36.515 / 20110902 15:00:50.108 / 00:00:13.593
 Overall Status: **FAIL**
 Message: 1 critical test, 0 passed, 1 failed
 1 test total, 0 passed, 1 failed

TEST CASE: TestCase1

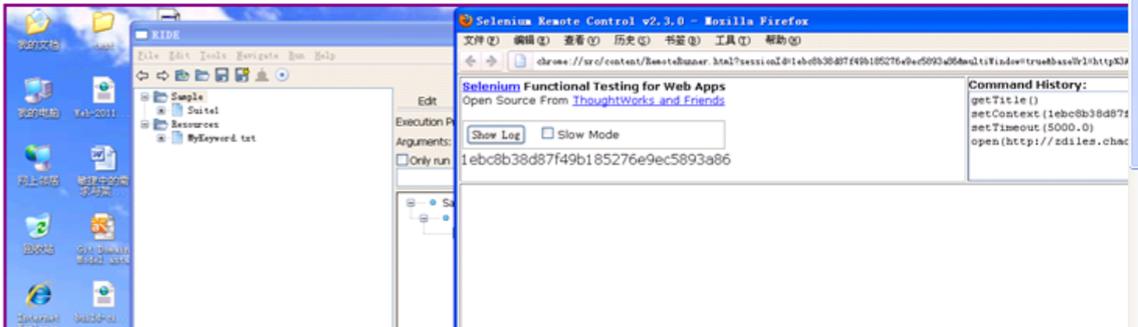
Full Name: Sample.Suite1.TestCase1
 Start / End / Elapsed: 20110902 15:00:36.530 / 20110902 15:00:50.108 / 00:00:13.578
 Status: **FAIL (critical)**
 Message: Timed out after 5000.0ms

KEYWORD: mykeyword.打开浏览器

Start / End / Elapsed: 20110902 15:00:36.530 / 20110902 15:00:50.108 / 00:00:13.578

KEYWORD: SeleniumLibrary.Open Browser <http://zdiles.chaosnet.org/>

Documentation: Opens a new browser instance to given URL.
 Start / End / Elapsed: 20110902 15:00:36.546 / 20110902 15:00:50.108 / 00:00:13.562
 15:00:50.108 INFO Opening browser 'firefox' to base url '<http://zdiles.chaosnet.org/>'
 15:00:50.108 INFO



目录

- RF框架介绍
- 测试案例 & 关键字
- **Selenium2Library**测试web演示
- **AutoltLibrary**测试演示
- **DatabaseLibrary**测试演示
- **AppiumLibrary**移动测试演示
- RF和敏捷测试
- 其他及答疑

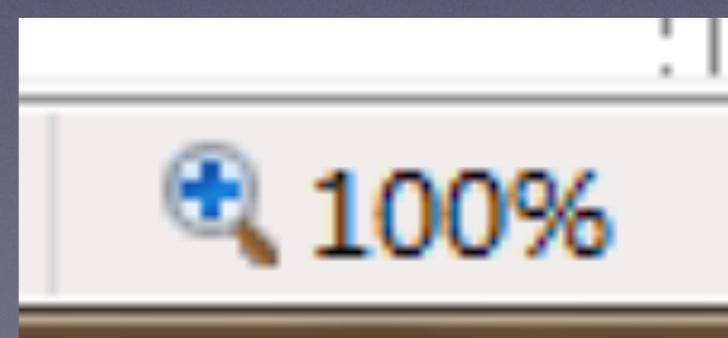
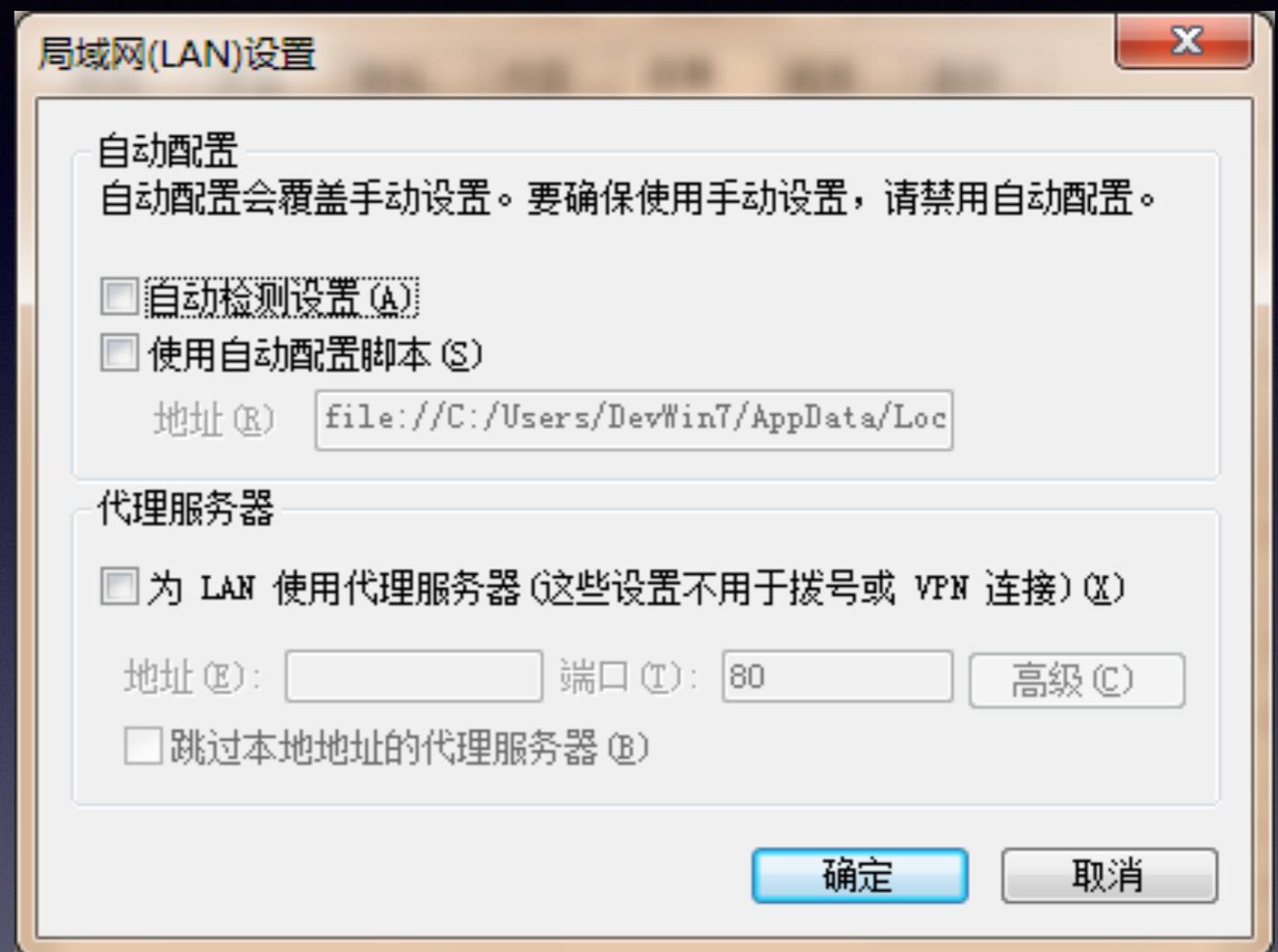
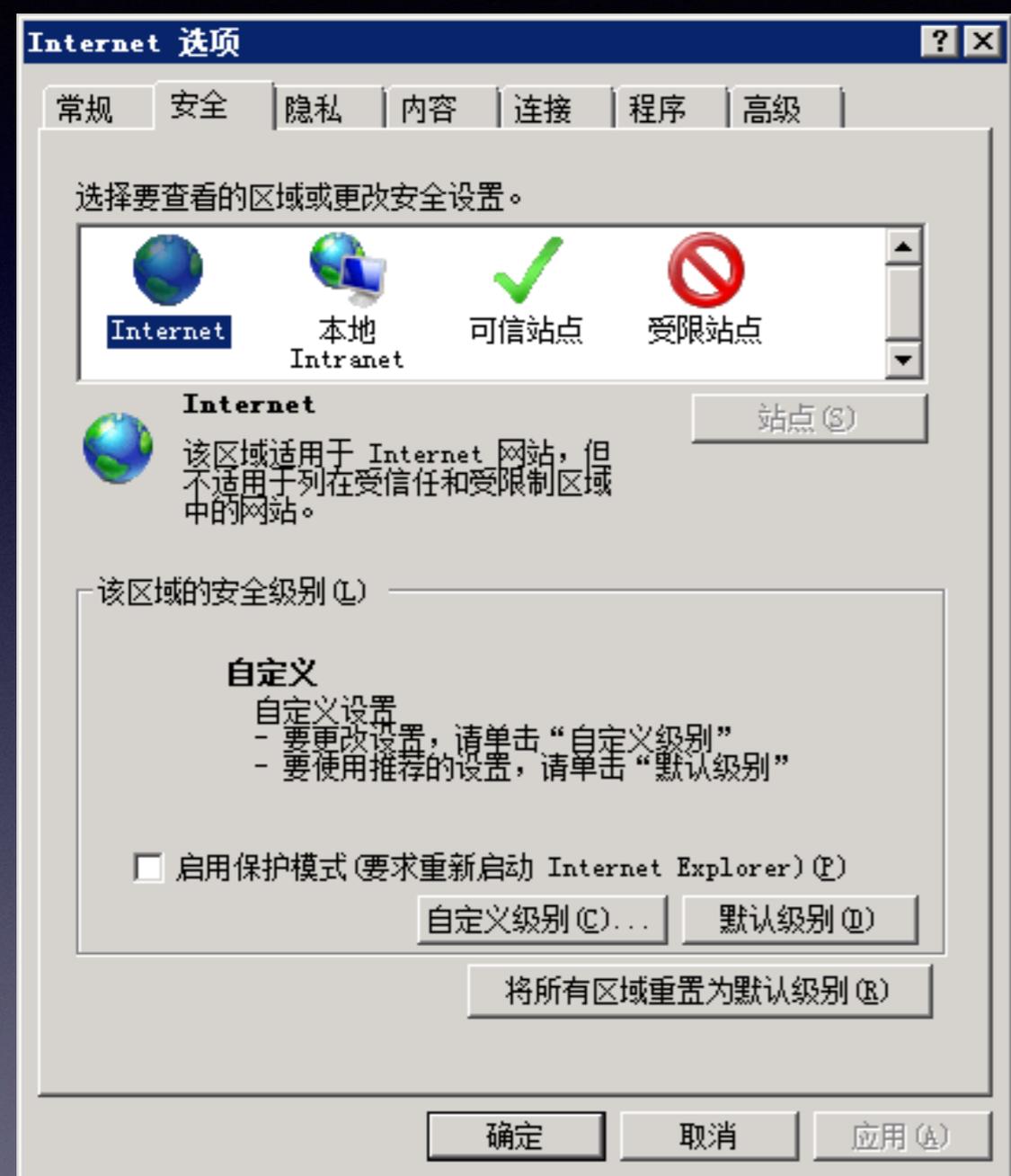
Selenium2Library测试web

- Selenium2Library is a web testing library for Robot Framework that leverages the [Selenium 2 \(WebDriver\)](#) libraries from the [Selenium](#) project.
- It is modeled after (and forked from) the [SeleniumLibrary](#) library, but re-implemented to use Selenium 2 and WebDriver technologies.

Selenium2Library测试web

- 支持的浏览器：
- | firefox 或 ff | FireFox |
- | internetexplorer 或 ie | Internet Explorer |
- | googlechrome 或gc 或 chrome | Google Chrome |
- | opera | Opera |
- | phantomjs | PhantomJS |
- | htmlunit | HTMLUnit |
- | htmlunitwithjs | HTMLUnit with Javascript support |
- | android | Android |
- | iphone | Iphone |

IE设置



Selenium2Library测试web

- 常用关键字：
 - Open Browser Close Browser Close All Browser
 - Log Source
 - Input Text
 - Click Button Click Element Click Link
 - Confirm Action
 - Capture Page Screenshot
 - Assign Id To Element
 - Execute Javascript
 - Select From List
 - **Select Frame**
 - **Select Window**
 - Wait Until Page Contains
 - Wait Until Keyword Succeeds (BuiltIn)
 - Run Keyword XXX (BuiltIn)

定位元素

- **Locator**
 - 可以id或name来用定位界面元素
 - 也可以使用XPath或Dom，但是，必须用XPath=或Dom=来开头

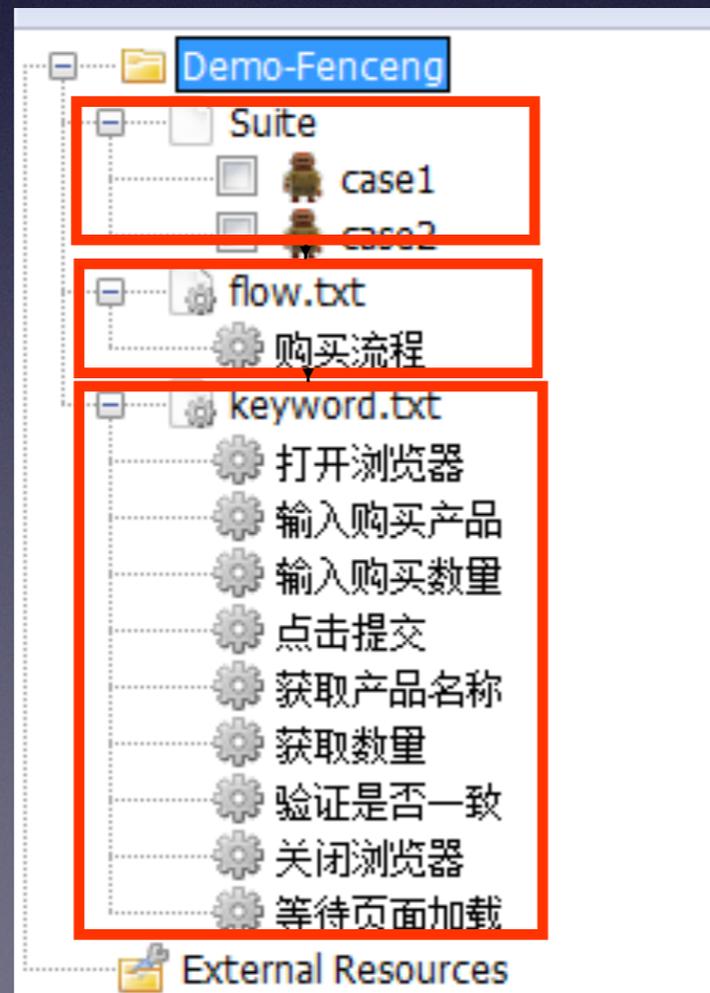
Strategy	Example	Description
identifier	Click Element identifier=my_element	Matches by @id or @name attribute
id	Click Element id=my_element	Matches by @id attribute
name	Click Element name=my_element	Matches by @name attribute
xpath	Click Element xpath=//div[@id='my_element']	Matches with arbitrary XPath expression
dom	Click Element dom=document.images[56]	Matches with arbitrary DOM express
link	Click Element link=My Link	Matches anchor elements by their link text
css	Click Element css=div.my_class	Matches by CSS selector
tag	Click Element tag=div	Matches by HTML tag name

Selenium2Library演示

- demo演示

写好自动化测试用例原则

- 要做到流程和数据的分离
- 通过不断抽象，消除冗余
- 测试用例应尽量简单易读，避免复杂逻辑
- 建立测试用例分层架构，并坚守



Suite
Source: D:\Python27\Scripts\demo-fenceng\suite.txt

Settings >>

Import	Name / Path	Arguments	Comment
Resource	flow.txt		

Flow
Source: D:\Python27\Scripts\demo-fenceng\flow.txt

Settings >>

Import	Name / Path	Arguments	Comment
Resource	keyword.txt		

测试用例层次架构 (实例)

测试用例 =
测试流程模板 +
测试数据

测试流程模板 =
测试流程构件的排列

测试流程构件 =
测试流程步骤的排列

测试流程步骤 =
界面交互细节

新保

Settings >>

1	新保流程	110000	110100
2	新保流程	310000	310100

新保流程

Settings >>

1	打开页面	\${province-code}	\${city-code}
2	基本信息页-北京	\${mobile}	\${email}
3	NewCarBasicInfo	\${province-code}	\${city-code}

基本信息页-北京

Settings >>

1	新车	
2	手机	\${mobile}
3	电邮	\${email}
4	生效日期	\${valid-date}

手机

Settings >>

1	INPUT TEXT	pre_insurantMobilePhone	Call Selenium Library \${arg1}
---	------------	-------------------------	-----------------------------------

分层总结

- 越靠近顶层，越接近手工测试案例
- 越靠近底层，越接近测试脚本

- 像写代码一样写案例，像写案例一样写代码。

- **RF**的关键词驱动：函数式关键字
- **Keyword | arg1...argN** (做操作)
- **Variable(s)= | Keyword | arg1...argN** (返回值)

目录

- RF框架介绍
- 测试案例 & 关键字
- **Selenium2Library**测试web演示
- **AutoltLibrary**测试演示
- **DatabaseLibrary**测试演示
- **AppiumLibrary**移动测试演示
- RF和敏捷测试
- 其他及答疑

AutoltLibrary介绍及演示

- **AutoltLibrary** is a Python keyword library that extends [Robot Framework](#) by providing keywords based on the COM interface to [Autolt](#), a freeware tool for automating the Windows GUI.

AutoltLibrary介绍及演示

- 先安装Python Windows Extension(pywin32-216.win32-py2.7.exe) (需要本机管理员权限)
- 再安装AutoltLibrary-1.1, 解压zip到任意不带空格目录, 然后在目录下执行
 - Python setup.py install
- **AutoltLibrary-1.1**
 - 下载路径: <http://code.google.com/p/robotframework-autoitlibrary/>
- **pywin32-217.win32-py2.7.exe**
 - 下载路径: <http://sourceforge.net/projects/pywin32/files/pywin32/>

AutoItLibrary介绍及演示

- 演示
 - 计算器
 - 对话框
 - 上传
 - 下载

目录

- **RF框架介绍**
- **测试案例 & 关键字**
- **Selenium2Library测试web演示**
- **AutoltLibrary测试演示**
- **DatabaseLibrary测试演示**
- **AppiumLibrary移动测试演示**
- **RF和敏捷测试**
- **其他及答疑**

DatabaseLibrary介绍

- **Database Library contains utilities meant for Robot Framework's usage. This can allow you to query your database after an action has been made to verify the results. This is compatible* with any Database API Specification 2.0 module.**

安装-DatabaseLibrary

- **cx_Oracle-5.1.2-11g.win32-py2.7.msi** (目前最新5.1.2, 注意要和你本地的oracle客户端版本一致)
 - 下载路径: <http://sourceforge.net/projects/cx-oracle/files/>
- **DatabaseLibrary**
 - 下载路径: <http://franz-see.github.io/Robotframework-Database-Library/>

DatabaseLibrary介绍

- 支持的数据库：
 - IBM DB2
 - Firebird (and Interbase)
 - Informix
 - Ingres
 - MySQL
 - Oracle
 - PostgreSQL
 - SAP DB (also known as "MaxDB")
 - Microsoft SQL Server
 - Microsoft Access
 - Sybase
 - SQLite
 -
 - <https://wiki.python.org/moin/DatabaseInterfaces>

DatabaseLibrary演示

- 演示
 - Oracle
 - sqlite3

目录

- **RF框架介绍**
- **测试案例 & 关键字**
- **Selenium2Library测试web演示**
- **AutoltLibrary测试演示**
- **DatabaseLibrary测试演示**
- **AppiumLibrary移动测试演示**
- **RF和敏捷测试**
- **其他及答疑**

Appium 自动化测试

- 需要安装
- appium (android环境, xcode-command-line)
- Appium-Python-Client
- robotframework-appiumlibrary

appium-doctor

Running iOS Checks

- ✓ Xcode is installed at `/Applications/Xcode.app/Contents/Developer`
- ✓ Xcode Command Line Tools are installed.
- ✓ DevToolsSecurity is enabled.
- ✓ The Authorization DB is set up properly.
- ✓ Node binary found at `/usr/local/bin/node`
- ✓ iOS Checks were successful.

Running Android Checks

- ✓ ANDROID_HOME is set to `"/Users/qitao/Desktop/mobile/android/adt-bundle-mac-x86_64-20140321/sdk"`
 - ✓ JAVA_HOME is set to `"/System/Library/Frameworks/JavaVM.framework/Home."`
 - ✓ ADB exists at `/Users/qitao/Desktop/mobile/android/adt-bundle-mac-x86_64-20140321/sdk/platform-tools/adb`
 - ✓ Android exists at `/Users/qitao/Desktop/mobile/android/adt-bundle-mac-x86_64-20140321/sdk/tools/android`
 - ✓ Emulator exists at `/Users/qitao/Desktop/mobile/android/adt-bundle-mac-x86_64-20140321/sdk/tools/emulator`
 - ✓ Android Checks were successful.
-
- ✓ All Checks were successful

appium演示

- **iOS演示**
- **Android演示**

目录

- **RF框架介绍**
- **测试案例 & 关键字**
- **Selenium2Library测试web演示**
- **AutoltLibrary测试演示**
- **DatabaseLibrary测试演示**
- **AppiumLibrary移动测试演示**
- **RF和敏捷测试**
- **其他及答疑**

RF和敏捷测试

- 返回
- 状态
- 变更集
- 工作区
- 立即构建
- 删除 Project
- 配置
- Job Config History
- Robot Results
- Open Latest Robot log.html

Project web_

- 工作区
- 最近变更集

Latest Robot Results:
In build number #103

[Open log.html](#)

- Pass ratio (Critical tests): 100%
- Pass ratio (All tests): 100%
- Tests passed (Critical tests): 15/15
- Tests passed (All tests): 15/15

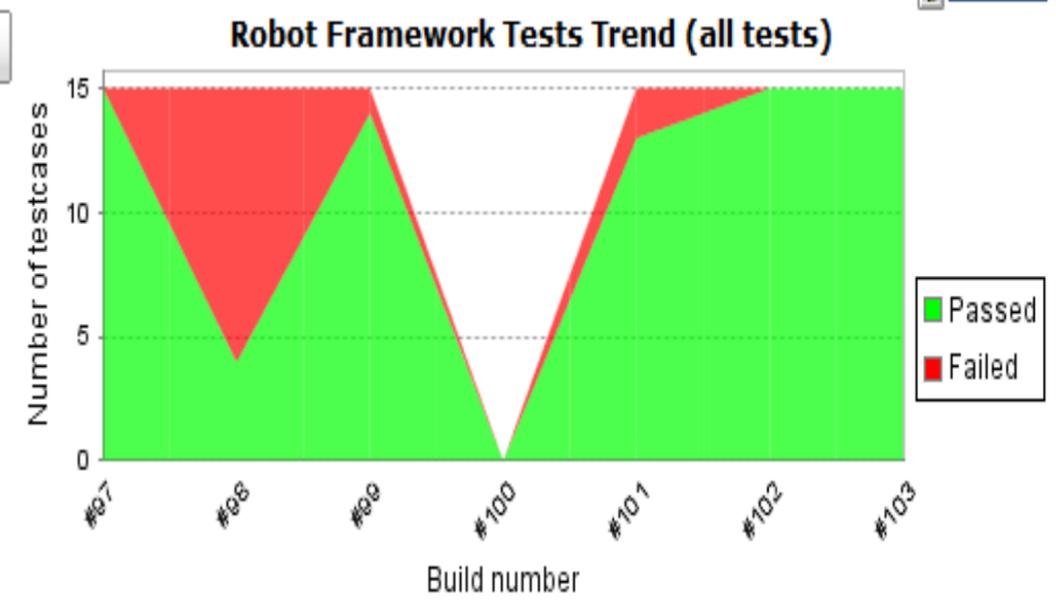
Build History (趋势图)

#103	2013-12-15 10:49:58
#102	2013-12-14 11:45:55
#101	2013-12-13 10:12:56
#100	2013-12-12 10:13:03
#99	2013-12-11 10:00:55
#98	2013-12-10 10:22:27
#97	2013-12-9 10:00:53

RSS 全部 RSS 失败

- 永久连接**
- [Last build\(#103\),22 小时前](#)
 - [Last stable build\(#103\),22 小时前](#)
 - [Last successful build\(#103\),22 小时前](#)
 - [Last failed build\(#101\),2 days 23 小时前](#)
 - [Last unsuccessful build\(#101\),2 days 23 小时前](#)

禁用项目



RF和敏捷测试

在必要的时候并发构建 ?

Restrict where this project can be run ?

Label Expression ?

高级项目选项 高级...

源码管理

Base ClearCase

CVS

ClearCase UCM baseline

None

Subversion

Modules

Repository URL ?

Local module directory (optional) ?

Add more locations...

Check-out Strategy ▼

Use 'svn update' whenever possible, making the build faster. But this causes the artifacts from the previous build to remain when a new build starts.

源码库浏览器 ▼ ?

高级...

RF和敏捷测试

构建

Execute Windows batch command

```
命令
echo on
java -version
python --version
pybot.bat --name [redacted] --test * -v url:http://[redacted] -i run -d .\Result test\[redacted]\[redacted].txt
```

See [the list of available environment variables](#)

删除

增加构建步骤 ▾

构建后操作

Publish Robot Framework test results

Directory of Robot output

Path to directory containing robot xml and html files (relative to build workspace)

Log/Report link

Name of log or report file to be linked on jobs front page

高级...

Thresholds for build result

Use thresholds for critical tests only

RF和敏捷测试

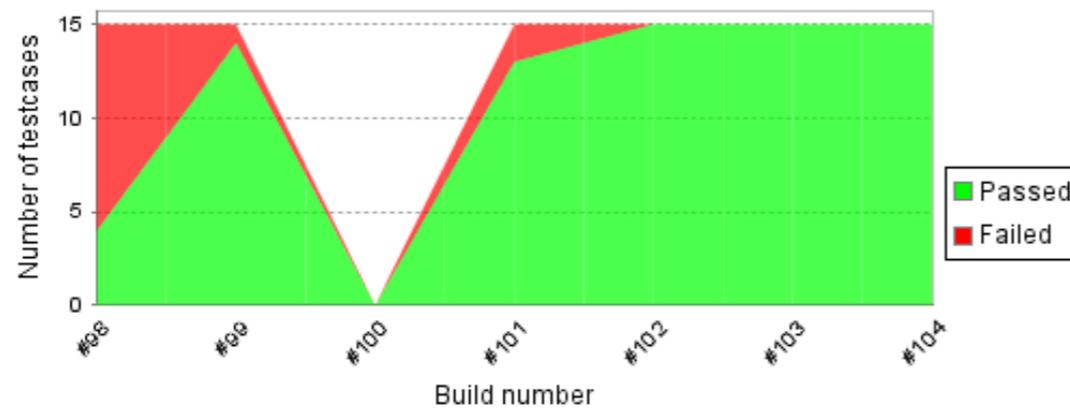
Robot Framework test results

15 tests in total (± 0), 15 critical

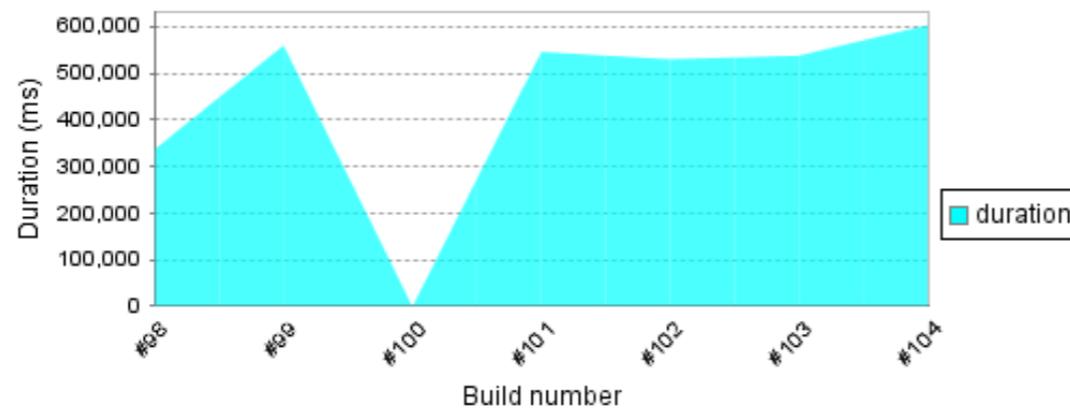
[Original report files](#)

Executed at 20131216 11:11:22.636
Tests took 602937ms (+65449)

Pass/fail trend



Duration trend



All test suites

Name	Failed tests (diff)	Total tests (diff)	Duration ms (diff)
CFS-CS	0 (± 0)	15 (± 0)	602937 (+65449)

目录

- **RF框架介绍**
- **测试案例 & 关键字**
- **Selenium2Library测试web演示**
- **AutoltLibrary测试演示**
- **DatabaseLibrary测试演示**
- **AppiumLibrary移动测试演示**
- **RF和敏捷测试**
- **其他及答疑**

其他

- **RF测试库不仅仅是前面那些，还有以下：**
 - **QTLibrary**（我自己写的库，功能就是随机生成汉字姓名、身份证号等等，<https://github.com/qitaos/robotframework-QTLibrary>）
 - **HTTP test library using Requests** <https://github.com/bulkan/robotframework-requests>
 - **HTTP test library using livetest** <https://github.com/peritus/robotframework-httplibrary>
 - **SshLibrary** <http://code.google.com/p/robotframework-sshlibrary/>
 - **mabot** <http://code.google.com/p/robotframework-mabot/> 用于手工执行robotframework案例，最新0.10版本。
 - 还有很多，不一一列举

requests接口自动化

- **requests**
- **robotframework-requests**

Q&A