
Golem Documentation

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CHAPTER 1

Intro

Golem is a complete test automation tool and framework for end-to-end testing. It creates powerful, robust and maintainable test suites, yet, it is easy to pick up and learn even without a lot of programming knowledge. It is based on Selenium Webdriver and it can be extended using Python.

It can:

- Use the Page Object pattern
- Write tests with multi data sets (data-driven)
- Run tests in parallel
- Test APIs
- Run tests remotely (Selenium Grid or a cloud testing provider)
- It can be executed from Jenkins or any other CI tool

It has:

- A complete GUI module (a web application) to write and execute tests
- A reporting engine and a web reports module
- An interactive console

CHAPTER 2

Selenium

Some prior knowledge of Selenium is required to work with Golem. Golem extends Selenium webdriver and webelement classes and uses a simplified interface for finding elements. It is advised to understand how standard Selenium works. [This guide](#) is a good place to start.

3.1 Installation

3.1.1 Requirements

Python

Golem requires Python 3.6 or higher.

Windows:

The Windows installer works fine, you can get it from here: python.org/downloads/

Mac:

To install on Mac OS follow these instructions: [Installing Python 3 on Mac OS X](#)

Linux:

Debian 8 and Ubuntu 14.04 comes with Python 3.4 pre-installed, newer Linux distributions might come with newer Python versions.

Since Linux tends to have both Python 2 and 3 installed alongside each other, the command to execute the latter should be 'python3' instead of just 'python'.

PIP

PIP is the package manager for Python. It is required to install Golem and its dependencies. Check if you already have it. PIP comes bundled with the newer versions of Python.

```
pip --version
```

or

```
pip3 --version
```

If you don't have PIP installed, follow [these instructions](#).

3.1.2 Create a Virtual Environment

It is recommended to install Golem and its dependencies in a [virtual environment](#) instead of globally. To do that, follow these steps:

Install Virtualenv

```
pip install virtualenv
```

Create a new virtualenv in the './env' folder

```
virtualenv env
```

If the virtual environment is being created with Python 2 instead of 3, use the following command instead:

```
virtualenv env -p python3
```

Activate the Environment

To use a virtual environment it needs to be activated first.

Windows:

```
env\scripts\activate
```

Mac/Linux:

```
source env/bin/activate
```

3.1.3 Install Golem Using PIP

The quickest and the preferred way to install Golem.

```
pip install golem-framework
```

3.1.4 Installing From Source

```
pip install -U https://github.com/golemhq/golem/archive/master.tar.gz
```

3.2 Tutorial - Part 1

Let's create the first test in Golem and learn the main features along the way. This tutorial assumes Golem is already installed. If not, head over to the [Installation](#) section.

3.2.1 Create a Test Directory

A **Test Directory** needs to be created first. This directory contains the initial folder structure and some config files. To create a Test Directory, open a console wherever you want the new directory to be and execute this command:

```
golem-admin createdirectory <test_dir_name>
```

This will create a **testdir** folder that will be used for all subsequent projects.

3.2.2 Download Webdriver

Each browser requires its own Webdriver executable. Golem uses the [webdriver-manager](#) tool to download these automatically.

```
cd <test_directory>
webdriver-manager update
```

The Webdriver executables are downloaded into the *drivers* folder inside the Test Directory.

The settings.json file contains a key for each browser that should point to the Webdriver file for that browser. For example:

settings.json

```
{
  "chromedriver_path": "./drivers/chromedriver*"
}
```

The '*' wildcard at the end of the path is used to match the highest version available, in the case there's more than one present.

This doesn't need to be modified unless the Webdriver files are located elsewhere.

For more detail, check [this page](#).

3.2.3 Start the Web Module

To start the Golem Web Module, run the following command:

```
golem gui
```

The Web Module can be accessed at <http://localhost:5000/>

The following superuser is available at the start: username: **admin** / password: **admin**

3.2.4 Create a New Project

A new **project** can be created by using the Web Module or by the following command:

```
cd <directory_name>
golem createproject <project_name>
```

A new project has the following structure:

```
project_name/  
  pages/  
  reports/  
  suites/  
  tests/  
  environments.json  
  settings.json
```

Once the test directory and the project are created you can proceed to [Tutorial - Part 2](#)

3.3 Tutorial - Part 2

3.3.1 Adding a New Test File

Test files are Python modules located inside the *tests* folder of a project.

To create a new **test file** use the following command:

```
golem createtest <project_name> <test_name>
```

A test can also be created from the Web Module.

A test example

Next is a test that navigates to 'en.wikipedia.org', searches an article and validates that the title of the article is correct.

validate_article_title.py

```
description = 'Search an article in Wikipedia'  
  
def test_validate_article_title(data):  
    navigate('http://en.wikipedia.org/')  
    send_keys(('id', 'searchInput'), 'automation')  
    click(('id', 'searchButton'))  
    verify_element_text(('id', 'firstHeading'), 'Automation')
```

In the Web Module:

validate_article_title

Run Test

< Code >

Save

Description

Search an article in Wikipedia

Tags

Skip ☐

Pages

import page

+ New Page

Setup

test_validate_article_title ✕

1	navigate	'https://en.wikipedia.org'	✕
2	send_keys	('id', 'searchInput')	'automation' ✕
3	click	('id', 'searchButton')	✕
4	verify_element_text	('id', 'firstHeading')	'Automation' ✕

+ Add Test

Teardown

Golem Actions

In the previous example, *navigate*, *send_keys*, *click*, and *verify_element_text* are Golem actions. Check out [the entire list of actions](#).

Opening and Closing the Browser

There is no need to open or close the browser. The first action that requires a browser will open one. At the end, Golem will close the browser. However, this can be done explicitly with the [open_browser](#) and [close_browser](#) actions.

3.3.2 Running a Test

To run the test just press the 'Run Test' button in the Web Module or run the following command:

```
golem run <project_name> validate_article_title
```

3.3.3 Managing Test Data

The data for each test can be stored inside the test file, in CSV or JSON files.

Using the CSV Data Table

Let's rewrite the previous test but extracting all the data outside the code:

In the Test Builder select *Add Data Source* -> *CSV*. Then we fill the table with the following values:

validate_article_title.csv

```
URL,search_value,article_title
http://en.wikipedia.org/,automation,Automation
```

And we refactor the test to use the data object instead of hardcoded values:

validate_article_title.py

```
description = 'Search an article in Wikipedia'

def test_validate_article_title(data):
    go_to(data.URL)
    send_keys(('id', 'searchInput'), data.search_value)
    click(('id', 'searchButton'))
    verify_element_text(('id', 'firstHeading'), data.article_title)
```

This is the final result:

validate_article_title

 Run Test ▼ < Code > Save

Description

Tags

Skip ☐

Pages

+ New Page

Setup

test_validate_article_title ✕

navigate

data.URL

✕

send_keys

('id', 'searchInput')

data.search_value

✕

click

('id', 'searchButton')

✕

verify_element_text

('id', 'firstHeading')

data.article_title

✕

+ Add Test

Teardown

Data

#	URL	search_value	article_title	
1	https://en.wikipedia.org	automation	Automation	
2				
3				

Multiple data sets

The test will be executed once per each row in the CSV file. Each row is considered a **data set**.

For example, consider the previous data file, but with more rows:

validate_article_title.csv

```
URL,search_value,article_title
http://en.wikipedia.org/,automation,Automation
http://en.wikipedia.org/,webdriver,Selenium (software)
http://es.wikipedia.org/,chimichanga,Chimichanga
http://fr.wikipedia.org/,soupe à l'oignon,Soupe à l'oignon
```

Using this data file, Golem will run the same test 4 times, using each time a different data set.

Test data can also be [JSON](#) and [internal](#).

3.3.4 Using Page Objects

If you remember from the previous example, each time the test interacted with a web element (an HTML tag), the selector for that element was defined right there inside the step. That will make the tests hard to maintain, especially when the application under test changes.

Defining Page Objects

It is a good practice to keep the selectors of the web elements outside of the test, and declared once in a single place. That place should be a **Page Object**.

A Page Object represents an entire page of the application (or a part of a page, like the header or the menu). Inside the Page Object, the elements of the page can be defined so they can be used later in the tests.

Let's see an example. Consider the previous test (`validate_article_title`). Let's extract all the element selectors and put them inside Page Objects.

For this, we create two pages. The first will be the 'header', as it's the same header for every page of the application. The second page object will be the 'article'.

header.py

```
search_input = ('id', 'searchInput')

search_button = ('id', 'searchButton')
```

article.py

```
title = ('id', 'firstHeading')
```

These pages, as seen with the Web Module, look like this:

Using Pages Inside Tests

Having these two pages created, we can use them in our test, and refactor it as follows:

validate_article_title.py

```
description = 'Search an article in Wikipedia'

pages = ['header', 'article']

def test_validate_article_title(data):
    navigate(data.URL)
    send_keys(header.search_input, data.search_value)
    click(header.search_button)
    verify_element_text(article.title, data.article_title)
```

In the Web Module:

validate_article_title

Run Test

< Code >

Save

Description

Search an article in Wikipedia

Tags

Skip ☐

Pages

header

article

import page

+ New Page

Setup

test_validate_article_title ✕

1

navigate

data.URL

✕

2

send_keys

header.search_input

data.search_value

✕

3

click

header.search_button

✕

5

verify_element_text

article.title

data.article_title

✕

+

+ Add Test

Teardown

Data

#	URL	search_value	article_title	
1	https://en.wikipedia.org	automation	Automation	
2				

+

+

With this change, the ‘Search input’, ‘Search button’ and ‘Article Title’ elements are defined in a separate file. A test that needs to interact with these elements, just needs to import the page object and reference them. This reduces the required time to write new tests and the maintenance of existing tests.

3.3.5 Creating a suite

A suite lets you arbitrarily select a subset of all the tests to execute as a group.

A suite contains a list of *tests*, *browsers*, *environments*, *tags*, and the number of *processes*. Consider the following example:

full_regression.py

```
browsers = ['chrome', 'firefox']
environments = ['staging']
processes = 3
```

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```
tags = []

tests = [
    'module.module_test1',
    'module.module_test2',
    'another_test',
    'validate_article_title'
]
```

Test Parallelization

The `processes = 2` tells Golem how many tests should be executed at the same time. The default is one (one at a time). How many tests can be parallelized depends on your test infrastructure.

Execution report

When the suite finishes a JSON report is generated in the *reports* folder. This report can be visualized using the Web Module.

That's it! The basic tutorial ends here. Feel free to learn more about Golem using the table of contents. Happy testing!

3.4 Browsers

3.4.1 Supported Browsers

The supported browsers are:

- Chrome
- Edge
- Firefox
- Internet Explorer
- Opera
- Remote (Selenium Grid)

3.4.2 Webdriver Manager

To download the Webdriver executables run the following command (currently only Chrome and Firefox):

```
webdriver-manager update
```

List the current downloaded versions:

```
webdriver-manager versions
```

Download a specific Webdriver:

```
webdriver-manager update -d chrome
```

To learn more about the Webdriver Manager see: <https://github.com/golemhq/webdriver-manager>

Webdriver Executables

Each browser requires its own Webdriver executable. These can be downloaded manually from these locations:

- Chrome: <https://sites.google.com/a/chromium.org/chromedriver/downloads>
- Firefox: <https://github.com/mozilla/geckodriver/releases>
- IE: <http://selenium-release.storage.googleapis.com/index.html>
- Edge: <https://developer.microsoft.com/en-us/microsoft-edge/tools/webdriver/>
- Opera: <https://github.com/operasoftware/operachromiumdriver/releases>

3.4.3 Path to the Webdriver Executables

Golem needs to know where to find the executables for each of the required browsers. This is accomplished by the *settings.json* file. By default it points to the *drivers* folder inside the Test Directory:

```
{
  "chromedriver_path": "./drivers/chromedriver*",
  "edgedriver_path": "./drivers/edgedriver*",
  "geckodriver_path": "./drivers/geckodriver*",
  "iedriver_path": "./drivers/iedriver*",
  "operadriver_path": "./drivers/operadriver*"
}
```

When using a search pattern like: "chromedriver_path": "./drivers/chromedriver*" Golem will automatically choose the highest version available. In the next case, *chromedriver_2.38* will be selected:

```
/drivers
  chromedriver_2.36
  chromedriver_2.37
  chromedriver_2.38
```

Error: cannot find Opera binary

The Opera driver fails to find the Opera binary installed in the machine. To fix this set the *opera_binary_path* setting to point to the Opera binary. Example:

```
"opera_binary_path": "C:\\Program Files\\Opera\\launcher.exe",
```

3.4.4 Specifying the Browser For a Test

The browser (or browsers) that a test or suite will use can be specified from a few places:

1. From the run command:

```
golem run project_name test_name -b chrome firefox
```

2. From a suite:

```
browsers = ['chrome', 'firefox']
```

3. Using the *default_browser* setting:

```
"default_browser": "chrome"
```

Valid options:

- chrome
- chrome-headless
- chrome-remote
- chrome-remote-headless
- edge
- edge-remote
- firefox
- firefox-headless
- firefox-remote
- firefox-remote-headless
- ie
- ie-remote
- opera
- opera-remote
- any remote browser defined in settings

Chrome Headless

Chrome can run in headless mode (without a GUI). Set the browser of a test or suite to ‘chrome-headless’ or ‘chrome-remote-headless’.

Requirements: chrome 58+, chromedriver 2.32+

```
golem run <project> <test> -b chrome-headless
```

Firefox Headless

Chrome can run in headless mode (without a GUI). Set the browser of a test or suite to ‘firefox-headless’ or ‘firefox-remote-headless’.

```
golem run <project> <test> -b firefox-headless
```

3.4.5 Working with the Browser

Opening and Closing the Browser

There is no need to open or close the browser. The first action that requires a browser will open one. At the end of the test, Golem will close the browser. However, this can be done explicitly with the *open_browser* and *close_browser* actions.

Retrieving the Open Browser

During the execution of a test the open browser is located in the execution module:

```
from golem import execution

print(execution.browser.title)
```

A shortcut to this is using the *get_browser* action:

```
from golem import actions

print(actions.get_browser().title)
```

3.4.6 Custom Browser Boot Up

To have full control over the configuration of a WebDriver instance a custom browser boot up function can be defined.

Custom browsers are defined inside a **browsers.py** module in the folder of a project.

Custom browser functions receive the settings dictionary and must return an instance of a GolemXDriver class (golem.webdriver.GolemChromeDriver, golem.webdriver.GolemGeckoDriver, golem.webdriver.GolemRemoteDriver, etc.)

projects/my_project/browsers.py

```
from selenium import webdriver
from golem.webdriver import GolemChromeDriver

def my_custom_chrome(settings):
    chrome_options = webdriver.ChromeOptions()
    chrome_options.add_argument("--window-size=800,600")
    executable_path = 'path/to/chromedriver'
    return GolemChromeDriver(executable_path=executable_path,
                             chrome_options=chrome_options)
```

Then use it:

```
golem run my_project . -b my_custom_chrome
```

The following custom browser uses the version matching mechanism to get the latest executable from the /drivers folder:

```
from selenium import webdriver
from golem.core.utils import match_latest_executable_path
from golem import execution
from golem.webdriver import GolemChromeDriver
```

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```
def my_custom_chrome(settings):
    executable_path = settings['chromedriver_path']
    matched_executable_path = match_latest_executable_path(executable_path,
                                                            execution.testdir)

    return GolemChromeDriver(executable_path=matched_executable_path,
                              chrome_options=chrome_options)
```

A custom Firefox:

```
from selenium.webdriver.firefox.options import Options
from golem.core.utils import match_latest_executable_path
from golem import execution
from golem.webdriver import GolemGeckoDriver

def my_custom_firefox(settings):
    executable_path = settings['geckodriver_path']
    matched_executable_path = match_latest_executable_path(executable_path,
                                                            execution.testdir)

    options = Options()
    options.add_argument("--headless")
    return GolemGeckoDriver(executable_path=matched_executable_path, options=options)
```

A custom remote browser

```
from golem.webdriver import GolemRemoteDriver

def my_custom_remote_driver(settings):
    capabilities = {
        'browserName': 'chrome',
        'platform': 'WINDOWS',
        'version': ''
    }
    grid_url = 'http://localhost:4444'
    return GolemRemoteDriver(command_executor=grid_url,
                              desired_capabilities=capabilities)
```

3.5 Finding Elements

3.5.1 Actions and Elements

Golem actions that require a WebElement can be defined in four different ways:

An element tuple:

```
from golem import actions

input = ('id', 'myElementId', 'Username input')
actions.send_keys(input, 'my username')

# the third element is optional
button = ('css', 'button.btn-default')
actions.click(button)
```

A css selector string:

```
from golem import actions

actions.send_keys('#myElementId', 'my username')
actions.click('button.btn-default')
```

An XPath selector string:

```
from golem import actions

actions.send_keys('//input[@id="myElementId"]', 'my username')
actions.click('//button[@class="btn-default"]')
```

A WebElement object:

```
from golem import actions

webelement = actions.get_browser().find(id='myElementId')
actions.send_keys(webelement, 'my username')

webelement = actions.get_browser().find(css='button.btn-default')
actions.click(webelement)
```

3.5.2 find and find_all

The browser has two methods used to find elements: **find** and **find_all**

find()

GolemExtendedDriver.**find**(*element=None, id=None, name=None, link_text=None, partial_link_text=None, css=None, xpath=None, tag_name=None, timeout=None, wait_displayed=None*)

The **find()** method provides a few ways to find elements. Only one search criteria must be provided. *element* must be a CSS selector string, an XPath selector string, an element tuple, or a WebElement object.

The *timeout* argument determines how much time to wait until the element is present. If this is not provided, the value defined in settings by the *search_timeout* key will be used. This is considered the global search timeout.

The *wait_displayed* argument makes **find()** wait for the element to be displayed (visible) as well. This value is taken by default from the *wait_displayed* key in settings.

Some examples:

```
from golem import actions

browser = actions.get_browser()

# by an element tuple
element = browser.find(('id', 'someId'))

# by a css selector (positional argument)
element = browser.find('input.someClass')

# by an XPath selector (positional argument)
element = browser.find('//input[@class="someClass"]')
```

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```
# by a WebElement object
element = browser.find(id='someId')
element = browser.find(element)

# by css selector (keyword argument)
element = browser.find(css='input.someClass')

# by id
element = browser.find(id='someId')

# by name
element = browser.find(name='someName')

# by link text
element = browser.find(link_text='link text')

# by partial link text
element = browser.find(partial_link_text='link')

# by xpath (keyword argument)
element = browser.find(xpath="//input[@id='someId']")

# by tag name
element = browser.find(tag_name='input')
```

find_all()

GolemExtendedDriver.**find_all**(*element=None, id=None, name=None, link_text=None, partial_link_text=None, css=None, xpath=None, tag_name=None*)

Finds all the elements that match the selected criteria. Only one search criteria must be provided. Returns a list of WebElements. *element* must be a CSS selector string, an XPath selector string, an element tuple, or a WebElement object.

```
from golem import actions

browser = actions.get_browser()
table_rows = browser.find_all('table.myTable > tbody > tr')
```

3.5.3 Finding children elements

WebElements also have the *find()* and *find_all()* methods. They can be used to find children elements from a parent element.

```
from golem import actions

browser = actions.get_browser()

table_rows = browser.find('table.myTable').find_all('tr')

for row in table_rows:
    print(row.find('td.resultColumn').text)
```


3.5.4 element() and elements() Shortcuts

`element()` and `elements()` provide handy shortcuts to `find()` and `find_all()` respectively.

```
from golem.browser import element, elements

title = element(id='headerTitle')
print(title.text)

table_rows = elements('table > tbody > tr')
print(len(table_rows))
```

3.6 Waiting for Elements

3.6.1 Implicit Wait

There is an implicit search timeout that is applied to every time a web element is searched. This search timeout is defined in the settings file by using the `search_timeout` setting key.

It can also be set by using the `set_search_timeout` and `get_search_timeout` actions.

Note that this timeout only waits for the element to be present (to exist in the DOM). It does not wait for the element to be visible, clickable, enabled, etc.

3.6.2 Explicit Wait

There are a few ways to wait for an element to be present.

Using the `wait_for_element_present` action:

```
from golem import actions

actions.wait_for_element_present('#button-id', 15)
actions.click('#button-id')
```

Using the `timeout` argument in the find methods:

```
from golem import actions

button = actions.get_browser().find('#button-id', timeout=15)
button.click()
```

Using the `wait_for_element_present` method of the `WebDriver` class:

```
from golem import actions

actions.get_browser().wait_for_element_present('#button-id', timeout=15)
```

3.6.3 Wait for Element Displayed

Very often an element needs to be displayed (visible) besides being present. Here are the ways to wait for an element to be visible.

Using the `wait_displayed` setting. This is defined globally for every search.

Using the `wait_for_element_displayed` action.

Using the `wait_displayed` argument in the find methods:

```
from golem import actions

actions.get_browser().find('#button-id', 15, wait_displayed=True).click()
```

Using the `wait_displayed` method of the `WebElement` class:

```
from golem import actions

button = actions.get_browser().find('#button-id')
button.wait_displayed().click()
```

3.7 Golem Actions

Golem has a list of predefined actions that cover most of the scenarios for tests. These are self-documenting, meaning, they store the steps, logs and screenshots in the execution report.

Location: `golem.actions`

A note on assertions and verifications:

Actions that start with `'assert_'` are hard assertions. They will stop the test when they fail (jump to teardown) and the test will end with result: failure.

Actions that start with `'verify_'` are soft assertions. When a `verify_` action fails it stores an error but the test continues with the next statement. The test will end with result: error.

3.7.1 Contents

- *Alerts*
- *API*
- *Browser*
- *Cookies*
- *Element*
- *Frames*
- *Select*
- *Window*
- *Windows/Tabs*
- *General*

3.7.2 Alerts

`accept_alert(ignore_not_present=False)`

Accept an alert, confirm or prompt box. Use `ignore_not_present` to ignore error when alert is not present.

assert_alert_not_present()

Assert an alert is not present. This applies to alerts, confirms and prompts.

assert_alert_present()

Assert an alert is present. This applies to alerts, confirms and prompts.

assert_alert_text(text)

Assert alert text. This will fail if there is no alert present.

assert_alert_text_is_not(text)

Assert alert text is not text. This will fail if there is no alert present.

dismiss_alert(ignore_not_present=False)

Dismiss an alert, confirm or prompt box. When ignore_not_present is True the error when alert is not present is ignored.

get_alert_text()

Get text of alert, confirm or prompt box

send_text_to_alert(text)

Send text to an alert

submit_prompt_alert(text)

Send text to a prompt alert and accept it. If there is no prompt alert present this will fail.

verify_alert_not_present()

Verify an alert is not present. This applies to alerts, confirms and prompts.

verify_alert_present()

Verify an alert is present. This applies to alerts, confirms and prompts.

verify_alert_text(text)

Verify alert text. This will fail if there is no alert present.

verify_alert_text_is_not(text)

Verify alert text is not text. This will fail if there is no alert present.

wait_for_alert_present(timeout=30)

Wait for an alert to be present

3.7.3 API

assert_response_status_code(response, status_code)

assert response status code

http_get(url, headers={}, params={})

Perform an HTTP GET request to the URL, with the given headers and params. Headers and params must be Python dictionaries and are optional. The response is stored in 'data.last_response'. Returns the response.

Example:

```
http_get('http://google.com/')
assert data.last_response.status_code == 200
```

http_post(url, headers={}, data={}, verify_ssl_cert=True)

Perform an HTTP POST request to the URL, with the given headers and data. Headers and params must be Python dictionaries and are optional. The response is stored in 'data.last_response' Returns the response.

verify_response_status_code(response, status_code)

Verify response status code

3.7.4 Browser

activate_browser(browser_id)

Activates a browser to use in subsequent actions. When opening more than one browser (not windows or tabs) for a single test, the new browser can be assigned to an ID. Default browser ID is 'main'.

close_browser()

Closes the webdriver browser and all it's windows/tabs

get_browser()

Returns the active browser driver object

get_window_size()

Return the window size with the following format:

```
size = {  
    'width': x,  
    'height': y  
}
```

maximize_window()**open_browser(browser_name=None, capabilities=None, remote_url=None, browser_id=None)**

Open a new browser.

See `open_browser`

set_window_size(width, height)

Set the width and height of the window (in pixels)

3.7.5 Cookies

add_cookie(cookie_dict)

Add a cookie to the current session.

Required keys are: “name” and “value”. Optional keys are: “path”, “domain”, “secure”, “expiry”

Note:

- If a cookie with the same name exists, it will be overridden.
- This function cannot set the domain of a cookie, the domain URL must be visited by the browser first.
- The domain is set automatically to the current domain the browser is in.
- If the browser did not visit any URL (initial blank page) this function will fail with “Message: unable to set cookie”

Example usage:

```
add_cookie({'name': 'foo', 'value': 'bar'})
```

assert_cookie_present(name)

Assert a cookie exists in the current session by the cookie name

assert_cookie_value(name, value)

Assert the value of a cookie. This will fail if the cookie does not exist.

delete_all_cookies()

Delete all cookies from the current session. Note: this only deletes cookies from the current domain.

delete_cookie(name)

Delete a cookie from the current session.

get_cookie(name)

Get a cookie by its name. Returns the cookie if found, None if not.

get_cookies()

Returns a list of dictionaries, corresponding to cookies present in the current session.

verify_cookie_present(name)

Verify a cookie exists in the current session by the cookie name

verify_cookie_value(name, value)

Verify the value of a cookie. This will fail if the cookie does not exist.

3.7.6 Element

assert_element_attribute(element, attribute, value)

Assert value of element attribute

assert_element_attribute_is_not(element, attribute, value)

Assert the value of attribute of element is not 'value'

assert_element_checked(element)

Assert element is checked. This applies to checkboxes and radio buttons.

assert_element_displayed(element)

Assert element is displayed (visible to the user)

assert_element_enabled(element)

Assert that element is enabled

assert_element_has_attribute(element, attribute)

Assert element has attribute

assert_element_has_focus(element)

Assert element has focus

assert_element_has_not_attribute(element, attribute)

Assert element does not have attribute

assert_element_has_not_focus(element)

Assert element does not have focus

assert_element_not_checked(element)

Assert element is not checked. This applies to checkboxes and radio buttons.

assert_element_not_displayed(element)

Assert element is not displayed (visible to the user)

assert_element_not_enabled(element)

Assert that element is not enabled

assert_element_not_present(element)

Assert element is not present in the DOM

assert_element_present(element)

Assert element is present in the DOM

assert_element_text(element, text)

Assert the text of the element

assert_element_text_contains(element, text)

Assert element contains text

assert_element_text_is_not(element, text)

Assert the text of the element is not *text*

assert_element_text_not_contains(element, text)

Assert element does not contain *text*

assert_element_value(element, value)

Assert element value

assert_element_value_is_not(element, value)

Assert element value is not *value*

check_element(element)

Check an element (checkbox or radiobutton). If element is already checked this is ignored.

clear_element(element)

Clear element (e.g. a text input)

click(element)

Perform a mouse click on element

double_click(element)

Perform a double click on element

focus_element(element)

Give focus to element

get_element_attribute(element, attribute)

Get the attribute value of element. If the attribute is not present in element, None is returned.

get_element_text(element)

Get the element text

get_element_value(element)

Get the element value attribute

highlight_element(element)

Highlight element on the page

javascript_click(element)

Click an element using Javascript

mouse_over(element)

Perform a mouse over on the element

press_key(element, key)

Press a given key in the element. Key must be a string with a value defined in `selenium.webdriver.common.keys.Keys`

Examples:

```
press_key('ENTER')
press_key('TAB')
press_key('LEFT')
```

send_secure_keys(element, text)

Send keys to element. Text is hidden from logs and report (masked by asterisks).

send_keys(element, text)

Send text to element

send_keys_with_delay(element, text, delay=0.1)

Send keys to element one by one with a delay between keys. Delay must be a positive int or float.

submit_form(element)

Submit form. Element can be the form itself or any child element.

uncheck_element(checkbox)

Uncheck a checkbox. If element is already checked this is ignored.

verify_element_attribute(element, attribute, value)

Verify the value of attribute of element

verify_element_attribute_is_not(element, attribute, value)

Verify the value of attribute of element is not *value*

verify_element_checked(element)

Verify element is checked. This applies to checkboxes and radio buttons.

verify_element_displayed(element)

Verify element is displayed (visible to the user)

verify_element_enabled(element)

Verify that element is enabled

verify_element_has_attribute(element, attribute)

Verify element has attribute

verify_element_has_focus(element)

Verify element has focus

verify_element_has_not_attribute(element, attribute)

Verify element does not have attribute

verify_element_has_not_focus(element)

Verify element does not have focus

verify_element_not_checked(element)

Verify element is not checked. This applies to checkboxes and radio buttons.

verify_element_not_displayed(element)

Verify element is not displayed (visible to the user)

verify_element_not_enabled(element)

Verify that element is not enabled

verify_element_not_present(element)

Verify element is not present in the DOM

verify_element_present(element)

Verify element is present in the DOM

verify_element_text(element, text)

Verify the text of the element

verify_element_text_contains(element, text)

Verify element contains text

verify_element_text_is_not(element, text)

Verify the text of the element is not *text*

verify_element_text_not_contains(element, text)

Verify element does not contain text

verify_element_value(element, value)

Verify element value

verify_element_value_is_not(element, value)

Verify element value is not *value*

wait_for_element_displayed(element, timeout=30)

Wait for element to be present and displayed

wait_for_element_enabled(element, timeout=30)

Wait for element to be enabled

wait_for_element_has_attribute(element, attribute timeout=30)

Wait for element to have attribute

wait_for_element_has_not_attribute(element, attribute timeout=30)

Wait for element to not have attribute

wait_for_element_not_displayed(element, timeout=30)

Wait for element to be not displayed. When element is not displayed this is ignored. When element is not present this will raise `ElementNotFound`.

wait_for_element_not_enabled(element, timeout=30)

Wait for element to be not enabled

wait_for_element_not_present(element, timeout=30)

Wait for element to stop being present in the DOM. If element is already not present, this will be ignored.

wait_for_element_present(element, timeout=30)

Wait for element to be present in the DOM

wait_for_element_text(element, text, timeout=30)

Wait for element text to match given text

wait_for_element_text_contains(element, text, timeout=30)

Wait for element text to contain given text

wait_for_element_text_is_not(element, text, timeout=30)

Wait for element text to not match given text

wait_for_element_text_not_contains(element, text, timeout=30)

Wait for element text to not contain given text

3.7.7 Frames

switch_to_default_content()

Switch to default content (default frame)

switch_to_frame(frame)

Switch to frame. frame must be the index, name, or the frame webelement itself.

switch_to_parent_frame()

Switch to the parent of the current frame

3.7.8 Select

assert_selected_option_by_text(element, text)

Assert the option selected in a <select> by the option text

assert_selected_option_by_value(element, text)

Assert the option selected in a <select> by the option value

select_option_by_index(element, text)

Select an option from a <select> element by index (starts from 0)

select_option_by_text(element, text)

Select an option from a <select> element by the option text

select_option_by_value(element, value)

Select an option from a <select> element by the option value.

For example, given:

```
<select id="countrySelect">
  <option value="CA">Canada</option>
  <option value="US">United States</option>
  <option value="MX">Mexico</option>
</select>
```

To select the first option use:

```
select_option_by_index('#countrySelect', 0)
select_option_by_text('#countrySelect', 'Canada')
select_option_by_value('#countrySelect', 'CA')
```

verify_selected_option_by_text(element, text)

Verify the option selected in a <select> by the option text

verify_selected_option_by_value(element, text)

Verify the option selected in a <select> by the option value

3.7.9 Window

assert_page_contains_text(text)

Assert the given text is present anywhere in the page (in the entire DOM)

assert_page_not_contains_text(text)

Assert the given text is present anywhere in the page (in the entire DOM)

assert_title(title)

Assert the page title

assert_title_contains(partial_title)

Assert the page title contains partial_title

assert_title_is_not(title)

Assert the page title is not title

assert_title_not_contains(text)

Assert the page title does not contain text

assert_url(url)

Assert the current URL

assert_url_contains(partial_url)

Assert the current URL contains partial_url

assert_url_is_not(url)

Assert the current URL is not url

assert_url_not_contains(partial_url)

Assert the current URL does not contain partial_url

execute_javascript(script, *args)

Execute javascript code

Examples:

```
from golem import actions

# return the title of the page
title = actions.execute_javascript('return document.title')

# pass an element and click it using Javascript
element = actions.get_browser().find('#myElement')
actions.execute_javascript('arguments[0].click()', element)
```

get(url)

Navigate to a URL, same as *navigate(url)*

get_active_element()

Returns the element with focus, or BODY if nothing has focus

get_current_url()

Returns the current browser URL

get_page_source()

Get the entire source code of the page

get_window_title()**go_back()**

Goes one step backward in the browser history

go_forward()

Goes one step forward in the browser history

navigate(url)

Navigate to a URL

refresh_page()

Refreshes the page

verify_page_contains_text(text)

Verify the given text is present anywhere in the page (in the entire DOM)

verify_page_not_contains_text(text)

Verify the given text is present anywhere in the page (in the entire DOM)

verify_title(title)

Verify the page title

verify_title_contains(partial_title)

Verify the page title contains `partial_title`

verify_title_is_not(title)

Verify the page title is not *title*

verify_title_not_contains(text)

Verify the page title does not contain *text*

verify_url(url)

Verify the current URL

verify_url_contains(partial_url)

Verify the current URL contains `partial_url`

verify_url_is_not(url)

Verify the current URL is not `url`

verify_url_not_contains(partial_url)

Verify the current URL does not contain `partial_url`

wait_for_page_contains_text(text, timeout=30)

Wait for page to contain text in the DOM

wait_for_page_not_contains_text(text, timeout=30)

Wait for page to not contain text in the DOM

wait_for_title(title, timeout=30)

Wait for page title to be the given value

wait_for_title_contains(partial_title, timeout=30)

Wait for page title to contain `partial_title`

wait_for_title_is_not(title, timeout=30)

Wait for page title to not be the given value

wait_for_title_not_contains(partial_title, timeout=30)

Wait for page title to not contain partial_title

3.7.10 Windows / Tabs

assert_amount_of_windows(amount)

Assert the amount of open windows/tabs

assert_window_present_by_partial_title(title)

Assert there is a window/tab present by partial title

assert_window_present_by_partial_url(partial_url)

Assert there is a window/tab present by partial URL

assert_window_present_by_title(title)

Assert there is a window/tab present by title

assert_window_present_by_url(url)

Assert there is a window/tab present by URL

close_window()

Close current window/tab. If there is only one window, this will close the browser, use close_browser instead. If there are other windows open, this will switch to the first window afterwards.

close_window_by_index()

Close window/tab by index. Note: “The order in which the window handles are returned is arbitrary.”

close_window_by_partial_title(partial_title)

Close window/tab by partial title

close_window_by_partial_url(partial_url)

Close window/tab by partial URL

close_window_by_title(title)

Close window/tab by title

close_window_by_url(url)

Close window/tab by URL

get_window_handle()

get_window_handles()

Return a list with the handles of all the open windows/tabs

get_window_index()

Get the index of the current window/tab from the list of window handles

get_window_titles()

Return a list with the titles of all the open windows/tabs

switch_to_first_window()

Switch to first window/tab (in the list of window handles)

switch_to_last_window()

Switch to last window/tab (in the list of window handles)

switch_to_next_window()

Switch to next window/tab in the list of window handles. If current window is the last in the list this will circle back from the start.

switch_to_previous_window()

Switch to previous window/tab in the list of window handles. If current window is the first in the list of window handles this will circle back from the top.

switch_to_window_by_index(index)

Switch to window/tab by index. Note: “The order in which the window handles are returned is arbitrary.”

switch_to_window_by_partial_title(partial_title)

Switch to window/tab by partial Title

switch_to_window_by_partial_url(partial_url)

Switch to window/tab by partial URL

switch_to_window_by_title(title)

Switch to window/tab by title

switch_to_window_by_url(url)

Switch to window/tab by title

verify_amount_of_windows(amount)

Verify the amount of open windows/tabs

verify_window_present_by_partial_title(title)

Verify there is a window/tab present by partial title

verify_window_present_by_partial_url(partial_url)

Verify there is a window/tab present by partial URL

verify_window_present_by_title(title)

Verify there is a window/tab present by title

verify_window_present_by_url(url)

Verify there is a window/tab present by URL

wait_for_window_present_by_partial_title(partial_title, timeout=30)

Wait for window/tab present by partial title

wait_for_window_present_by_partial_url(partial_url, timeout=30)

Wait for window/tab present by partial url

wait_for_window_present_by_title(title, timeout=30)

Wait for window/tab present by title

wait_for_window_present_by_url(url, timeout=30)

Wait for window/tab present by url

3.7.11 General Actions

error(message=)

Add an error to the test. The test will continue.

fail(message=)

Mark the test as failure and stop

get_data()

Return test data.

get_secrets()

Return the secrets object.

get_search_timeout()

Get search timeout.

interactive_mode()

Starts an interactive console at this point of the test. The test should be run with the ‘-i’ flag, otherwise this action will be ignored. See [Interactive Mode](#) for more details.

log(message, level='INFO')

Log a message. Valid log levels are: DEBUG, INFO, WARNING, ERROR and CRITICAL.

random_float(min=1.0, max=100.0, decimals=None)

Generate a random float between min and max. *Decimals* is the maximum amount of decimal places the generated float should have.

random_int(min=1, max=100)

Generate a random integer between min and max

random_str(length=10, sample=None, prefix="", suffix="")

Generate a random string. *Sample* should be a string or a list of strings/characters to choose from. The default sample is lowercase ascii letters. A few presets can be used:

- ‘LOWERCASE’: lower case ascii letters
- ‘UPPERCASE’: uppercase ascii letters

- 'DIGITS': digit characters
- 'SPECIAL': Special characters

Example:

```
random_str(sample=['LOWERCASE', '!@#$$%']) -> 'am$y%eg$ug'
```

prefix: A string to be prepended to the generated string

suffix: A string to be appended to the generated string

set_browser_capability(capability_key, capability_value)

Set a browser capability. This must be called before the browser is started.

set_search_timeout(timeout)

Set the search timeout value (in seconds). Timeout must be either int or float.

set_trace()

Perform a `pdb.set_trace()`. The test should be run with the '-i' flag, otherwise this action will be ignored. Read more about the Python debugger [here](#).

step(message)

Add a step to the report

store(key, value)

Store a value in data object.

store_secret(key, value)

Store a value in the secrets object.

take_screenshot(message=)

Take a screenshot. *message* will be used for the filename.

timer_start(timer_name=)

Start a timer. By default start a timer with empty name. Use `actions.timer_stop()` to stop the timer. Returns: the current time.

timer_stop(timer_name=)

Stop a timer by its name. By default stops a timer with empty name. Returns: the elapsed time.

wait(seconds)

Pause execution for the given amount of seconds. Seconds can be an int or float.

3.8 Tests

Tests are functions that begin with ‘test’ and are located in Python modules in the test folder of a project.

To create a test first start a Golem test directory, if you don’t already have one, and add a project to it:

```
golem-admin createdirectory <directory_name>
cd <directory_name>
golem createproject <project_name>
```

Then add a test file inside that project:

```
golem createtest <project_name> <test_name>
```

A project and a test can also be created using the Web Module:

```
golem gui
```

3.8.1 Test Structure

```
description = ''
tags = []
pages = []
skip = False

def setup(data):
    pass

def test_one(data):
    pass

def test_two(data):
    pass

def teardown(data):
    pass
```

A test file must implement at least one **test** function that receives a data object as argument.

3.8.2 Multiple Tests per File

All test functions inside a test file are run in sequence. The data is shared between tests. The browser session is shared as well, unless a test explicitly closes the current open browser.

3.8.3 Test Data

Test data can be defined inside the file or in a separate CSV file. For detailed info about see: [Test Data](#)

CSV Data

It should be defined in a CSV file with the same name and in the same folder as the test.

Infile Test Data

A test can have data defined as a list of dictionaries.

```
data = [
    {
        'url': 'http://url1.com',
        'title': 'title1'
    },
    {
        'url': 'http://url2.com',
        'title': 'title2'
    }
]

def test(data):
    navigate(data.url)
    assert_title(data.title)
```

Note: when saving a test using the Test Module, if the `test_data` setting is not 'infile', any data stored in the test will be moved to a CSV file.

3.8.4 Skip flag

A flag variable to indicate that this test should be skipped. It should be a boolean or a string to use as skip message.

Note: tests will only be skipped when running from a suite.

3.8.5 Tags

A list of tags (strings). Tags can be used to filter tests when running a suite. See [Filter Tests by Tags](#).

3.8.6 Implicit vs Explicit Imports

By default, the test runner imports the `golem.actions` module and any page module implicitly during the execution. Pages are saved as a list of strings. The GUI test builder complies with this format and generates code like the following:

```
pages = ['page1']

def test(data):
    navigate('https://...')
    page1.custom_funtion()
```

This behaviour can be turned off by setting `implicit_actions_import` and `implicit_page_import` to false.

Then, the test structure will be:

```
from golem import actions

from projects.<project_name>.pages import page1

def test(data):
    actions.navigate('https://...')
    page1.custom_funtion()
```

GUI Test Builder and Imports Statements

The GUI test builder only supports import statements for the **golem.actions** module and any Python module inside the **pages** folder; and only when the implicit modes are turned off. Any other import statements will be discarded when saving a test from the GUI test builder.

3.9 Pages

A page in Golem is a module that can be imported into a test. It can be used as a Page Object.

3.9.1 Page Elements

A way to store element selectors in a page is by using a tuple. This is the default behavior for the Web Module.

```
input = ('id', 'myID', 'My Input')
button = ('css', 'button.btn-default', 'My Button')
```

The third value in the tuple is optional and it is used as a friendly name by the execution report.

3.9.2 Page Functions

A page can have functions and these will be available from the test after importing the page into it. These functions will also be available when using the Web Module as regular actions do.

Example 1:

page1.py

```
from golem.browser import element

title = ('css', 'h1')
```

(continues on next page)

(continued from previous page)

```
def assert_title(expected_title):
    assert element(title).text == expected_title
```

test1.py

```
pages = ['page1']

def test(data):
    navigate('http://...')
    page1.assert_title('My Expected Title')
```

Example 2:

page2.py

```
from golem.browser import elements

table_rows = ('css', 'table > tbody > tr')

def assert_row_amount(expected_amount):
    rows = elements(table_rows)
    assert len(rows) == expected_amount, 'Incorrect amount of rows'
```

test2.py

```
pages = ['page2']

def test(data):
    navigate('http://...')
    page2.assert_row_amount(5)
```

3.10 Suites

A suite can execute a set of tests with the specified configuration. A suite contains a list of *tests*, *browsers*, and *environments* and the number of *processes*, and *tags*. Consider the following example:

full_regression.py

```
browsers = ['firefox', 'chrome']

environments = []

processes = 2

tags = []

tests = [
    'test1',
    'test2',
    'some_folder.test3',
]
```

3.10.1 Test Parallelization

The 'processes = 2' tells Golem how many tests should be executed at the same time. The default is one (one at a time). How many tests can be parallelized depends on your test infrastructure.

3.10.2 Environments

Environments are defined in the environments.json file inside a project. See [Environments](#).

3.11 Test data

A test file can have one of three different types of data sources: CSV, JSON and internal.

3.11.1 CSV Data

The CSV data file must have the same filename as the test file and be located in the same folder. Note that: All CSV values are considered strings. If you need different value types use JSON or internal data.

test_01.csv

```
name,age
John,23
Marie,32
```

test_01.py

```
def test(data):
    print(data.name, data.age)
```

3.11.2 JSON Data

The JSON data file must have the same filename as the test file and be located in the same folder. Valid JSON data must be an object (dictionary), or an array of objects (list of dictionaries). Invalid data is ignored.

test_02.json

```
[
  {
    "item_id": 5143,
    "price": 2134.55,
  },
  {
    "item_id": 8429,
    "price": 462.21,
  }
]
```

test_01.py

```
def test(data):
    print(data.item_id, data.price)
```

3.11.3 Internal Data

Internal data must be a variable with name “data” defined inside the test file and of type either dictionary or list of dictionaries.

test_03.py

```
data = [
    {
        'name': 'Chicken S Rice',
        'price': 100,
        'discount': True
    },
    {
        'customer': 'Paneer Schezwan Rice',
        'price': 110
        'discount': False,
    },
]

def test(data):
    print(data.name, data.price, data.discount)
```

3.11.4 Repeating the test based on data

When the data is a list (or array) with more than one item, or a CSV table with more than one row, the test will repeat once per each test data set.

3.11.5 Adding Values to Data at Runtime

Values can be added to the data object using the *store* action.

```
def test(data):
    store('title', 'My Title')
    assert_title(data.title)
```

3.11.6 Accesing data during the test

The data object is present in the execution module during the test.

```
from golem import execution

print(execution.data.my_value)
```

The data object is shared among all the test functions of a test file:

```
def setup(data):
    store('title', 'My Title')
    data.username = 'my-username' # direct assignment also works

def test_one(data):
```

(continues on next page)

(continued from previous page)

```
assert_title(data.title)
assert_username(data.username)

def test_two(data):
    assert_title_is_not(data.title)
    assert_username_is_not(data.username)
```

The `get_data` action can be used to retrieve the data object:

page1.py

```
from golem import actions

def function():
    print(actions.get_data().title)
```

3.11.7 Environments

Environments are defined in the `environments.json` file inside a project. This file can be used to store environment specific data, such as the URL and the user credentials.

For example:

environments.json

```
{
  "testing": {
    "url": "http://testing.app",
    "users": {
      "user01": {
        "username": "john"
      },
      "user02": {
        "username": "mark"
      }
    }
  },
  "staging": {
    "url": "http://stage.app",
    "users": {
      "user01": {
        "username": "john"
      },
      "user02": {
        "username": "mark"
      }
    }
  }
}
```

During the execution of the test, the environment data is stored in `data.env`:

test1.py

```
def test(data):
    navigate(data.env.url)
    login(data.env.users.user01.username)
```

Select the Environments For the Test

There are two ways to define the environment (or environments) for a test or suite:

1. from the command line:

```
golem run project_name test_name -e testing
golem run project_name suite_name -e testing staging
```

2. from the definition of a suite:

suite1.py

```
environments = ['testing']
```

3.11.8 Secrets

Secrets are defined in the *secrets.json* file inside a project. Secrets can be used to store specific data which you do not want to expose in golem test reports / logging such as passwords, hostnames of database systems and temporary test data needed for text execution

Please note: When using secrets in conjunction with default Golem actions, their values can be exposed in the test reports and logs. Exposure is caused by the fact that most default golem actions log their actions.

secrets.json

```
{
  "database": {
    "host": "db-server.local",
    "user": "db_consumer",
    "password": "abc",
    "port": 5432,
    "schema": "public"
  },
  "secret_user_1": "Joe"
}
```

During text execution secrets can be stored and retrieved, see examples below.

1. storing and retrieving a secret from a test

```
def test(data):
    store_secret('password', 'my_password')
    print(get_secrets().password)
```

1. storing and retrieving a secret from a page

```
from golem import actions
def some_function():
    actions.store_secret('password', 'my_password')
    print(actions.get_secrets().password)
```

3.12 Running tests

3.12.1 Run a single test

A test file can be run using the file path or the test module path. In both cases it should be relative to the *tests* folder.

```
golem run project_name test_name
golem run project_name test_name.py
golem run project_name folder.test_name
golem run project_name folder/test_name.py
```

3.12.2 Run a suite

Similar to a test, a suite can be run using the file path or the test module path. In both cases it should be relative to the *suites* folder.

```
golem run project_name suite_name
golem run project_name suite_name.py
golem run project_name folder.suite_name
golem run project_name folder/suite_name.py
```

3.12.3 Run every test in a directory

To select all the tests in a directory and subdirectories a relative path can be supplied. The path has to be relative to the *tests* folder.

```
golem run project_name folder/
```

Run every test in a project

```
golem run project_name .
```

3.12.4 Select Browsers

```
golem run project suite -b chrome firefox
```

Every selected test will be run for each of the selected browsers. The browsers can also be defined inside a suite. If no browser is set, the default defined in settings will be used. The valid options for browsers are listed [here](#).

3.12.5 Run Tests in Parallel

To run test files in parallel the number of processes must be set to more than 1. This can be done through the *golem run* command or by the *processes* attribute of a suite.

```
golem run project suite_name -p 3
```

3.12.6 Select Environments

Select which `environments` to use for a test execution:

```
golem run project suite -e internal staging
```

3.12.7 Filter Tests by Tags

The selected tests for an execution can be filtered by tags.

```
golem run project suite -t smoke "release 42.11.01"
```

Multiple tags are always used with *and* operator. To use a combination of *and*, *or*, and *not*, a tag expression must be used:

```
golem run project suite -t "smoke and (regression or not 'release 001')"
```

3.13 Report

3.13.1 Default Report

When an execution is run a JSON report is generated in this location:

```
<golem_dir>/projects/<project_name>/reports/<execution_name>/<timestamp>/report.json
```

3.13.2 Generate Reports After Execution

These are the available report types:

- html (single html file, screenshots included)
- html-no-images (single html file, without screenshots)
- json
- junit (XML compatible with Jenkins)

Example:

```
golem run project suite -r junit html html-no-images json
```

Report Location

The location of the reports can be specified with the `--report-folder` argument:

```
golem run project suite -r html --report-folder /the/path/to/the/report
```

Report Name

By default, the report name is 'report' ('report.xml', 'report.html', 'report-no-images.html' and 'report.json')

The name of the reports can be modified with the `--report-name` argument:

```
golem run project suite -r html --report-name report_name
```

3.13.3 Modify Screenshot Format, Size, and Quality

The size and compression of the screenshots can be modified to reduce the size on disk.

For example:

Given the default settings (PNG image, no resize, no compression), a screenshot was **~149kb**.

When these settings were applied:

```
{
  "screenshots": {
    "format": "jpg",
    "quality": 50,
    "resize": 70
  }
}
```

Then the same screenshot takes **~35kb**.

Experiment to find optimum settings. More info on screenshot formatting [here](#).

3.14 Settings

Settings are defined in the settings.json file. They modify certain Golem behaviors. There is a global settings.json file and a project settings.json file. Note: project settings override global settings.

3.14.1 Setting List

search_timeout

Default time to wait looking for an element until it is present. Default is 20 seconds.

wait_displayed

Wait for elements to be present and displayed. Default is False.

screenshot_on_error

Take a screenshot on error by default. Default is True.

screenshot_on_step

Take a screenshot on every step. Default is False.

screenshot_on_end

Take a screenshot after ‘test’ function ends. Default is False.

highlight_elements

Highlight elements on the screen when found. Default is False

wait_hook

Custom wait method to use for every action, that can be specific to each application. It must be defined inside extend.py

default_browser

Define the driver to use unless overridden by the -b/--browsers flag. Default is ‘chrome’. The valid options are listed [here](#).

chromedriver_path

Path to the Chrome driver executable.

edgedriver_path

Path to the Edge driver executable.

geckodriver_path

Path to the Gecko driver executable.

iedriver_path

Path to the Internet Explorer driver driver executable.

operadriver_path

Path to the Opera driver executable.

opera_binary_path

The path to the Opera binary file. Used to fix “Error: cannot find Opera binary” error.

remote_url

The URL to use when connecting to a remote webdriver, for example, when using selenium grid. Default is ‘http://localhost:4444/wd/hub’

remote_browsers

Defines a list of remote browsers with its capabilities, required to run tests with Selenium Grid or another remote device provider. The minimum capabilities required are 'browserName', 'version' and 'platform', read [this](#) for more info.

Example: settings.json

```
{
  "remote_browsers": {
    "chrome_60_mac": {
      "browserName": "chrome",
      "version": "60.0",
      "platform": "macOS 10.12"
    },
    "firefox_56_windows": {
      "browserName": "firefox",
      "version": "56.0",
      "platform": "Windows 10"
    }
  }
}
```

implicit_actions_import

Import golem.actions module implicitly to the tests. Modifies test saving behavior when using the GUI test builder. Default is true.

implicit_page_import

Import pages implicitly to the test from a list of strings. When true, imported pages are saved as a list of strings. When false, import statements are used instead. Default is true.

screenshots

Modify screenshot format, size, and quality before saving to disk.

Requires Pillow to be installed. It must be installed separately: `pip install pillow`

It should be an object with the following attributes: format, quality, width, height, and resize

- **format**: "jpg" or "png". The default is "png".
- **quality**: an int in 1..95 range. The default is 75. This only applies to "jpg" files.
- **width**: defines the width of screenshots. If "height" is not set, this will maintain the aspect ratio.
- **height**: defines the height of screenshots. If "width" is not set, this will maintain the aspect ratio.
- **resize**: the percentage to resize screenshots. Must be int or string in the format "55" or "55%". To resize by percentage do not set width or height.

Example:

```
{
  "screenshots": {
    "format": "jpg",
    "quality": 50,
    "resize": 70
  }
}
```

cli_log_level

command line log level. Options are: DEBUG, INFO, WARNING, ERROR, CRITICAL. Default is INFO.

log_all_events

Log all events or just Golem events. Default is true.

start_maximized

Start the browser maximized. Default is true.

3.15 Test Framework

3.15.1 Test File

A test file contains one or more tests (functions that start with 'test')

Test files also can have the setup and teardown hooks:

Setup

A function that is executed before every test of a test file.

Teardown

A function that is executed after all tests even if there were exceptions or errors.

Example

```
description = 'the description for my test'

pages = ['login', 'menu', 'releases']

def setup(data):
    navigate(data.env.url)
    login.login(data.env.user1)
```

(continues on next page)

(continued from previous page)

```
def test(data):
    menu.navigate_to('Releases')
    data.store('release_name', 'release_001')
    releases.create_release(data.release_name)
    releases.assert_release_exists(data.release_name)

def teardown(data):
    releases.remove_release(data.release_name)
```

3.15.2 Test Results

The test can end with one of the following result statuses:

Success: The test run without any errors.

Failure: The test threw an AssertionError.

Possible reasons for a test to end with failure:

- Actions that start with 'assert_'.

```
actions.assert_title('My App Title')
```

- A call to *fail()* action.

```
actions.fail('this is a failure')
```

- A normal Python assert statement.

```
assert browser.title == 'My App Title', 'this is the incorrect title'
```

Error:

The test had at least one error. Possible reasons for errors:

- Actions that start with 'verify_'.
- An error added manually:

```
actions.error('my error message')
```

Code error:

Any exception that is not an AssertionError will mark the test as 'code error'.

Example:

test1.py

```
def test(data):
    send_keys('#button', 'there is something missing here')
```

```
>golem run project1 test1
17:55:25 INFO Test execution started: test1
17:55:25 ERROR SyntaxError: unexpected EOF while parsing
Traceback (most recent call last):
  File "C:\...\testdir\projects\project1\tests\test1.py"
SyntaxError: unexpected EOF while parsing
17:55:25 INFO Test Result: CODE ERROR
```

3.15.3 Assertions and Verifications

Soft Assertions

Every action that starts with “verify” is a soft assertion, meaning that the error will be recorded. The test will be marked as ‘error’ at the end, but the test execution will not be stopped.

Hard Assertions

Every action that starts with “assert” is a hard assertion, meaning that it will stop the test execution at that point. The teardown method will still be executed afterward.

Assertion Actions Example

verify_element_present(element):

- It adds an error to the error list
- Logs the error to console and to file
- Takes a screenshot if *screenshot_on_error* setting is True
- The test is not stopped.
- The test result will be: ‘error’

assert_element_present(element):

- An AssertionError is thrown
- It adds an error to the list
- Logs the error to console and to file
- Takes a screenshot if *screenshot_on_error* setting is True
- The test is stopped, jumps to teardown function
- The test result will be: ‘failure’

3.16 GUI - Web Module

3.16.1 Commands

Start the web module:

```
golem gui
```

Specify the port

```
golem gui -p 8080
```

Specify the host

```
golem gui --host 127.0.0.1
```

Default is localhost. Running it in `host=0.0.0.0` will make Golem accessible from outside the computer by using the public IP of the computer running Golem. Use this only if debug mode is turned off or if you trust the users of your network.

If public access to the web module is needed, consider using a [production server](#).

Run in debug mode

```
golem gui -d
```

3.16.2 Users

User Permissions

There are five user permissions: superuser, admin, standard, read-only, reports-only. Permissions are defined for each project except superuser that is global. Permission access is documented in the table below.

Creating Users

Superusers can be created using the `createsuperuser` command. Non superusers have to be created from the User Management page.

3.16.3 Secret Key

For security purposes, each test directory is generated with a unique **secret key** stored in the `.golem` file.

Example `.golem` file:

```
[gui]
secret_key = <your_super_secret_key_string>
```

If the secret key is not provided, a default key will be used (not recommended).

3.16.4 Using a Production Server

The default server (Flask development server) is not suited for production.

The Golem GUI web application can be run with a production WSGI server just like any other Flask application.

As an example, these are the steps to use Waitress:

```
pip install waitress
waitress-serve --call "golem.gui:create_app"
```

There are a lot of different options. Here is a complete guide: <https://flask.palletsprojects.com/en/2.0.x/deploying/>

3.17 The CLI

3.17.1 golem-admin

createdirectory

```
golem-admin createdirectory <name>
```

Used to generate a new test directory. Name must be a relative or absolute path for the new test directory. Use '.' to use the current directory.

3.17.2 golem

run

The command to run tests or suites from the command line:

```
golem run <project> <test|suite|directory> [-b|--browsers]
      [-p|--processes] [-e|--environments] [-t|--tags]
      [-i|--interactive] [-r|--report] [--report-folder]
      [--report-name] [-l|--cli-log-level] [--timestamp]
```

-b, --browsers

One or more browsers to use for the tests. If not provided, the browsers defined inside the suite or the default browser defined in settings will be used. The valid options are listed [here](#).

-p, --processes

The number of tests to run in parallel. The default is 1.

-e, --environments

The environments to use for the execution. If not provided, the environments defined inside the suite will be used.

-t, --tags

Filter the tests by tags.

Example, run all tests with tag “smoke”:

```
golem run project_name . --tags smoke
```

Or using a tag expression:

```
golem run project suite --tags "smoke and (regression or not 'release 001')"
```

-i, --interactive

Run the test in interactive mode. This is required for the *interactive_mode* and *set_trace* actions.

See [Interactive Mode](#)

-r, --report

Select which reports should be generated at the end of the execution. Options are: *junit*, *html*, *html-no-images*, and *json*

--report-folder

Absolute path to the generated reports. The default is `/<testdir>/projects/<project>/resports/<suite>/<timestamp>`

--report-name

Name of the generated reports. The default is 'report'

-l, --cli-log-level

command line log level. Options are: DEBUG, INFO, WARNING, ERROR, CRITICAL. Default is INFO.

--timestamp

Used by the execution. Optional. The default is auto-generated with the format: 'year.month.day.hour.minutes.seconds.milliseconds'

gui

```
golem gui [--host -p|--port -d|--debug]
```

Start Golem Web Module (GUI). Default host is 127.0.0.1 (localhost). Use host 0.0.0.0 to make the GUI publicly accessible. Default port is 5000. Debug runs the application in debug mode, default is False. Do not run in debug mode on production machines.

See [GUI - Web Module](#) for more info.

createproject

```
golem createproject <project name>
```

Creates a new project with the given name. Creates the base files and folders.

createtest

```
golem createtest <project name> <test name>
```

Creates a new test inside the given project.

createsuite

```
golem createsuite <project name> <suite name>
```

Creates a new suite inside the given project.

createsuperuser

```
golem createuser [-u|--username -e|email -p|--password -n|--noinput]
```

Create a new superuser. The command is interactive unless username and password are provided. Email is optional.

3.17.3 webdriver-manager**update**

```
webdriver-manager update -b chrome
```

To learn more about the Webdriver Manager see: <https://github.com/golemhq/webdriver-manager>.

3.18 Interactive Mode

With Golem the execution of a test can be paused at any point to start an interactive console with all the actions available. This is useful for debugging tests.

3.18.1 interactive_mode Action

To start the interactive console at any point of a test just add the **interactive_mode** action. Example:

test.py

```
def test(data):
    navigate('http://wikipedia.org/')
    interactive_mode()
    click(page.button)
    take_screenshot('final screenshot')
```

When the test reaches the second step, the interactive console is going to start:

```

3. Shell
test3 $golem run project1 test1 -i
00:47:31 INFO Test execution started: test1
00:47:31 INFO Browser: chrome
00:47:39 INFO Navigate to: 'http://wikipedia.org/'
Entering interactive debug mode
Type exit() to stop
>>> from golem.browser import get_browser
>>> browser = get_browser()
>>> browser.title
'Wikipedia'
>>> link = browser.find(id='js-link-box-en')
>>> link.text
'English\ñ5 530 000+ articles'
>>> exit()
00:48:42 INFO Click searchLanguage
00:48:47 INFO Take screenshot final screenshot
00:48:48 INFO Step: final screenshot__94d60a40
00:48:50 INFO Test passed
test3 $

```

console

interactive-

When the interactive console is terminated, the test will resume the execution from that point on.

3.18.2 Quick Interactive Mode

It is possible to start a quick interactive shell by not providing a project and test to the run command:

```
golem run -i
```

This will start an interactive console with a clean slate.

```

>golem run -i
Entering interactive mode
type exit() to stop
type help() for more info
>>> navigate('https://en.wikipedia.org')
12:47:54 INFO Navigate to: 'https://en.wikipedia.org'
>>> send_keys('#searchInput', 'automation')
12:48:58 INFO Write 'automation' in element #searchInput
>>> click('#searchButton')
12:49:18 INFO Click #searchButton
>>> get_browser().title
'Automation - Wikipedia'
>>> assert_title_contains('Automation')
12:49:50 INFO Assert page title contains 'Automation'

```

3.18.3 Python Debugger

It is possible to add a Python debugger breakpoint (`pdb.set_trace()`) using the **set_trace** action. As with the **interactive_mode**, the test must be run with the `-i` flag for this action to take effect. More info about `pdb` [here](#).

Example:

test.py

```
def test(data):
    navigate('https://en.wikipedia.org')
    set_trace()
```

```
>golem run project test -i
12:57:11 INFO Test execution started: test
12:57:11 INFO Browser: chrome
12:57:11 INFO Navigate to: 'https://en.wikipedia.org'
--Return--
> c:\[...]\golem\actions.py(1578) set_trace()->None
-> pdb.set_trace()
(Pdb)
```

3.19 API Reference

3.19.1 Browser Module

Functions to manipulate WebDriver Browser instances.

Location: `golem.browser`

open_browser(browser_name=None, capabilities=None, remote_url=None, browser_id=None)

When no arguments are provided the browser is selected from the CLI `-bl=browsers` argument, the suite `browsers` list, or the `default_browser` setting.

This can be overridden in two ways:

- a local webdriver instance or
- a remote Selenium Grid driver instance.

To open a local Webdriver instance pass `browser_name` with a [valid value](#)

To open a remote Selenium Grid driver pass a capabilities dictionary and a `remote_url`. The minimum capabilities required is:

```
{
    browserName: 'chrome'
    version: ''
    platform: ''
}
```

More info here: <https://github.com/SeleniumHQ/selenium/wiki/DesiredCapabilities>

If `remote_url` is `None` it will be taken from the `remote_url` setting.

When opening more than one browser instance per test provide a `browser_id` to switch between browsers later on

Returns: the opened browser

`get_browser()`

Returns the active browser. Starts a new one if there is none.

`activate_browser(browser_id)`

Activate an opened browser. Only needed when the test starts more than one browser instance.

Raises:

- `InvalidBrowserIdError`: The browser Id does not correspond to an opened browser

Returns: the active browser

`element(*args, **kwargs)`

Shortcut to `golem.browser.get_browser().find()`.

See `find`.

`elements(*args, **kwargs)`

Shortcut to `golem.browser.get_browser().find_all()`

See `find_all`.

3.19.2 Execution Module

This module stores values specific to a test file execution. These values should be read-only, modifying them can cause errors.

Location: `golem.execution`

Example:

test.py

```
from golem import execution
from golem.browser import open_browser

def test(data):
    print('Running test:', execution.test_name)
    open_browser()
    execution.browser.navigate('http://...')
    execution.logger.info('log this message')
```

`test_file`

Module path of the current test file, relative to the tests folder.

browser

The current active browser object. None if there is no open browser yet.

browser_definition

The browser definition passed to this test.

browsers

A dictionary with all the open browsers.

data

The data object.

secrets

The secrets data object.

description

The description of the test.

settings

The settings passed to this test.

test_dirname

The directory path where the test is located.

test_path

Full path to the test file.

project_name

Name of the project.

project_path

Path to the project directory.

testdir

Golem root directory.

execution_reportdir

Path for the execution report.

testfile_reportdir

Path for the test file report

logger

Test logger object.

tags

The list of tags passed to the execution.

environment

Name of the environment passed to the test. None is no environment was selected.

Values for each test function

test_name

Current test function name.

steps

Steps collected by the current test function.

errors

A list of errors collected by the test function.

test_reportdir

Path for the test function report.

timers

A dictionary with timers, used by the *timer_start* and *timer_stop* actions.

3.19.3 WebDriver class

class GolemExtendedDriver()

This class represents a browser. It extends `selenium.webdriver.remote.webdriver.WebDriver`.

Methods and Properties

accept_alert(ignore_not_present=False) [Golem]

Accepts alert.

Args:

- `ignore_not_present`: ignore `NoAlertPresentException`

add_cookie(cookie_dict) [Selenium]

Adds a cookie to your current session.

Args:

- `cookie_dict`: A dictionary object, with required keys - “name” and “value”; optional keys - “path”, “domain”, “secure”, “expiry”

Usage:

```
driver.add_cookie({'name': 'foo', 'value': 'bar'})
driver.add_cookie({'name': 'foo', 'value': 'bar', 'path': '/'})
driver.add_cookie({'name': 'foo', 'value': 'bar', 'path': '/', 'secure': True})
```

alert_is_present() [Golem]

Returns whether an alert is present

application_cache [Selenium]

Returns a `ApplicationCache` Object to interact with the browser app cache

back() [Selenium]

Goes one step backward in the browser history.

Usage: `driver.back()`

check_element(element) [Golem]

Check an element (checkbox or radiobutton). If element is already checked this is ignored.

Args:

- `element`: an element tuple, a CSS string or a `WebElement` object

close() [Selenium]

Closes the current window.

Usage:

```
driver.close()
```

close_window_by_index(index) [Golem]

Close window/tab by index. Note: “The order in which the window handles are returned is arbitrary.”

Args:

- index: index of the window to close from window_handles

close_window_by_partial_title(partial_title) [Golem]

Close window/tab by partial title

close_window_by_partial_url(partial_url) [Golem]

Close window/tab by partial url

close_window_by_title(title) [Golem]

Close window/tab by title

close_window_by_url(url) [Golem]

Close window/tab by URL

close_window_switch_back(close_handle) [Golem]

Close a window/tab by handle and switch back to current handle. If current handle is the same as close_handle, try to switch to the first available window/tab.

create_web_element(element_id) [Selenium]

Creates a web element with the specified element_id.

current_url [Selenium]

Gets the URL of the current page.

Usage: driver.current_url

current_window_handle [Selenium]

Returns the handle of the current window.

Usage:

```
driver.current_window_handle
```

delete_all_cookies() [Selenium]

Delete all cookies in the scope of the session.

Usage:

```
driver.delete_all_cookies()
```

delete_cookie(name) [Selenium]

Deletes a single cookie with the given name.

Usage:

```
driver.delete_cookie('my_cookie')
```

desired_capabilities [Selenium]

returns the drivers current desired capabilities being used

dismiss_alert(ignore_not_present=False) [Golem]

Dismiss alert.

Args:

- ignore_not_present: ignore NoAlertPresentException

element_is_present(element) [Golem]

If element is present, return the element. If element is not present return False

Args:

- element: an element tuple, a CSS string or a WebElement object

execute(driver_command, params=None) [Selenium]

Sends a command to be executed by a command.CommandExecutor.

Args:

- driver_command: The name of the command to execute as a string.
- params: A dictionary of named parameters to send with the command.

Returns:

The command's JSON response loaded into a dictionary object.

execute_async_script(script, *args) [Selenium]

Asynchronously Executes JavaScript in the current window/frame.

Args:

- script: The JavaScript to execute.
- args: Any applicable arguments for your JavaScript.

Usage:

```
script = ("var callback = arguments[arguments.length - 1];"
         "window.setTimeout(function(){ callback('timeout') }, 3000);")
driver.execute_async_script(script)
```

execute_script(script, *args) [Selenium]

Synchronously Executes JavaScript in the current window/frame.

Args:

- script: The JavaScript to execute.
- args: Any applicable arguments for your JavaScript.

Usage:

```
driver.execute_script('return document.title;')
```

file_detector_context(file_detector_class, *args, **kwargs) [Selenium]

Overrides the current file detector (if necessary) in limited context. Ensures the original file detector is set afterwards.

Example:

```
with webdriver.file_detector_context(UselessFileDetector):
    someinput.send_keys('/etc/hosts')
```

Args:

- file_detector_class - Class of the desired file detector. If the class is different from the current file_detector, then the class is instantiated with args and kwargs and used as a file detector during the duration of the context manager.
- args - Optional arguments that get passed to the file detector class during instantiation.
- kwargs - Keyword arguments, passed the same way as args.

find(element=None, id=None, name=None, link_text=None, partial_link_text=None, css=None, xpath=None, tag_name=None, timeout=None, wait_displayed=None, highlight=None) [Golem]

Find a WebElement

Search criteria:

- The first argument must be: an element tuple, a CSS string, an XPath string, or a WebElement object.
- Keyword search criteria: id, name, link_text, partial_link_text, css, xpath, tag_name.
- Only one search criteria should be provided.

Other args:

- timeout: timeout (in seconds) to wait for element to be present. by default it uses the *search_timeout* setting value
- wait_displayed: wait for element to be displayed (visible). By default uses the *wait_displayed* setting value
- highlight: highlights element on the page when found

Usage:

```
driver.find('div#someId > input.class')
driver.find(('id', 'someId'))
driver.find(id='someId')
driver.find(xpath='//div/input', timeout=5, wait_displayed=True)
```

Returns:

A `golem.webdriver.extended_webelement.ExtendedRemoteWebElement`

Described in more detail [here](#).

find_all(element=None, id=None, name=None, link_text=None, partial_link_text=None, css=None, xpath=None, tag_name=None) [Golem]

Find all WebElements that match the search criteria.

Search criteria:

- The first argument must be: an element tuple, a CSS string, or an XPath string.
- Keyword search criteria: id, name, link_text, partial_link_text, css, xpath, tag_name
- Only one search criteria should be provided.

Usage:

```
driver.find_all('div#someId > span.class')
driver.find(('tag_name', 'input'))
driver.find(xpath='//div/input')
```

Returns a list of `ExtendedRemoteWebElement`

Described in more detail [here](#).

find_element(by='id', value=None) [Selenium]

Use *find* instead.

find_element_by_class_name(name) [Selenium]

Finds an element by class name.

Use *find* instead.

find_element_by_css_selector(css_selector) [Selenium]

Finds an element by css selector.

Use *find* instead.

find_element_by_id(id_) [Selenium]

Finds an element by id.

Use *find* instead.

find_element_by_link_text(link_text) [Selenium]

Finds an element by link text.

Use *find* instead.

find_element_by_name(name) [Selenium]

Finds an element by name.

Use *find* instead.

find_element_by_partial_link_text(link_text) [Selenium]

Finds an element by a partial match of its link text.

Use *find* instead.

find_element_by_tag_name(name) [Selenium]

Finds an element by tag name.

Use *find* instead.

find_element_by_xpath(xpath) [Selenium]

Finds an element by xpath.

Use *find* instead.

find_elements(by='id', value=None) [Selenium]

Use *find_all* instead.

find_elements_by_class_name(name) [Selenium]

Finds elements by class name.

Use *find_all* instead.

find_elements_by_css_selector(css_selector) [Selenium]

Finds elements by css selector.

Use *find_all* instead.

find_elements_by_id(id_) [Selenium]

Finds multiple elements by id.

Use *find_all* instead.

find_elements_by_link_text(text) [Selenium]

Finds elements by link text.

Use *find_all* instead.

find_elements_by_name(name) [Selenium]

Finds elements by name.

Use *find_all* instead.

find_elements_by_partial_link_text(link_text) [Selenium]

Finds elements by a partial match of their link text.

Use *find_all* instead.

find_elements_by_tag_name(name) [Selenium]

Finds elements by tag name.

Use *find_all* instead.

find_elements_by_xpath(xpath) [Selenium]

Finds multiple elements by xpath.

Use *find_all* instead.

forward() [Selenium]

Goes one step forward in the browser history.

Usage:

```
driver.forward()
```

fullscreen_window() [Selenium]

Invokes the window manager-specific ‘full screen’ operation

get(url) [Selenium]

Loads a web page in the current browser session.

get_cookie(name) [Selenium]

Get a single cookie by name. Returns the cookie if found, None if not.

Usage:

```
driver.get_cookie('my_cookie')
```

get_cookies() [Selenium]

Returns a set of dictionaries, corresponding to cookies visible in the current session.

Usage:

```
driver.get_cookies()
```

get_log(log_type) [Selenium]

Gets the log for a given log type

Args:

- log_type: type of log that which will be returned

Usage:

```
driver.get_log('browser') driver.get_log('driver') driver.get_log('client') driver.get_log('server')
```

get_screenshot_as_base64() [Selenium]

Gets the screenshot of the current window as a base64 encoded string which is useful in embedded images in HTML.

Usage:

```
driver.get_screenshot_as_base64()
```

get_screenshot_as_file(filename) [Selenium]

Saves a screenshot of the current window to a PNG image file. Returns False if there is any IOError, else returns True. Use full paths in your filename.

Args:

- filename: The full path you wish to save your screenshot to. This should end with a .png extension.

Usage:

```
driver.get_screenshot_as_file('/Screenshots/foo.png')
```

get_screenshot_as_png() [Selenium]

Gets the screenshot of the current window as a binary data.

Usage:

```
driver.get_screenshot_as_png()
```

get_window_index() [Golem]

Get the index of the current window/tab

get_window_position(windowHandle='current') [Golem]

Gets the x,y position of the current window.

Usage: driver.get_window_position()

get_window_rect() [Selenium]

Gets the x, y coordinates of the window as well as height and width of the current window.

Usage: driver.get_window_rect()

get_window_size(windowHandle='current') [Selenium]

Gets the width and height of the current window.

Usage: driver.get_window_size()

get_window_titles() [Golem]

Return a list of the titles of all open windows/tabs

get_window_urls() [Golem]

Return a list of the URLs of all open windows/tabs

implicitly_wait(time_to_wait) [Selenium]

Sets a sticky timeout to implicitly wait for an element to be found, or a command to complete. This method only needs to be called one time per session. To set the timeout for calls to `execute_async_script`, see `set_script_timeout`.

Args:

- `time_to_wait`: Amount of time to wait (in seconds)

Usage:

```
driver.implicitly_wait(30)
```

Use `search_timeout` setting instead.

log_types [Selenium]

Gets a list of the available log types

Usage: `driver.log_types`

maximize_window() [Selenium]

Maximizes the current window that webdriver is using

minimize_window() [Selenium]

Invokes the window manager-specific ‘minimize’ operation

name [Selenium]

Returns the name of the underlying browser for this instance.

orientation [Selenium]

Gets the current orientation of the device

page_source [Selenium]

Gets the source of the current page.

quit() [Selenium]

Quits the driver and closes every associated window.

refresh() [Selenium]

Refreshes the current page.

save_screenshot(filename) [Selenium]

Saves a screenshot of the current window to a PNG image file. Returns False if there is any IOError, else returns True. Use full paths in your filename.

Args:

- filename: The full path you wish to save your screenshot to. This should end with a .png extension.

Usage:

```
driver.save_screenshot('/Screenshots/foo.png')
```

set_page_load_timeout(time_to_wait) [Selenium]

Set the amount of time to wait for a page load to complete before throwing an error.

Args:

- time_to_wait: The amount of time to wait

Usage:

```
driver.set_page_load_timeout(30)
```

set_script_timeout(time_to_wait) [Selenium]

Set the amount of time that the script should wait during an execute_async_script call before throwing an error.

Args: *time_to_wait: The amount of time to wait (in seconds)

Usage:

```
driver.set_script_timeout(30)
```

set_window_position(x, y, windowHandle='current') [Selenium]

Sets the x,y position of the current window. (window.moveTo)

Args:

- x: the x-coordinate in pixels to set the window position
- y: the y-coordinate in pixels to set the window position

Usage:

```
driver.set_window_position(0,0)
```

set_window_rect(x=None, y=None, width=None, height=None) [Selenium]

Sets the x, y coordinates of the window as well as height and width of the current window.

Usage:

```
driver.set_window_rect(x=10, y=10)
driver.set_window_rect(width=100, height=200)
driver.set_window_rect(x=10, y=10, width=100, height=200)
```

set_window_size(width, height, windowHandle='current') [Selenium]

Sets the width and height of the current window. (window.resizeTo)

Args: *width: the width in pixels to set the window to *height: the height in pixels to set the window to

Usage:

```
driver.set_window_size(800,600)
```

start_client() [Selenium]

Called before starting a new session. This method may be overridden to define custom startup behavior.

start_session(capabilities, browser_profile=None) [Selenium]

Creates a new session with the desired capabilities.

Args:

- browser_name - The name of the browser to request.
- version - Which browser version to request.
- platform - Which platform to request the browser on.
- javascript_enabled - Whether the new session should support JavaScript.
- browser_profile - A selenium.webdriver.firefox.firefox_profile.FirefoxProfile object. Only used if Firefox is requested.

stop_client() [Selenium]

Called after executing a quit command. This method may be overridden to define custom shutdown behavior.

switch_to [Selenium]

Returns:

SwitchTo: an object containing all options to switch focus into

Usage:

```
element = driver.switch_to.active_element
alert = driver.switch_to.alert
driver.switch_to.default_content()
driver.switch_to.frame('frame_name')
driver.switch_to.frame(1)
driver.switch_to.frame(driver.find_elements_by_tag_name('iframe')[0])
driver.switch_to.parent_frame()
driver.switch_to.window('main')
```

switch_to_active_element() [Selenium]

Deprecated use `driver.switch_to.active_element`

switch_to_alert() [Selenium]

Deprecated use `driver.switch_to.alert`

switch_to_default_content() [Selenium]

Deprecated use `driver.switch_to.default_content`

switch_to_first_window() [Golem]

Switch to first window/tab

switch_to_frame(frame_reference) [Selenium]

Deprecated use `driver.switch_to.frame`

switch_to_last_window() [Golem]

Switch to last window/tab

switch_to_next_window() [Golem]

Switch to next window/tab in the list of window handles. If current window is the last in the list this will circle back from the start.

switch_to_previous_window() [Golem]

Switch to previous window/tab in the list of window handles. If current window is the first in the list this will circle back from the top.

switch_to_window(window_name) [Selenium]

Deprecated use driver.switch_to.window

switch_to_window_by_index(index) [Golem]

Switch to window/tab by index. Note: “The order in which the window handles are returned is arbitrary.”

switch_to_window_by_partial_title(partial_title) [Golem]

Switch to window/tab by partial title

switch_to_window_by_partial_url(partial_url) [Golem]

Switch to window/tab by partial URL

switch_to_window_by_title(title) [Golem]

Switch to window/tab by title

switch_to_window_by_url(url) [Golem]

Switch to window/tab by URL

title [Selenium]

Returns the title of the current page.

Usage: title = driver.title

uncheck_element(element) [Golem]

Uncheck a checkbox element. If element is already unchecked this is ignored.

Args

- element: an element tuple, a CSS string or a WebElement object

wait_for_alert_present(timeout) [Golem]

Wait for an alert to be present

Args:

- timeout: time to wait (in seconds)

wait_for_element_displayed(element, timeout) [Golem]

Wait for element to be present and displayed

Args:

- element: an element tuple, a CSS string or a WebElement object
- timeout: time to wait (in seconds)

wait_for_element_enabled(element, timeout) [Golem]

Wait for element to be enabled

Args:

- element: an element tuple, a CSS string or a WebElement object
- timeout: time to wait (in seconds)

wait_for_element_has_attribute(element, attribute, timeout) [Golem]

Wait for element to have attribute

Args:

- element: an element tuple, a CSS string or a WebElement object
- attribute: attribute name
- timeout: time to wait (in seconds)

Usage:

```
driver.wait_for_element_has_attribute('#someId', 'onclick', 5)
```

wait_for_element_has_not_attribute(element, attribute, timeout) [Golem]

Wait for element to not have attribute

Args:

- element: an element tuple, a CSS string or a WebElement object
- attribute: attribute name
- timeout: time to wait (in seconds)

Usage: `driver.wait_for_element_has_not_attribute('#someId', 'onclick', 5)`

wait_for_element_not_displayed(element, timeout) [Golem]

Wait for element to be not displayed. When element is not displayed this is ignored. When element is not present this will raise `ElementNotFound`.

Args:

- element: an element tuple, a CSS string or a WebElement object
- timeout: time to wait (in seconds)

wait_for_element_not_enabled(element, timeout) [Golem]

Wait for element to be not enabled

Args:

- element: an element tuple, a CSS string or a WebElement object
- timeout: time to wait (in seconds)

wait_for_element_not_present(element, timeout) [Golem]

Wait for element not present in the DOM

Args:

- element: an element tuple, a CSS string or a WebElement object
- timeout: time to wait (in seconds)

wait_for_element_present(element, timeout) [Golem]

Wait for element present in the DOM

Args:

- element: an element tuple, a CSS string or a WebElement object
- timeout: time to wait (in seconds)

wait_for_element_text(element, text, timeout) [Golem]

Wait for element text to match given text

Args:

- element: an element tuple, a CSS string or a WebElement object
- text: expected element text to be
- timeout: time to wait (in seconds)

wait_for_element_text_contains(element, text, timeout) [Golem]

Wait for element to contain text

Args:

- element: an element tuple, a CSS string or a WebElement object
- text: expected element to be contained by element
- timeout: time to wait (in seconds)

wait_for_element_text_is_not(element, text, timeout) [Golem]

Wait for element text to not match given text

Args:

- element: an element tuple, a CSS string or a WebElement object
- text: expected text to not be element's text
- timeout: time to wait (in seconds)

wait_for_element_text_not_contains(element, text, timeout) [Golem]

Wait for element to not contain text

Args:

- element: an element tuple, a CSS string or a WebElement object
- text: expected text to not be contained in element
- timeout: time to wait (in seconds)

wait_for_page_contains_text(text, timeout) [Golem]

Wait for page to contains text

Args:

- text: text to be contained in page source
- timeout: time to wait (in seconds)

wait_for_page_not_contains_text(text, timeout) [Golem]

Wait for page to not contain text

Args:

- text: text to not be contained in page source
- timeout: time to wait (in seconds)

wait_for_title(title, timeout) [Golem]

Wait for page title to be the given value

Args:

- title: expected title
- timeout: time to wait (in seconds)

wait_for_title_contains(partial_title, timeout) [Golem]

Wait for page title to contain partial_title

Args:

- partial_title: expected partial title
- timeout: time to wait (in seconds)

wait_for_title_is_not(title, timeout) [Golem]

Wait for page title to not be the given value

Args:

- title: not expected title
- timeout: time to wait (in seconds)

wait_for_title_not_contains(partial_title, timeout) [Golem]

Wait for page title to not contain partial_title

Args:

- partial_title: not expected partial title
- timeout: time to wait (in seconds)

wait_for_window_present_by_partial_title(partial_title, timeout) [Golem]

Wait for window/tab present by partial title

wait_for_window_present_by_partial_url(partial_url, timeout) [Golem]

Wait for window/tab present by partial url

wait_for_window_present_by_title(title, timeout) [Golem]

Wait for window/tab present by title

wait_for_window_present_by_url(url, timeout) [Golem]

Wait for window/tab present by url

window_handles [Selenium]

Returns the handles of all windows within the current session.

Usage: driver.window_handles

3.19.4 WebElement class

class ExtendedWebElement()

This class represents a web element. It extends `selenium.webdriver.remote.webelement.WebElement`.

Methods and Properties

check() [Golem]

Check element if element is checkbox or radiobutton. If element is already checked, this is ignored.

clear() [Selenium]

Clears the text if it's a text entry element.

click() [Selenium]

Clicks the element.

double_click() [Golem]

Double click the element

find(element=None, id=None, name=None, link_text=None, partial_link_text=None, css=None, xpath=None, tag_name=None, timeout=None, wait_displayed=None, highlight=None) [Golem]

Find a WebElement

Search criteria:

- The first argument must be: an element tuple, a CSS string, an XPath string, or a WebElement object.
- Keyword search criteria: `id`, `name`, `link_text`, `partial_link_text`, `css`, `xpath`, `tag_name`.
- Only one search criteria should be provided.

Other args:

- `timeout`: timeout (in seconds) to wait for element to be present. By default it uses the `search_timeout` setting value.
- `wait_displayed`: wait for element to be displayed (visible). By default uses the `wait_displayed` setting value.
- `highlight`: highlights element on the page when found

Usage:

```
element.find('div#someId > input.class')
element.find(('id', 'someId'))
element.find(id='someId')
element.find(xpath='//div/input', timeout=5, wait_displayed=True)
```

Returns: a `golem.webdriver.extended_webelement.ExtendedRemoteWebElement`

find_all(element=None, id=None, name=None, link_text=None, partial_link_text=None, css=None, xpath=None, tag_name=None) [Golem]

Find all WebElements that match the search criteria.

Search criteria:

- The first argument must be: an element tuple, a CSS string, or an XPath string.
- Keyword search criteria: id, name, link_text, partial_link_text, css, xpath, tag_name.
- Only one search criteria should be provided.

Usage:

```
element.find_all('div#someId > span.class')
element.find(('tag_name', 'input'))
element.find(xpath='//div/input')
```

Returns: a list of ExtendedRemoteWebElement

find_element(by='id', value=None) [Selenium]

Use *find* instead.

find_element_by_class_name(name) [Selenium]

Finds element within this element's children by class name.

Use *find* instead.

find_element_by_css_selector(css_selector) [Selenium]

Finds element within this element's children by CSS selector.

Use *find* instead.

find_element_by_id(id_) [Selenium]

Finds element within this element's children by ID.

Use *find* instead.

find_element_by_link_text(link_text) [Selenium]

Finds element within this element's children by visible link text.

Use *find* instead.

find_element_by_name(name) [Selenium]

Finds element within this element's children by name.

Use *find* instead.

find_element_by_partial_link_text(link_text) [Selenium]

Finds element within this element's children by partially visible link text.

Use *find* instead.

find_element_by_tag_name(name) [Selenium]

Finds element within this element's children by tag name.

Use *find* instead.

find_element_by_xpath(xpath) [Selenium]

Finds element by xpath.

Use *find* instead.

find_elements(by='id', value=None) [Selenium]

Use *find_all* instead.

find_elements_by_css_selector(css_selector) [Selenium]

Finds a list of elements within this element's children by CSS selector.

Use *find_all* instead.

find_elements_by_id(id_) [Selenium]

Finds a list of elements within this element's children by ID. Will return a list of webelements if found, or an empty list if not.

Use *find_all* instead.

find_elements_by_link_text(link_text) [Selenium]

Finds a list of elements within this element's children by visible link text.

Use *find_all* instead.

find_elements_by_name(name) [Selenium]

Finds a list of elements within this element's children by name.

Use *find_all* instead.

find_elements_by_partial_link_text(link_text) [Selenium]

Finds a list of elements within this element's children by link text.

Use *find_all* instead.

find_elements_by_tag_name(name) [Selenium]

Finds a list of elements within this element's children by tag name.

Use *find_all* instead.

find_elements_by_xpath(xpath) [Selenium]

Finds elements within the element by xpath.

Use *find_all* instead.

focus() [Golem]

Give focus to element

get_attribute(name) [Selenium]

Gets the given attribute or property of the element.

This method will first try to return the value of a property with the given name. If a property with that name doesn't exist, it returns the value of the attribute with the same name. If there's no attribute with that name, None is returned.

Values which are considered truthy, that is equals "true" or "false", are returned as booleans. All other non-None values are returned as strings. For attributes or properties which do not exist, None is returned.

Args:

- name - Name of the attribute/property to retrieve.

Example:

```
# Check if the "active" CSS class is applied to an element.  
is_active = "active" in target_element.get_attribute("class")
```

get_property(name) [Selenium]

Gets the given property of the element.

Args:

- name - Name of the property to retrieve.

Example:

```
text_length = target_element.get_property("text_length")
```

has_attribute(attribute) [Golem]

Returns whether element has attribute

has_focus() [Golem]

Returns whether element has focus

id [Selenium]

Internal ID used by selenium.

This is mainly for internal use. Simple use cases such as checking if 2 webelements refer to the same element, can be done using ==:

```
if element1 == element2:
    print("These 2 are equal")
```

inner_html [Golem]

Element innerHTML attribute

is_displayed() [Selenium]

Whether the element is visible to a user.

is_enabled() [Selenium]

Returns whether the element is enabled.

is_selected() [Selenium]

Returns whether the element is selected.

Can be used to check if a checkbox or radio button is selected.

javascript_click() [Golem]

Click element using Javascript

location [Selenium]

The location of the element in the renderable canvas.

location_once_scrolled_into_view [Selenium]

THIS PROPERTY MAY CHANGE WITHOUT WARNING. Use this to discover where on the screen an element is so that we can click it. This method should cause the element to be scrolled into view.

Returns the top lefthand corner location on the screen, or None if the element is not visible.

mouse_over() [Golem]

Mouse over element

outer_html [Golem]

Element outerHTML attribute

parent [Selenium]

Internal reference to the WebDriver instance this element was found from.

press_key(key) [Golem]

Press a key on element

Usage:

```
element.press_key('ENTER')
element.press_key('TAB')
element.press_key('LEFT')
```

rect [Selenium]

A dictionary with the size and location of the element.

screenshot(filename) [Selenium]

Saves a screenshot of the current element to a PNG image file. Returns False if there is any IOError, else returns True. Use full paths in your filename.

Args:

- filename: The full path you wish to save your screenshot to. This should end with a .png extension.

Usage: `element.screenshot('/Screenshots/foo.png')`

screenshot_as_base64 [Selenium]

Gets the screenshot of the current element as a base64 encoded string.

Usage: `img_b64 = element.screenshot_as_base64`

screenshot_as_png [Selenium]

Gets the screenshot of the current element as a binary data.

Usage: `element_png = element.screenshot_as_png`

select [Golem]

Return a Select object

send_keys(*value) [Selenium]

Simulates typing into the element.

Args:

- `value` - A string for typing, or setting form fields. For setting file inputs, this could be a local file path. Use this to send simple key events or to fill out form fields:

```
form_textfield = driver.find_element_by_name('username')
form_textfield.send_keys("admin")
```

This can also be used to set file inputs.

```
file_input = driver.find_element_by_name('profilePic')
file_input.send_keys("path/to/profilepic.gif")
# Generally it's better to wrap the file path in one of the methods
# in os.path to return the actual path to support cross OS testing.
# file_input.send_keys(os.path.abspath("path/to/profilepic.gif"))
```

send_keys_with_delay(value, delay=0.1) [Golem]

Send keys to element one by one with a delay between keys.

Args:

- `value`: a string to type
- `delay`: time between keys (in seconds)

Raises:

- `ValueError`: if delay is not a positive int or float

size [Selenium]

The size of the element.

submit() [Selenium]

Submits a form.

tag_name [Selenium]

This element's tagName property.

text [Selenium]

The text of the element.

unchecked() [Golem]

Uncheck element if element is checkbox. If element is already unchecked, this is ignored.

value [Golem]

The value attribute of element

value_of_css_property(property_name) [Selenium]

The value of a CSS property.

wait_displayed(timeout=30) [Golem]

Wait for element to be displayed

Returns: The element

wait_enabled(timeout=30) [Golem]

Wait for element to be enabled

Returns: The element

wait_has_attribute(attribute, timeout=30) [Golem]

Wait for element to have attribute

Returns: The element

wait_has_not_attribute(attribute, timeout=30) [Golem]

Wait for element to not have attribute

Returns: The element

wait_not_displayed(timeout=30) [Golem]

Wait for element to be not displayed

Returns: The element

wait_not_enabled(timeout=30) [Golem]

Wait for element to be not enabled

Returns: The element

wait_text(text, timeout=30) [Golem]

Wait for element text to match given text

Returns: The element

wait_text_contains(text, timeout=30) [Golem]

Wait for element to contain given text

Returns: The element

wait_text_is_not(text, timeout=30) [Golem]

Wait fo element text to not match given text

Returns: The element

wait_text_not_contains(text, timeout=30) [Golem]

Wait for element text to not contain text

Returns: The element

3.19.5 Golem Expected Conditions

Some extra expected conditions. Located at `golem.webdriver.golem_expected_conditions`.

element_to_be_enabled(element)

An Expectation for checking an element is enabled

text_to_be_present_in_page(text)

An Expectation for checking page contains text

element_text_to_be(element, text)

An expectation for checking the given text matches element text

element_text_to_contain(element, text)

An expectation for checking element contains the given text

element_to_have_attribute(element, attribute)

An expectation for checking element has attribute

window_present_by_partial_title(partial_title)

An expectation for checking a window is present by partial title

window_present_by_partial_url(partial_url)

An expectation for checking a window is present by partial url

window_present_by_title(title)

An expectation for checking a window is present by title

window_present_by_url(url)

An expectation for checking a window is present by url

3.20 Guides

3.20.1 Running Tests with Jenkins

In this guide let's see how Golem tests can be run in jenkins.

Pre-requisites

- Jenkins is installed.
- Python 3.6+ is installed in the Jenkins machine.
- A Golem directory with tests is stored in a git repository.

Steps

In Jenkins go to Dashboard > Manage Jenkins > Global Tool Configuration

In Python > Python installations section add a Python version with the path to the executable:

Dashboard ▸ Global Tool Configuration

Python

Python installations

[Add Python](#)

Python

Name ?

python379

Home or executable ?

C:\Python\Python394

☐ Install automatically ?

[Delete Python](#)

We will be using ShiningPanda to manage the virtual environments in the Jenkins job: <https://plugins.jenkins.io/shiningpanda/>.

In Jenkins go to Dashboard > Manage Jenkins > Manage Plugins. Install the ShiningPanda plugin and restart Jenkins.

Create a new Jenkins job of type “Freestyle project”

Define the location of the tests in the Source Code Management section:

Source Code Management

☐ None

☒ Git ?

Repositories ?

Repository URL ?

<https://github.com/golemhq/golem-tests>

Credentials ?



- none - [Add](#)


[Advanced...](#)


[Add Repository](#)


Add a build step of type “Virtualenv Builder”:


Build


Virtualenv Builder  


Python version 

python379 


☐ Clear 

Nature 

Shell 



Command 

```
pip install golem-framework
webdriver-manager update -d chrome
golem run golem integration actions/element -r junit --report-folder "%WORKSPACE%"
```

 **Advanced...**

Add a post-build action that collects the generated JUnit XML report:


Post-build Actions

Publish JUnit test result report  


Test report XMLs

report.xml

Fileset 'includes' setting that specifies the generated raw XML report files, such as 'myproject/target/test-reports/*.xml'. Basedir of the fileset is [the workspace root](#).



☐ Retain long standard output/error

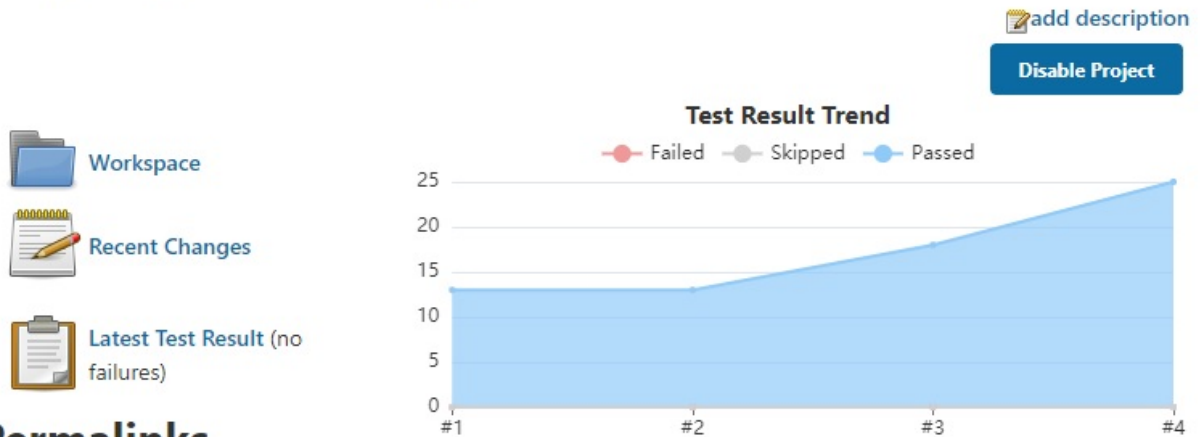
Health report amplification factor 

1.0

1% failing tests scores as 99% health. 5% failing tests scores as 95% health

Run!

Project golem-integration



Permalinks

- Last build (#4), 2 min 17 sec ago
- Last stable build (#4), 2 min 17 sec ago
- Last successful build (#4), 2 min 17 sec ago
- Last completed build (#4), 2 min 17 sec ago

3.20.2 Using Multiple Browsers Sessions

Sometimes a test requires two or more different browser sessions opened at the same time.

A browser is opened by default when using an action that needs a browser. To open a browser explicitly use the **open_browser** action or `golem.browser.open_browser()`.

Open Multiple Browsers

To open a second browser use **open_browser** again and pass an id to identify it. The first browser has 'main' as its id by default.

The list of opened browsers is stored in `golem.execution.browsers`.

To use a browser when there is more than one, it has to be activated first:

```
open_browser()
open_browser('second')
activate_browser('second')
```

As an example, testing a chat application with two concurrent users:

```
def test(data):
    navigate('https://app-url.com/') # browser opened with id='main'
    open_browser('second browser') # second browser opened
    navigate('https://app-url.com/')
    activate_browser('main')
    send_chat_message('hey there!')
```

(continues on next page)

(continued from previous page)

```
activate_browser('second browser')
assert_message_received('hey there!')
```

3.20.3 Generate a Standalone Executable

Using PyInstaller

A Golem standalone executable without any dependencies (including Python) can be generated using [PyInstaller](#).

Note: the executable must be generated in the same platform that it will be used (e.g.: Windows 10 64 with Python 3.7)

Steps

Create an empty virtualenv (having the required packages only reduces the final executable size):

```
virtualenv env
```

Clone the repo and install:

```
git clone https://github.com/golemhq/golem.git
cd golem
pip install .
```

Install PyInstaller

```
pip install pyinstaller
```

Install python3-dev if needed (Linux)

```
apt-get install python3-dev
```

Generate the executable

Linux:

```
pyinstaller golem/bin/golem_standalone.py --onefile -n golem --add-data "golem/gui/
↳ templates:golem/gui/templates" --add-data "golem/gui/static:golem/gui/static"
```

Windows:

```
pyinstaller golem\bin\golem_standalone.py --onefile -n golem --add-data
↳ "golem\gui\templates;golem\gui\templates" --add-data "golem\gui\static;
↳ golem\gui\static"
```

Where:

--onefile generates a single file instead of a folder

-n golem is the name of the executable

--add-data includes the templates and static files required by the GUI

The executable is generated in the *dist* folder.

How to Use the Standalone Executable

Put the executable in your path.

The executable includes the *golem*, *golem-admin*, and *webdriver-manager* interfaces.

Usage:

```
golem golem-admin createdirectory .  
golem webdriver-manager update  
golem gui  
golem run project test
```