

An introduction to Robot Framework

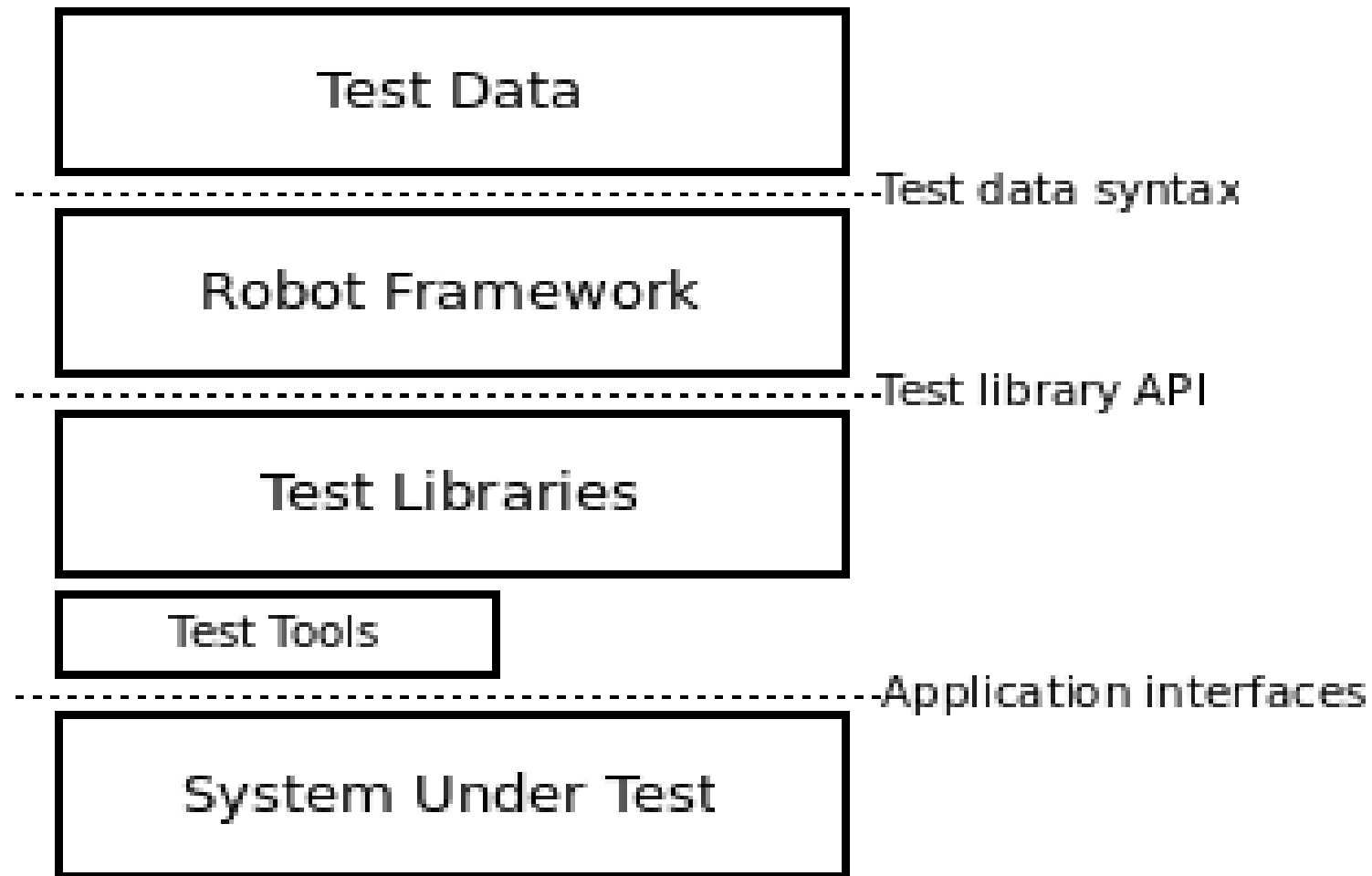
<http://robotframework.org>



Fast facts

- Generic test automation framework
 - Utilizes the keyword-driven testing approach
- Implemented with Python
 - Jython supported fully and IronPython initially
 - Can be extended natively using Python or Java
 - Other languages supported via XML-RPC based remote interface
- Open source
 - Apache 2.0 license
 - Sponsored by Nokia Siemens Networks
 - Active development and growing community
 - Hosted on Google Code

High level architecture



Simple tabular syntax

| Test Case | Action | Argument | Argument |
|---------------------------------------|-----------------------------------|---------------|----------|
| User can create an account and log in | Create Valid User | fred | P4ssw0rd |
| | Attempt to Login with Credentials | fred | P4ssw0rd |
| | Status Should Be | Logged In | |
| | | | |
| User cannot log in with bad password | Create Valid User | betty | P4ssw0rd |
| | Attempt to Login with Credentials | betty | wrong |
| | Status Should Be | Access Denied | |

Data-driven test cases

| Test Case | Action | Password | Expected error message |
|------------------------------------|-------------------------------------------------|---------------|-------------------------|
| Too short password | Creating user with invalid password should fail | abCD5 | \${PWD INVALID LENGTH} |
| Too long password | Creating user with invalid password should fail | abCD567890123 | \${PWD INVALID LENGTH} |
| Password without lowercase letters | Creating user with invalid password should fail | 123DEFG | \${PWD INVALID CONTENT} |
| Password without capital letters | Creating user with invalid password should fail | abcd56789 | \${PWD INVALID CONTENT} |
| Password without numbers | Creating user with invalid password should fail | AbCdEfGh | \${PWD INVALID CONTENT} |
| Password with special characters | Creating user with invalid password should fail | abCD56+ | \${PWD INVALID CONTENT} |

Executable specifications

| Test Case | Steps |
|--------------------------|---------------------------------------------|
| User can change password | Given a user has a valid account |
| | when she changes her password |
| | then she can log in with the new password |
| | and she cannot use the old password anymore |

Higher level keywords

| Keyword | Action | Argument | Argument |
|-------------------------------------------------|-----------------------------------|------------------------------------|--------------|
| Clear login database | Remove file | \${DATABASE FILE} | |
| | | | |
| Create valid user | [Arguments] | \${username} | \${password} |
| | Create user | \${username} | \${password} |
| | Status should be | SUCCESS | |
| | | | |
| Creating user with invalid password should fail | [Arguments] | \${password} | \${error} |
| | Create user | example | \${password} |
| | Status should be | Creating user failed: \${error} | |
| | | | |
| Login | [Arguments] | \${username} | \${password} |
| | Attempt to login with credentials | \${username} | \${password} |
| | Status should be | Logged In | |

Straightforward test library API

```
import os
import sys

class LoginLibrary:

    def __init__(self):
        sut_path = os.path.join(os.path.dirname(os.path.abspath(__file__)),
                                '..', 'sut', 'login.py')
        self._command_prefix = "%s" %s " % (sys.executable, sut_path)
        self._status = ''

    def create_user(self, username, password):
        self._run_command('create', username, password)

    def change_password(self, username, old_pwd, new_pwd):
        self._run_command('change-password', username, old_pwd, new_pwd)

    def attempt_to_login_with_credentials(self, username, password):
        self._run_command('login', username, password)

    def status_should_be(self, expected_status):
        if expected_status != self._status:
            raise AssertionError("Expected status to be '%s' but was '%s'"
                                % (expected_status, self._status))

    def _run_command(self, command, *args):
        command = '%s %s %s' % (self._command_prefix, command, ' '.join(args))
        process = os.popen(command)
        self._status = process.read().strip()
        process.close()
```


Variables

| Variable | Value |
|----------------------------|-------------------------------------------------------------------------------|
| \${USERNAME} | janedoe |
| \${PASSWORD} | J4n3D0e |
| \${NEW PASSWORD} | e0D3n4J |
| | |
| \${DATABASE FILE} | \${TEMPDIR}\${/}robotframework-quickstart-db.txt |
| | |
| \${PWD INVALID LENGTH} | Password must be 7-12 characters long |
| \${PWD INVALID CONTENT} | Password must be a combination of lowercase and uppercase letters and numbers |

From command line:

```
$ pybot --variable USERNAME:johndoe --variable PASSWORD:J0hnD0e my_tests.html
```

Tagging

- Free metadata to categorize test cases
- Statistics by tags collected automatically
- Select test cases to be executed
- Specify which test cases are considered critical

Clear reports

Login Tests Test Report

Generated
20080613 14:13:20 GMT +02:00
1 minute 0 seconds ago

Summary Information

Status: **6 critical tests failed**
Start Time: 20080613 14:12:08.445
End Time: 20080613 14:12:39.666
Elapsed Time: 00:00:31.221

Test Statistics

| Total Statistics | Total | Pass | Fail |
|------------------|-------|------|------|
| Critical Tests | 10 | 4 | 6 |
| All Tests | 10 | 4 | 6 |

| Statistics by Tag | Total | Pass | Fail |
|-------------------|-------|------|------|
| regression | 10 | 4 | 6 |
| smoke | 4 | 4 | 0 |

| Statistics by Suite | Total | Pass | Fail |
|----------------------|-------|------|------|
| Login Tests | 10 | 4 | 6 |
| I.Higher Level Login | 3 | 3 | 0 |
| I.Invalid Login | 6 | 0 | 6 |
| I.Simple Login | 1 | 1 | 0 |

Test Details by Suite

| Name | Documentation | Metadata / Tags | Crit. | Status |
|-----------------------------------|---------------|-------------------|-------|--------|
| Login Tests | | | N/A | FAIL |
| I.Higher Level Login | | | N/A | PASS |
| I.h.Higher Level Valid Login | | regression, smoke | yes | PASS |
| I.h.Even Higher Level Valid Login | | regression, smoke | yes | PASS |
| I.h.Highest Level Login | | regression, smoke | yes | PASS |
| I.Invalid Login | | | N/A | FAIL |
| I.i.Invalid Username | | regression | yes | FAIL |
| I.i.Invalid Password | | regression | yes | FAIL |
| I.i.Invalid Username | | | | FAIL |

Login Tests Test Report

Generated
20080613 13:39:08 GMT +02:00
1 minute 5 seconds ago

Summary Information

Status: **All tests passed**
Documentation: Demo test cases for Robot Framework using Selenium test library
Start Time: 20080613 13:38:36.191
End Time: 20080613 13:39:08.068
Elapsed Time: 00:00:31.877

Test Statistics

| Total Statistics | Total | Pass | Fail | Graph |
|------------------|-------|------|------|-------|
| Critical Tests | 10 | 10 | 0 | |
| All Tests | 10 | 10 | 0 | |

| Statistics by Tag | Total | Pass | Fail | Graph |
|-------------------|-------|------|------|-------|
| regression | 10 | 10 | 0 | |
| smoke | 4 | 4 | 0 | |

| Statistics by Suite | Total | Pass | Fail | Graph |
|----------------------|-------|------|------|-------|
| Login Tests | 10 | 10 | 0 | |
| I.Higher Level Login | 3 | 3 | 0 | |
| I.Invalid Login | 6 | 6 | 0 | |
| I.Simple Login | 1 | 1 | 0 | |

Test Details by Suite

| Name | Documentation | Metadata / Tags | Crit. | Status | Message | Start / Elapsed |
|-----------------------------------|-----------------------------------------------------------------|-------------------|-------|--------|-------------------------------------------------------------------------------|-------------------------------|
| Login Tests | Demo test cases for Robot Framework using Selenium test library | | N/A | PASS | 10 critical tests, 10 passed, 0 failed 10 tests total, 10 passed, 0 failed | 20080613 13:38:36 00:00:32 |
| I.Higher Level Login | | | N/A | PASS | 3 critical tests, 3 passed, 0 failed 3 tests total, 3 passed, 0 failed | 20080613 13:38:36 00:00:17 |
| I.h.Higher Level Valid Login | | regression, smoke | yes | PASS | | 20080613 13:38:36 00:00:06 |
| I.h.Even Higher Level Valid Login | | regression, smoke | yes | PASS | | 20080613 13:38:41 00:00:05 |
| I.h.Highest Level Login | | regression, smoke | yes | PASS | | 20080613 13:38:47 00:00:06 |
| I.Invalid Login | | | N/A | PASS | 6 critical tests, 6 passed, 0 failed 6 tests total, 6 passed, 0 failed | 20080613 13:38:52 00:00:10 |
| I.i.Invalid Username | | regression | yes | PASS | | 20080613 13:38:57 00:00:01 |
| I.i.Invalid Password | | regression | yes | PASS | | 20080613 13:38:58 00:00:01 |
| I.i.Invalid Username | | regression | yes | PASS | | 20080613 13:38:59 |

Detailed logs

[-] TEST SUITE: Higher Level Login

[Expand All](#)

Full Name: Login Tests.Higher Level Login
Source: /home/jth/workspace/seleniumlib/demo/login_tests/higher_level_login.html
Start / End / Elapsed: 20090415 07:36:29.500 / 20090415 07:36:55.480 / 00:00:25.980
Overall Status: **FAIL**
Message: 3 critical tests, 0 passed, 3 failed
3 tests total, 0 passed, 3 failed

[-] TEST CASE: Higher Level Valid Login

[Expand All](#)

Full Name: Login Tests.Higher Level Login.Higher Level Valid Login
Tags: regression, smoke
Start / End / Elapsed: 20090415 07:36:29.533 / 20090415 07:36:36.412 / 00:00:06.879
Status: **FAIL (critical)**
Message: Location should have been '<http://localhost:7272/welcome.html>' but was '<http://localhost:7272/error.html>'

[+] **SETUP: resource.Open Login Page**

[+] **KEYWORD: resource.Input Username** demo

[+] **KEYWORD: resource.Input Password** mode

[+] **KEYWORD: resource.Click Login Button**

[-] **KEYWORD: resource.Welcome Page Should Be Open**

Start / End / Elapsed: 20090415 07:36:36.340 / 20090415 07:36:36.374 / 00:00:00.034

[-] **KEYWORD: SeleniumLibrary.Location Should Be** \${WELCOME URL}

Documentation: Verifies that current URL is exactly `url`.

Start / End / Elapsed: 20090415 07:36:36.341 / 20090415 07:36:36.374 / 00:00:00.033

07:36:36.373 INFO Verifying current location is '<http://localhost:7272/welcome.html>'.

07:36:36.374 **FAIL** Location should have been '<http://localhost:7272/welcome.html>' but was '<http://localhost:7272/error.html>'

[+] **TEARDOWN: SeleniumLibrary.Close Browser**

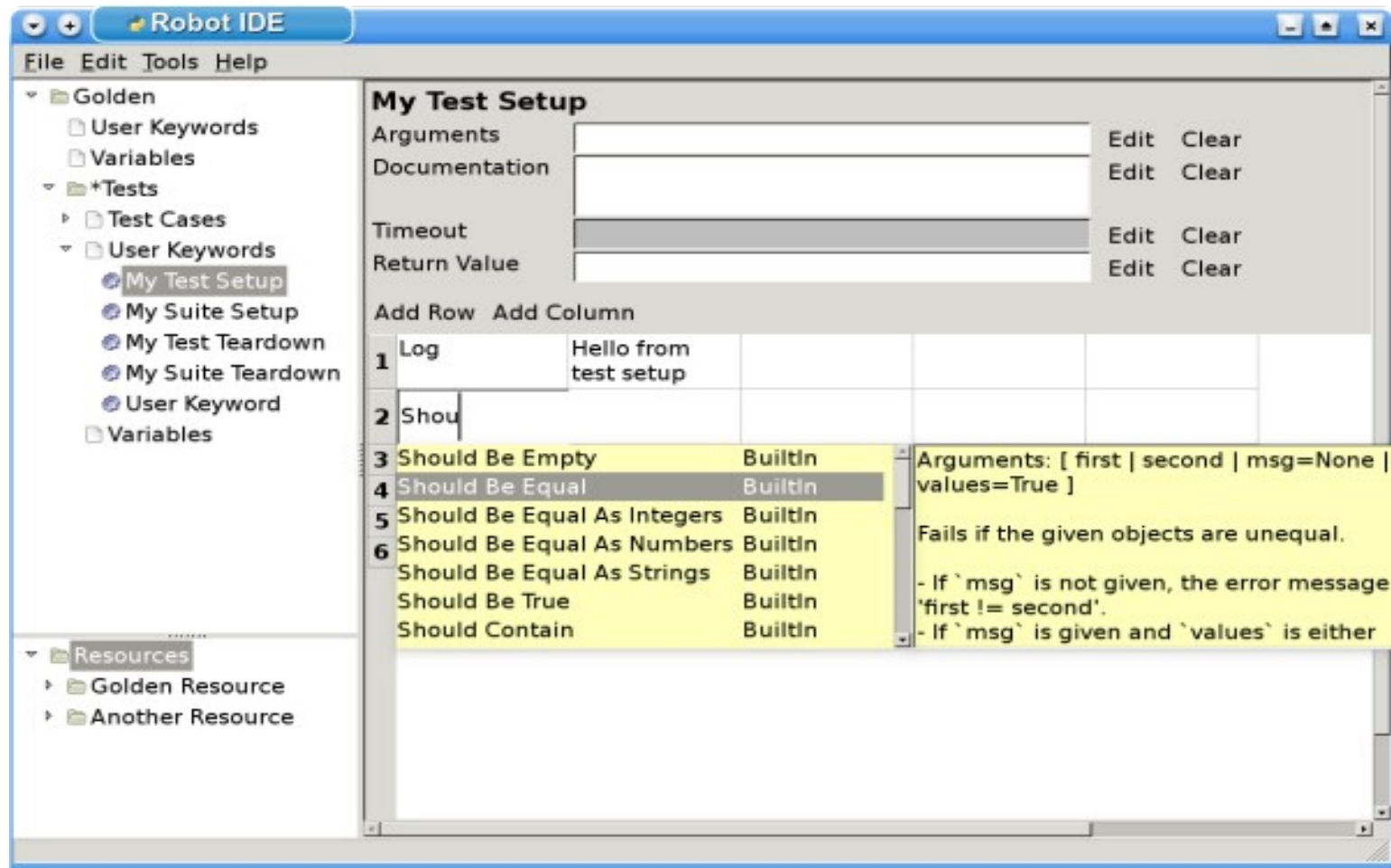
Easy integration

- Test suites are created from files and directories
 - Trivial to store into any version control system
- Simple command line interface
 - Easy to start test execution from CI systems or other tools
- Hudson/Jenkins plugin
- Output also in XML format
 - All information in machine readable format
 - Outputs from different test runs can be combined

Different test libraries

- Standard libraries
 - Included in normal installation
 - OperatingSystem, Telnet, Screenshot, String, ...
- External libraries
 - Must be installed separately
 - SeleniumLibrary, SwingLibrary, SSHLibrary, ...
- Project or team specific libraries

Separate test data editor (RIDE)



For more information

- Project pages
 - The main information hub
 - <http://robotframework.org>
- Quick Start Guide
 - Executable guide demonstrating the key features
 - Examples on these slides are taken from it
 - <http://code.google.com/p/robotframework/wiki/QuickStartGuide>
- User Guide
 - Detailed information about all features of the framework
 - <http://code.google.com/p/robotframework/wiki/UserGuide>