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# **ftw.testbrowser**

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*ftw.testbrowser* is a browser library for testing **Plone** based web sites and applications.



# CHAPTER 1

---

## Introduction

---

- *Features*
- *Motivation*
- *How it works*

*ftw.testbrowser* is a browser library for testing [Plone](#) based web sites and applications (CI).

## Features

The test browser supports all the basic features:

- Visit pages of the Plone site
- Access page content
- Find nodes by CSS- and XPath-Expressions or by text
- Click on links
- Fill and submit forms
- File uploading
- Make WebDAV requests

The *ftw.testbrowser* also comes with some basic Plone [page objects](#).

*ftw.testbrowser* currently does not support JavaScript.

## Motivation

A test browser should have a simple but powerful API (CSS expressions), it should be fast, reliable and easy to setup and use.

The existing test browsers for Plone development were not satisfactory:

- The `zope.testbrowser`, which is the current standard for Plone testing does not support CSS- or XPath-Selectors, it is very limiting in form filling (buttons without names are not selectable, for example) and it leads to brittle tests.
- The `splinter` test browser has a zope driver and various selenium based drivers. This abstraction improves the API but it is still limiting since it bases on `zope.testbrowser`.
- The `robotframework` is a selenium based full-stack browser which comes with an own language and requires a huge setup. The use of selenium makes it slow and brittle and a new language needs to be learned.

There are also some more browser libraries and wrappers, usually around selenium, which often requires to open a port and make actual requests. This behavior is very time consuming and should not be done unless really necessary, which is usually for visual things (making screenshots) and JavaScript testing.

## How it works

The `ftw.testbrowser` uses `mechanize` with `plone.testing` configurations / patches to directly dispatch requests in Zope.

The responses are parsed in an `lxml` document, which allows us to do all the necessary things such as selecting HTML elements or filling forms.

While querying, `ftw.testbrowser` wraps all the HTML elements into node wrappers which extend the `lxml` functionality with things such as using CSS selectors directly, clicking on links or filling forms based on labels.



## CHAPTER 2

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### Quickstart

---

Add *ftw.testbrowser* to your testing dependencies in your *setup.py*:

```
tests_require = [
    'ftw.testbrowser',
]

setup(name='my.package',
      install_requires=['Plone'],
      tests_require=tests_require,
      extras_require=dict(tests=tests_require))
```

Write tests using the browser:

```
from ftw.testbrowser import browsing
from ftw.testbrowser.pages import factoriesmenu
from ftw.testbrowser.pages import plone
from ftw.testbrowser.pages import statusmessages
from plone.app.testing import PLONE_FUNCTIONAL_TESTING
from plone.app.testing import SITE_OWNER_NAME
from unittest2 import TestCase

class TestFolders(TestCase):

    layer = PLONE_FUNCTIONAL_TESTING

    @browsing
    def test_add_folder(self, browser):
        browser.login(SITE_OWNER_NAME).open()
        factoriesmenu.add('Folder')
        browser.fill({'Title': 'The Folder'}).submit()

        statusmessages.assert_no_error_messages()
        self.assertEqual('folder_listing', plone.view())
        self.assertEqual('The Folder', plone.first_heading())
```



- *Setup*
  - *Choosing the default driver*
- *Visit pages*
- *Logging in*
- *Finding elements*
- *Matching text content*
- *Get the page contents / json data*
- *Filling and submitting forms*
  - *File uploading*
- *Tables*
- *Page objects*
- *XML Support*
- *WebDAV requests*
- *Error handling*
  - *Disabling HTTP exceptions*
  - *Expecting HTTP exceptions*
  - *Exception bubbling*

## Setup

For using the test browser, just decorate your test methods with the `@browsing` decorator.

```
from ftw.testbrowser import browsing
from unittest2 import TestCase
from plone.app.testing import PLONE_FUNCTIONAL_TESTING

class TestMyView(TestCase):

    layer = PLONE_FUNCTIONAL_TESTING

    @browsing
    def test_view_displays_things(self, browser):
        browser.visit(view='my_view')
```

**Warning:** Make sure that you use a functional testing layer!

See also:

`ftw.testbrowser.browsing()`

By default there is only one, global browser, but it is also possible to instantiate a new browser and to set it up manually:

```
from ftw.testbrowser.core import Browser

browser = Browser()
app = zope_app

with browser(app):
    browser.open()
```

**Warning:** Page objects and forms usually use the global browser. Creating a new browser manually will not set it as global browser and page objects / forms will not be able to access it!

## Choosing the default driver

The default driver is chosen automatically, depending on whether the browser is set up with a zope app (`=> LIB_MECHANIZE`) or not (`=> LIB_REQUESTS`). The default driver can be changed on the browser instance, overriding the automatic driver selection:

```
from ftw.testbrowser.core import Browser
from ftw.testbrowser.core import LIB_MECHANIZE
from ftw.testbrowser.core import LIB_REQUESTS

browser = Browser()
# always use mechanize:
browser.default_driver = LIB_MECHANIZE

# or always use requests:
browser.default_driver = LIB_REQUESTS
```

When using the testbrowser in a `plone.testing` layer, the driver can be chosen by using a standard `plone.testing` fixture:

```
from ftw.testbrowser import MECHANIZE_BROWSER_FIXTURE
from ftw.testbrowser import REQUESTS_BROWSER_FIXTURE
from plone.app.testing import PLONE_FIXTURE
from plone.app.testing import FunctionalTesting

MY_FUNCTIONAL_TESTING_WITH_MECHANIZE = FunctionalTesting(
    bases=(PLONE_FIXTURE,
            MECHANIZE_BROWSER_FIXTURE),
    name='functional:mechanize')

MY_FUNCTIONAL_TESTING_WITH_REQUESTS = FunctionalTesting(
    bases=(PLONE_FIXTURE,
            REQUESTS_BROWSER_FIXTURE),
    name='functional:requests')
```

## Visit pages

For visiting a page, use the *visit* or *open* method on the browser (those methods do the same).

Visiting the Plone site root:

```
browser.open()
print browser.url
```

**See also:**

`ftw.testbrowser.core.Browser.url()`

Visiting a full url:

```
browser.open('http://nohost/plone/sitemap')
```

Visiting an object:

```
folder = portal.get('the-folder')
browser.visit(folder)
```

Visit a view on an object:

```
folder = portal.get('the-folder')
browser.visit(folder, view='folder_contents')
```

The *open* method can also be used to make POST request:

```
browser.open('http://nohost/plone/login_form',
             {'__ac_name': TEST_USER_NAME,
              '__ac_password': TEST_USER_PASSWORD,
              'form.submitted': 1})
```

**See also:**

`ftw.testbrowser.core.Browser.open()`

## Logging in

The *login* method sets the *Authorization* request header.

Login with the *plone.app.testing* default test user (*TEST\_USER\_NAME*):

```
browser.login().open()
```

Logging in with another user:

```
browser.login(username='john.doe', password='secret')
```

Logout and login a different user:

```
browser.login(username='john.doe', password='secret').open()
browser.reset()
browser.login().open()
```

**See also:**

```
ftw.testbrowser.core.Browser.login(), ftw.testbrowser.core.Browser.reset()
```

## Finding elements

Elements can be found using CSS-Selectors (*css* method) or using XPath-Expressions (*xpath* method). A result set (*Nodes*) of all matches is returned.

**See also:**

```
ftw.testbrowser.nodes.Nodes()
```

CSS:

```
browser.open()
heading = browser.css('.documentFirstHeading').first
self.assertEqual('Plone Site', heading.normalized_text())
```

**See also:**

```
ftw.testbrowser.core.Browser.css(),                               ftw.testbrowser.nodes.NodeWrapper.
normalized_text()
```

XPath:

```
browser.open()
heading = browser.xpath('h1').first
self.assertEqual('Plone Site', heading.normalized_text())
```

**See also:**

```
ftw.testbrowser.core.Browser.xpath()
```

Finding elements by text:

```
browser.open()
browser.find('Sitemap').click()
```

The *find* method will look for these elements (in this order):

- a link with this text (normalized, including subelements' texts)
- a field which has a label with this text
- a button which has a label with this text

See also:

```
ftw.testbrowser.core.Browser.find()
```

## Matching text content

In HTML, most elements can contain direct text but the elements can also contain sub-elements which also have text.

When having this HTML:

```
<a id="link">
  This is
  <b>a link
</a>
```

We can get only direct text of the link:

```
>>> browser.css('#link').first.text
'\n      This is\n      '
```

or the text recursively:

```
>>> browser.css('#link').first.text_content()
'\n      This is\n      a link\n      '
```

See also:

```
ftw.testbrowser.nodes.NodeWrapper.text_content()
```

or the normalized recursive text:

```
>>> browser.css('#link').first.normalized_text()
'This is a link'
```

See also:

```
ftw.testbrowser.nodes.NodeWrapper.normalized_text()
```

Functions such as *find* usually use the *normalized\_text*.

See also:

```
ftw.testbrowser.core.Browser.find()
```

## Get the page contents / json data

The page content of the currently loaded page is always available on the browser:

```
browser.open()
print browser.contents
```

**See also:**

`ftw.testbrowser.core.Browser.contents()`

If the result is a JSON string, you can access the JSON data (converted to python data structure already) with the `json` property:

```
browser.open(view='a-json-view')
print browser.json
```

**See also:**

`ftw.testbrowser.core.Browser.json()`

## Filling and submitting forms

The browser's *fill* method helps to easily fill forms by label text without knowing the structure and details of the form:

```
browser.visit(view='login_form')
browser.fill({'Login Name': TEST_USER_NAME,
            'Password': TEST_USER_PASSWORD}).submit()
```

The *fill* method returns the browser instance which can be submitted with *submit*. The keys of the dict with the form data can be either field labels (<label> text) or the name of the field. Only one form can be filled at a time.

## File uploading

For uploading a file you need to pass at least the file data (string or stream) and the filename to the *fill* method, optionally you can also declare a mime type.

There are two syntaxes which can be used.

**Tuple syntax:**

```
browser.fill({'File': ('Raw file data', 'file.txt', 'text/plain')})
```

**Stream syntax**

```
file_ = StringIO('Raw file data')
file_.filename = 'file.txt'
file_.content_type = 'text/plain'

browser.fill({'File': file_})
```

You can also pass in filesystem files directly, but you need to make sure that the file stream is opened until the form is submitted.

```
with open('myfile.pdf') as file_:
    browser.fill({'File': file_}).submit()
```

**See also:**

`ftw.testbrowser.core.Browser.fill()`, `ftw.testbrowser.form.Form.submit()`, `ftw.testbrowser.form.Form.save()`



## Tables

Tables are difficult to test without the right tools. For making the tests easy and readable, the table components provide helpers especially for easily extracting a table in a readable form.

For testing the content of this table:

```
<table id="shopping-cart">
  <thead>
    <tr>
      <th>Product</th>
      <th>Price</th>
    </tr>
  </thead>
  <tbody>
    <tr>
      <td>Socks</td>
      <td>12.90</td>
    </tr>
    <tr>
      <td>Pants</td>
      <td>35.00</td>
    </tr>
  </tbody>
  <tfoot>
    <tr>
      <td>TOTAL:</td>
      <td>47.90</td>
    </tr>
  </tfoot>
</table>
```

You could use the `lists` method:

```
self.assertEqual(
    [['Product', 'Price'],
     ['Socks', '12.90'],
     ['Pants', '35.00'],
     ['TOTAL:', '47.90']],
    browser.css('#shopping-cart').first.lists())
```

**See also:**

`ftw.testbrowser.table.Table.lists()`

or the `dicts` method:

```
self.assertEqual(
    [{'Product': 'Socks',
      'Price': '12.90'},
     {'Product': 'Pants',
      'Price': '35.00'},
     {'Product': 'TOTAL:',
      'Price': '47.90'}],
    browser.css('#shopping-cart').first.dicts())
```

**See also:**

`ftw.testbrowser.table.Table.dicts()`

See the tables API for more details.

**See also:**

```
ftw.testbrowser.table.Table(),          ftw.testbrowser.table.TableRow(),      ftw.  
testbrowser.table.TableCell()
```

## Page objects

*ftw.testbrowser* ships some basic page objects for Plone. Page objects represent a page or a part of a page and provide an API to this part. This allows us to write simpler and more expressive tests and makes the tests less brittle.

Read the [post by Martin Fowler](#) for better explanation about what page objects are.

You can and should write your own page objects for your views and pages.

See the API documentation for the page objects included in *ftw.testbrowser*:

- The **plone** page object provides general information about this page, such as if the user is logged in or the view / portal type of the page.
- The **factoriesmenu** page object helps to add new content through the browser or to test the addable types.
- The **statusmessages** page object helps to assert the current status messages.
- The **dexterity** page object provides helpers related to dexterity
- The **z3cform** page object provides helpers related to z3cforms, e.g. for asserting validation errors in the form.

**See also:**

```
ftw.testbrowser.pages
```

## XML Support

When the response mimetype is `text/xml` or `application/xml`, the response body is parsed as XML instead of HTML.

This can lead to problems when having XML-Documents with a default namespace, because `lxml` only supports XPath 1, which does not support default namespaces.

You can either solve the problem yourself by parsing the `browser.contents` or you may switch back to HTML parsing. HTML parsing will modify your document though, it will insert a `html` node for example.

Re-parsing with another parser:

```
browser.webdav(view='something.xml')  # XML document  
browser.parse_as_html()               # HTML document  
browser.parse_as_xml()                # XML document
```

**See also:**

```
ftw.testbrowser.core.Browser.parse_as_html
```

**See also:**

```
ftw.testbrowser.core.Browser.parse_as_xml
```

**See also:**

```
ftw.testbrowser.core.Browser.parse
```

## WebDAV requests

*ftw.testbrowser* supports doing WebDAV requests, although it requires a ZServer to be running because of limitations in mechanize.

Use a testing layer which bases on `plone.app.testing.PLONE_ZSERVER`:

```
from plone.app.testing import FunctionalTesting
from plone.app.testing import PLONE_FIXTURE
from plone.app.testing import PLONE_ZSERVER
from plone.app.testing import PloneSandboxLayer

class MyPackageLayer(PloneSandboxLayer):

    defaultBases = (PLONE_FIXTURE, )

MY_PACKAGE_FIXTURE = MyPackageLayer()
MY_PACKAGE_ZSERVER_TESTING = FunctionalTesting(
    bases=(MY_PACKAGE_FIXTURE,
           PLONE_ZSERVER),
    name='my.package:functional:zserver')
```

Then use the `webdav` method for making requests in the test:

```
from ftw.testbrowser import browsing
from my.package.testing import MY_PACKAGE_ZSERVER_TESTING
from unittest2 import TestCase

class TestWebdav(TestCase):

    layer = MY_PACKAGE_ZSERVER_TESTING

    @browsing
    def test_DAV_option(self, browser):
        browser.webdav('OPTIONS')
        self.assertEqual('1,2', browser.response.headers.get('DAV'))
```

See also:

`ftw.testbrowser.core.Browser.webdav()`

## Error handling

The testbrowser raises exceptions by default when a request was not successful. When the response has a status code of 4xx, a `ftw.testbrowser.exceptions.HTTPClientError` is raised, when the status code is 5xx, a `ftw.testbrowser.exceptions.HTTPServerError` is raised.

## Disabling HTTP exceptions

Disable the `raise_http_errors` flag when the test browser should not raise any HTTP exceptions:

```
@browsing
def test(self, browser):
    browser.raise_http_errors = False
    browser.open(view='not-existing')
```

## Expecting HTTP exceptions

Sometimes we want to make sure that the server responds with a certain bad status. For making that easy, the test-browser provides assertion context managers:

```
@browsing
def test(self, browser):
    with browser.expect_http_error():
        browser.open(view='failing')

    with browser.expect_http_error(code=404):
        browser.open(view='not-existing')

    with browser.expect_http_error(reason='Bad Request'):
        browser.open(view='get-record-by-id')
```

## Exception bubbling

Exceptions happening in views can not be caught in the browser by default. When using an internally dispatched driver such as Mechanize, the option `exception_bubbling` makes the Zope Publisher and Mechanize let the exceptions bubble up into the test method, so that it can be caught and asserted there.

```
@browsing
def test(self, browser):
    browser.exception_bubbling = True
    with self.assertRaises(ValueError) as cm:
        browser.open(view='failing')

    self.assertEqual('No valid value was submitted', str(cm.exception))
```

## Browser

- *Drivers*
  - *RequestsDriver*
  - *MechanizeDriver*
  - *StaticDriver*

`ftw.testbrowser.MECHANIZE_BROWSER_FIXTURE = <Layer 'ftw.testbrowser.drivers.layers.DefaultDriverFixture:mechanize'>`  
A plone.testing layer which sets the default driver to Mechanize.

`ftw.testbrowser.REQUESTS_BROWSER_FIXTURE = <Layer 'ftw.testbrowser.drivers.layers.DefaultDriverFixture:requests'>`  
A plone.testing layer which sets the default driver to Requests.

`ftw.testbrowser.browser = <ftw.browser.core.Browser instance>`  
The singleton browser instance acting as default browser.

`ftw.testbrowser.browsing(func)`  
The browsing decorator is used in tests for automatically setting up the browser and passing it into the test function as additional argument:

```
from ftw.testbrowser import browsing
from plone.app.testing import PLONE_FUNCTIONAL_TESTING
from unittest2 import TestCase

class TestSomething(TestCase):
    layer = PLONE_FUNCTIONAL_TESTING

    @browsing
    def test_login_form(self, browser):
        browser.open(view='login_form')
```

```
self.assertEqual('http://nohost/plone/login_form',
                 browser.url)
```

**class** `ftw.testbrowser.core.Browser`

Bases: `object`

The `Browser` is the top level object of `ftw.testbrowser`. It represents the browser instance and is used for navigating and interacting with the browser.

The `Browser` is a context manager, requiring the Zope app to be set:

```
# "app" is the Zope app object

from ftw.testbrowser import Browser

browser = Browser()

with browser(app):
    browser.open()
```

When using the browser in tests there is a `@browsing` test-method decorator uses the global (singleton) browser and sets it up / tears it down using the context manager syntax. See the [ftw.testbrowser.browsing](#) documentation for more information.

#### Variables

- **`raise_http_errors`** – HTTPError exceptions are raised on 4xx and 5xx response codes when enabled (Default: `True`).
- **`exception_bubbling`** – When enabled, exceptions from within the Zope view are bubbled up into the test method if the driver supports it. (Default: `False`).

**`append_request_header`** (*name*, *value*)

Add a new permanent request header which is sent with every request until it is cleared.

HTTP allows multiple request headers with the same name. Therefore this method does not replace existing names. Use `replace_request_header` for replacing headers.

Be aware that the `requests` library does not support multiple headers with the same name, therefore it is always a replace for the `requests` module.

#### Parameters

- **`name`** (*string*) – Name of the request header
- **`value`** (*string*) – Value of the request header

See also:

`replace_request_header()`

See also:

`clear_request_header()`

**`base_url`**

The base URL of the current page. The base URL can be defined in HTML using a `<base>`-tag. If no `<base>`-tag is found, the page URL is used.

**`clear_request_header`** (*name*)

Removes a permanent header. If there are no such headers, the removal is silently skipped.

**Parameters** **`name`** (*string*) – Name of the request header as positional arguments

**click\_on** (*text*, *within=None*)

Find a link by its text and click on it.

**Parameters**

- **text** (*string*) – The text to be looked for.
- **within** (*ftw.testbrowser.nodes.NodeWrapper.*) – A node object for limiting the scope of the search.

**Returns** The browser object.

**Raises** *ftw.testbrowser.exceptions.NoElementFound*

**See also:**

*find()*

**clone** ()

Creates a new browser instance with a cloned state of the current browser. Headers and cookies are copied but not shared. The new browser needs to be used as a context manager, eg.:

**with browser.clone() as sub\_browser:** sub\_browser.open()

**Returns** A new browser instance.

**Return type** *ftw.testbrowser.core.Browser*

**contents**

The source of the current page (usually HTML).

**contenttype**

The contenttype of the response, e.g. text/html; charset=utf-8.

**See also:**

*mimetype()*, *encoding()*

**context**

Returns the current context (Plone object) of the currently viewed page.

**Returns** The Plone context object

**cookies**

A read-only dict of current cookies.

**css** (*css\_selector*)

Select one or more HTML nodes by using a CSS selector.

**Parameters** **css\_selector** (*string*) – The CSS selector.

**Returns** Object containg matches.

**Return type** *ftw.testbrowser.nodes.Nodes*

**debug** ()

Open the current page in your real browser by writing the contents into a temporary file and opening it with `os.system open [FILE]`.

This is meant to be used in pdb, not in actual code.

**encoding**

The encoding of the response, e.g. utf-8.

**See also:**

`contenttype()`

**expect\_http\_error** (\*args, \*\*kws)

Context manager for expecting certain HTTP errors. The `code` and `reason` arguments may be provided or omitted. The values are only asserted if the arguments are provided. An assertion error is raised when the HTTP error is not caught in the code block. The code block may make a request or reload the browser.

**Parameters**

- **code** (int) – The status code to assert.
- **reason** (string) – The status reason to assert.

**Raises** AssertionError

**fill** (values)

Fill multiple fields of a form on the current page. All fields must be in the same form.

Example:

```
browser.open(view='login_form')
browser.fill({'Login Name': 'hugo.boss', 'Password': 'secret'})
```

Since the form node (`ftw.testbrowser.form.Form`) is returned, it can easily be submitted:

```
browser.open(view='login_form')
browser.fill({'Login Name': 'hugo.boss',
             'Password': 'secret'}).submit()
```

**Parameters** **values** (dict) – The key is the label or input-name and the value is the value to set.

**Returns** The form node.

**Return type** `ftw.testbrowser.form.Form`

**find** (text, within=None)

Find an element by text. This will look for:

- a link with this text (normalized, including subelements' texts)
- a field which has a label with this text
- a button which has a label with this text

**Parameters**

- **text** (string) – The text to be looked for.
- **within** (`ftw.testbrowser.nodes.NodeWrapper`.) – A node object for limiting the scope of the search.

**Returns** A single node object or *None* if nothing matches.

**Return type** `ftw.testbrowser.nodes.NodeWrapper`

**find\_button\_by\_label** (label, within=None)

Finds a form button by its text label.

**Parameters**

- **text** (string) – The text to be looked for.



- **within**(*ftw.testbrowser.nodes.NodeWrapper*.) – A node object for limiting the scope of the search.

**Returns** The button node or *None* if nothing matches.

**Return type** *ftw.testbrowser.form.SubmitButton*

**find\_field\_by\_text**(*text*, *within=None*)

Finds a form field which has *text* as label.

**Parameters**

- **text**(*string*) – The text to be looked for.
- **within**(*ftw.testbrowser.nodes.NodeWrapper*.) – A node object for limiting the scope of the search.

**Returns** A single node object or *None* if nothing matches.

**Return type** *ftw.testbrowser.nodes.NodeWrapper*

**find\_form\_by\_field**(*field\_label\_or\_name*)

Searches for a field and returns the form containing the field. The field is searched by label text or field name. If no field was found, *None* is returned.

**Parameters** **label\_or\_name**(*string*) – The label or the name of the field.

**Returns** The form instance which has the searched fields or *None*

**Return type** *ftw.testbrowser.form.Form*.

**find\_form\_by\_fields**(*\*labels\_or\_names*)

Searches for the form which has fields for the labels passed as arguments and returns the form node.

**Returns** The form instance which has the searched fields.

**Return type** *ftw.testbrowser.form.Form*

**Raises** *ftw.testbrowser.exceptions.FormFieldNotFound*

**Raises** *ftw.testbrowser.exceptions.AmbiguousFormFields*

**find\_link\_by\_text**(*text*, *within=None*)

Searches for a link with the passed text. The comparison is done with normalized whitespace and includes the full text within the link, including its subelements' texts.

**Parameters**

- **text**(*string*) – The text to be looked for.
- **within**(*ftw.testbrowser.nodes.NodeWrapper*.) – A node object for limiting the scope of the search.

**Returns** The link object or *None* if nothing matches.

**Return type** *ftw.testbrowser.nodes.LinkNode*

**form\_field\_labels**

A list of label texts and field names of each field in any form on the current page.

The list contains the whitespace normalized label text of the each field. If there is no label or it has an empty text, the fieldname is used instead.

**Returns** A list of label texts (and field names).

**Return type** list of strings

**forms**

A *dict* of form instance where the key is the *id* or the *name* of the form and the value is the form node.

**get\_driver** (*library=None*)

Return the driver instance for a library.

**headers**

A dict of response headers.

**json**

If the current page is JSON only, this can be used for getting the converted JSON data as python data structure.

**login** (*username='test-user', password='secret'*)

Login a user by setting the `Authorization` header.

**logout** ()

Logout the current user by removing the `Authorization` header.

**mimetype**

The mimetype of the response, e.g. `text/html`.

**See also:**

`contenttype()`

**on** (*url\_or\_object=None, data=None, view=None, library=None*)

`on` does almost the same thing as `open`. The difference is that `on` does not reload the page if the current page is the same as the requested one.

Be aware that filled form field values may stay when the page is not reloaded.

**See also:**

`open()`

**open** (*url\_or\_object=None, data=None, view=None, library=None, referer=False, method=None, headers=None*)

Opens a page in the browser.

*Request library:* When running tests on a Plone testing layer and using the `@browsing` decorator, the `mechanize` library is used by default, dispatching the request internal directly into Zope. When the `testbrowser` is used differently (no decorator nor zope app setup), the `requests` library is used, doing actual requests. If the default does not fit your needs you can change the library per request by passing in `LIB_MECHANIZE` or `LIB_REQUESTS` or you can change the library for the session by setting `browser.request_library` to either of those constants.

**Parameters**

- **url\_or\_object** – A full qualified URL or a Plone object (which has an `absolute_url` method). Defaults to the Plone Site URL.
- **data** (*dict or string*) – A dict with data which is posted using a *POST* request, or request payload as string.
- **view** (*string*) – The name of a view which will be added at the end of the current URL.
- **library** (`LIB_MECHANIZE` or `LIB_REQUESTS`) – Lets you explicitly choose the request library to be used for this request.
- **referer** (Boolean (Default `False`)) – Sets the referer when set to `True`.
- **method** (*string*) – The HTTP request method. Defaults to 'GET' when not set, unless data is provided, then its set to 'POST'.

- **headers** (*dict*) – A dict with custom headers for this request.

**See also:**

`visit()`

**See also:**

`LIB_MECHANIZE`

**See also:**

`LIB_REQUESTS`

**open\_html** (*html*)

Opens a HTML page in the browser without doing a request. The passed `html` may be a string or a file-like stream.

**Parameters** **html** (*string or file-like object*) – The HTML content to load in the browser.

**Returns** The browser object.

**parse** (*xml\_or\_html*)

Parse XML or HTML with the default parser. For XML mime types the XML parser is used, otherwise the HTML parser.

**See also:**

`ftw.testbrowser.core.Browser.parse_as_html`

**See also:**

`ftw.testbrowser.core.Browser.parse_as_xml`

**Parameters** **xml** (*string*) – The XML or HTML to parse.

**parse\_as\_html** (*html=None*)

Parse the response document with the HTML parser.

**See also:**

`ftw.testbrowser.core.Browser.parse_as_xml`

**See also:**

`ftw.testbrowser.core.Browser.parse`

**Parameters** **html** (*string*) – The HTML to parse (default: current response).

**parse\_as\_xml** (*xml=None*)

Parse the response document with the XML parser.

**See also:**

`ftw.testbrowser.core.Browser.parse_as_html`

**See also:**

`ftw.testbrowser.core.Browser.parse`

**Parameters** **xml** (*string*) – The XML to parse (default: current response).

**reload()**

Reloads the current page by redoing the previous requests with the same arguments. This applies for GET as well as POST requests.

**Raises** `ftw.testbrowser.exceptions.BlankPage`

**Returns** The browser object.

**Return type** `ftw.testbrowser.core.Browser`

**replace\_request\_header** (*name*, *value*)

Adds a permanent request header which is sent with every request. Before adding the request header all existing request headers with the same name are removed.

**Parameters**

- **name** (*string*) – Name of the request header
- **value** (*string*) – Value of the request header

**See also:**

`replace_request_header()`

**See also:**

`clear_request_header()`

**reset()**

Resets the browser: closes active sessions and resets the internal state.

**root**

The current document root node.

**status\_code**

The status code of the last response or `None` when no request was done yet.

**Type** *int*

**status\_reason**

The status reason of the last response or `None` when no request was done yet. Examples: "OK", "Not Found".

**Type** *string*

**url**

The URL of the current page.

**visit** (*\*args*, *\*\*kwargs*)

Visit is an alias for `open()`.

**See also:**

`open()`

**webdav** (*method*, *url\_or\_object=None*, *data=None*, *view=None*, *headers=None*)

Makes a webdav request to the Zope server.

It is required that a `ZSERVER_FIXTURE` is used in the test setup (e.g. `PLONE_ZSERVER''` from `plone.app.testing`).

**Parameters**

- **method** (*string*) – The HTTP request method (OPTIONS, PROPFIND, etc)
- **url\_or\_object** – A full qualified URL or a Plone object (which has

an `absolute_url` method). Defaults to the Plone Site URL. :param data: A dict with data which is posted using a *POST* request. :type data: dict :param view: The name of a view which will be added at the end of the current URL. :type view: string :param headers: Pass in request headers. :type headers: dict

**xpath** (*xpath\_selector*, *query\_info=None*)

Select one or more HTML nodes by using an *xpath* selector.

**Parameters** **xpath\_selector** (*string*) – The xpath selector.

**Returns** Object containing matches.

**Return type** `ftw.testbrowser.nodes.Nodes`

`ftw.testbrowser.core.DRIVER_FACTORIES = {'mechanize library': <class 'ftw.testbrowser.drivers.mechdriver.MechanizeDriver'>}`

Mapping of driver library constants to its factories. This design is historical so that the library constants keep working. This mapping may be monkey patched.

`ftw.testbrowser.core.LIB_MECHANIZE = 'mechanize library'`

Constant for choosing the mechanize library (internally dispatched requests)

`ftw.testbrowser.core.LIB_REQUESTS = 'requests library'`

Constant for choosing the requests library (actual requests)

`ftw.testbrowser.core.LIB_STATIC = 'static driver'`

Constant for choosing the static driver.

## Drivers

Drivers are responsible for making the request and responding to basic questions, such as the current URL or response headers.

### RequestsDriver

**class** `ftw.testbrowser.drivers.requestsdriver.RequestsDriver` (*browser*)

Bases: `object`

The requests driver uses the “requests” library for making real requests.

**append\_request\_header** (*name*, *value*)

Add a new permanent request header which is sent with every request until it is cleared.

HTTP allows multiple request headers with the same name. Therefore this method does not replace existing names. Use `replace_request_header` for replacing headers.

Be aware that the `requests` library does not support multiple headers with the same name, therefore it is always a replace for the requests module.

**Parameters**

- **name** (*string*) – Name of the request header
- **value** (*string*) – Value of the request header

**clear\_request\_header** (*name*)

Removes a permanent header. If there is no such header, the removal is silently skipped.

**Parameters** **name** (*string*) – Name of the request header as positional argument

**cloned** (*subbrowser*)

When a browser was cloned, this method is called on each driver instance so that the instance can do whatever is needed to have a cloned state too.

**Parameters** **subbrowser** (*ftw.testbrowser.core.Browser*) – The cloned sub-browser instance.

**get\_response\_body()**

Returns the response body of the last response.

**Raises** *ftw.testbrowser.exceptions.BlankPage*

**Returns** Response body

**Return type** string

**get\_response\_cookies()**

Returns a dict-like object containing the cookies set by the last response.

**Returns** Response cookies dict

**Return type** *dict*

**get\_response\_headers()**

Returns a dict-like object containing the response headers. Returns an empty dict if there is no response.

**Returns** Response header dict

**Return type** *dict*

**get\_url()**

Returns the current url, if we are on a page, or None.

**Returns** the current URL

**Return type** string or None

**make\_request(\*args, \*\*kwargs)**

Make a request to the url and return the response body as string.

**Parameters**

- **method** (*string*) – The HTTP request method, all uppercase.
- **url** (*string*) – A full qualified URL.
- **data** (*dict* or *string*) – A dict with data which is posted using a POST request, or the raw request body as a string.
- **headers** (*dict*) – A dict with custom headers for this request.
- **referer\_url** – The referer URL or None.

**Returns** Status code, reason and body

**Return type** tuple: (int, string, string or stream)

**reload()**

Reloads the current page by redoing the previous request with the same arguments. This applies for GET as well as POST requests.

**Raises** *ftw.testbrowser.exceptions.BlankPage*

**Returns** Status code, reason and body

**Return type** tuple: (int, string, string or stream)

**reset()**

Resets the driver: closes active sessions and resets the internal state.

## MechanizeDriver

**class** `ftw.testbrowser.drivers.mechdriver.MechanizeDriver` (*browser*)

Bases: `object`

The mechanize driver uses the Mechanize browser with plone.testing integration for making the requests.

**append\_request\_header** (*name, value*)

Add a new permanent request header which is sent with every request until it is cleared.

HTTP allows multiple request headers with the same name. Therefore this method does not replace existing names. Use `replace_request_header` for replacing headers.

Be aware that the `requests` library does not support multiple headers with the same name, therefore it is always a replace for the `requests` module.

### Parameters

- **name** (*string*) – Name of the request header
- **value** (*string*) – Value of the request header

**clear\_request\_header** (*name*)

Removes a permanent header. If there is no such header, the removal is silently skipped.

**Parameters** **name** (*string*) – Name of the request header as positional argument

**cloned** (*subbrowser*)

When a browser was cloned, this method is called on each driver instance so that the instance can do whatever is needed to have a cloned state too.

**Parameters** **subbrowser** (`ftw.testbrowser.core.Browser`) – The cloned sub-browser instance.

**get\_response\_body** ()

Returns the response body of the last response.

**Raises** `ftw.testbrowser.exceptions.BlankPage`

**Returns** Response body

**Return type** `string`

**get\_response\_cookies** ()

Retruns a dict-like object containing the cookies set by the last response.

**Returns** Response cookies dict

**Return type** `dict`

**get\_response\_headers** ()

Returns a dict-like object containing the response headers. Returns an empty dict if there is no response.

**Returns** Response header dict

**Return type** `dict`

**get\_url** ()

Returns the current url, if we are on a page, or None.

**Returns** the current URL

**Return type** `string` or `None`

**make\_request** (*\*args, \*\*kwargs*)

Make a request to the url and return the response body as string.

**Parameters**

- **method** (*string*) – The HTTP request method, all uppercase.
- **url** (*string*) – A full qualified URL.
- **data** (*dict or string*) – A dict with data which is posted using a POST request, or the raw request body as a string.
- **headers** (*dict*) – A dict with custom headers for this request.
- **referer\_url** – The referer URL or None.

**Returns** Status code, reason and body

**Return type** tuple: (int, string, string or stream)

**reload()**

Reloads the current page by redoing the previous request with the same arguments. This applies for GET as well as POST requests.

**Raises** `ftw.testbrowser.exceptions.BlankPage`

**Returns** Status code, reason and body

**Return type** tuple: (int, string, string or stream)

**reset()**

Resets the driver: closes active sessions and resets the internal state.

**StaticDriver**

**class** `ftw.testbrowser.drivers.staticdriver.StaticDriver` (*browser*)

Bases: `object`

The static driver can load static HTML without doing an actual request. It does not support making requests at all.

**append\_request\_header** (*name, value*)

Add a new permanent request header which is sent with every request until it is cleared.

HTTP allows multiple request headers with the same name. Therefore this method does not replace existing names. Use `replace_request_header` for replacing headers.

Be aware that the `requests` library does not support multiple headers with the same name, therefore it is always a replace for the `requests` module.

**Parameters**

- **name** (*string*) – Name of the request header
- **value** (*string*) – Value of the request header

**clear\_request\_header** (*name*)

Removes a permanent header. If there is no such header, the removal is silently skipped.

**Parameters** **name** (*string*) – Name of the request header as positional argument

**cloned** (*subbrowser*)

When a browser was cloned, this method is called on each driver instance so that the instance can do whatever is needed to have a cloned state too.

**Parameters** **subbrowser** (`ftw.testbrowser.core.Browser`) – The cloned sub-browser instance.



**get\_response\_body()**

Returns the response body of the last response.

**Raises** `ftw.testbrowser.exceptions.BlankPage`

**Returns** Response body

**Return type** string

**get\_response\_cookies()**

Returns a dict-like object containing the cookies set by the last response.

**Returns** Response cookies dict

**Return type** *dict*

**get\_response\_headers()**

Returns a dict-like object containing the response headers. Returns an empty dict if there is no response.

**Returns** Response header dict

**Return type** *dict*

**get\_url()**

Returns the current url, if we are on a page, or None.

**Returns** the current URL

**Return type** string or None

**make\_request(method, url, data=None, headers=None, referer\_url=None)**

Make a request to the url and return the response body as string.

**Parameters**

- **method** (*string*) – The HTTP request method, all uppercase.
- **url** (*string*) – A full qualified URL.
- **data** (*dict or string*) – A dict with data which is posted using a POST request, or the raw request body as a string.
- **headers** (*dict*) – A dict with custom headers for this request.
- **referer\_url** – The referer URL or None.

**Returns** Status code, reason and body

**Return type** tuple: (int, string, string or stream)

**reload()**

Reloads the current page by redoing the previous request with the same arguments. This applies for GET as well as POST requests.

**Raises** `ftw.testbrowser.exceptions.BlankPage`

**Returns** Status code, reason and body

**Return type** tuple: (int, string, string or stream)

**reset()**

Resets the driver: closes active sessions and resets the internal state.

## Nodes and forms

- *Result set*
- *Node wrappers*
- *Forms, fields and widgets*
- *Tables*

### Result set

**class** `ftw.testbrowser.nodes.Nodes (*args, **kwargs)`

Bases: `list`

A list of HTML nodes. This is used as result set when doing queries (css / xpath) on the HTML document. It acts as a list.

**css** (*\*args, \*\*kwargs*)

Find nodes by a *css* expression which are within one of the nodes in this result set. The resulting nodes are merged into a new result set.

**Parameters** `xpath_selector` (*string*) – The xpath selector.

**Returns** Object containg matches.

**Return type** `ftw.testbrowser.nodes.Nodes`

**find** (*\*args, \*\*kwargs*)

Find a elements by text. The elements are searched within each node of the current result set.

The method looks for: - a link with this text (normalized, including subelements' texts) - a field which has a label with this text - a button which has a label with this text

**Parameters** `text` (*string*) – The text to be looked for.

**Returns** A list of the parent of each node in the current result set.

**Return type** `ftw.testbrowser.nodes.Nodes`

**first**

The first element of the list.

**Raises** `ftw.testbrowser.exceptions.NoElementFound`

**first\_or\_none**

The first element of the list or None if the list is empty.

**getparents** ()

Returns a list of each node's parent.

**Returns** The parent of each node of the current result set.

**Return type** `ftw.testbrowser.nodes.Nodes`

**raw\_text**

A list of all `raw_text` properties of this result set.

**See also:**

`ftw.testbrowser.nodes.NodeWrapper.raw_text()`

**Returns** A list of raw text

**Return type** list of string

#### **text**

A list of all `text` properties of this result set.

**See also:**

`ftw.testbrowser.nodes.NodeWrapper.text()`

**Returns** A list of text

**Return type** list of string

#### **text\_content()**

Returns a list with the text content of each node of this result set.

**Returns** A list of the *text\_content* of each node.

**Return type** list

**See also:**

`ftw.testbrowser.nodes.NodeWrapper.text_content()`

#### **xpath(\*args, \*\*kwargs)**

Find nodes by an *xpath* expression which are within one of the nodes in this result set. The resulting nodes are merged into a new result set.

**Parameters** **xpath\_selector** (*string*) – The xpath selector.

**Returns** Object containg matches.

**Return type** `ftw.testbrowser.nodes.Nodes`

## Node wrappers

Node wrappers wrap the standard *lxml* elements and extend them with some useful methods so that it is nicely integrated in the *ftw.testbrowser* behavior.

**class** `ftw.testbrowser.nodes.NodeWrapper` (*node*, *browser*)

Bases: `object`

*NodeWrapper* is the default wrapper class in which each element will be wrapped for use in *ftw.testbrowser*. It wraps the elements returned by *lxml* and redirects calls if it does not overload them.

There are more specific node wrapper classes for some elements.

#### **browser**

The current browser instance.

#### **classes**

A list of css-classes of this element.

#### **contains** (*other*)

Test whether the passed *other* node is contained in the current node.

**Parameters** **other** (`ftw.testbrowser.nodes.NodeWrapper`) – The other node.

**Returns** *True* when *other* is within *self*.

**Return type** boolean

**css** (*css\_selector*)

Find nodes within this node by a *css* selector.

**Parameters** **css\_selector** (*string*) – The CSS selector.

**Returns** Object containing matches.

**Return type** *ftw.testbrowser.nodes.Nodes*

**find** (*text*)

Find an element by text within the current node.

The method looks for: - a link with this text (normalized, including subelements' texts) - a field which has a label with this text - a button which has a label with this text

**Parameters**

- **text** (*string*) – The text to be looked for.
- **within** (*ftw.testbrowser.nodes.NodeWrapper.*) – A node object for limiting the scope of the search.

**Returns** A single node object or *None* if nothing matches.

**Return type** *ftw.testbrowser.nodes.NodeWrapper*

**innerHTML**

The unmodified HTML content of the current node. The HTML-Tag of the current node is not included.

**Returns** HTML

**Return type** unicode

**iterlinks** (*\*args, \*\*kwargs*)

Iterate over all links in this node. Each link is represented as a tuple with *node*, *attribute*, *link*, *pos*.

**normalized\_innerHTML**

The whitespace-normalized HTML content of the current node. The HTML-Tag of the current node is not included. All series of whitespaces (including non-breaking spaces) are replaced with a single space.

**Returns** HTML

**Return type** unicode

**normalized\_outerHTML**

The whitespace-normalized HTML of the current node and its children. The HTML-Tag of the current node is included. All series of whitespaces (including non-breaking spaces) are replaced with a single space.

**Returns** HTML

**Return type** unicode

**outerHTML**

The whitespace-normalized HTML of the current node and its children. The HTML-Tag of the current node is included.

**Returns** HTML

**Return type** unicode

**parent** (*css=None, xpath=None*)

Find the nearest parent which (optionally) does match a *css* or *xpath* selector.

If *parent* is called without an argument the first parent is returned.

Examples:

```
browser.css('.foo > .bar').first.parent('#content')
# equals
browser.css('.foo > .bar').first.parent(xpath='*[@id="content"]')
```

**Parameters**

- **css** (*string*) – The css selector.
- **xpath** (*string*) – The xpath selector.

**Returns** The parent node.

**Return type** *ftw.testbrowser.nodes.NodeWrapper*

**raw\_text**

The original lxml raw text of this node.

**Returns** Original lxml raw text.

**Return type** unicode

**text**

Returns the whitespace-normalized text of the current node. This includes the text of each node within this node recursively. All whitespaces are reduced to a single space each, including newlines within the text.

HTML line breaks (`<br />`) are turned into a single newline and paragraphs (`<p></p>`) and with two newlines, although the end of the string is stripped.

For having the original lxml raw text, use `raw_text`. .. seealso: *ftw.testbrowser.nodes.NodeWrapper.raw\_text()*

**Returns** The whitespace normalized text content.

**Return type** unicode

**text\_content()**

Returns the text content of the current node, including the text content of each containing node recursively.

**Returns** The text content.

**Return type** unicode

**within** (*container*)

Test whether the passed *other* node contains the current node.

**Parameters** **other** (*ftw.testbrowser.nodes.NodeWrapper*) – The other node.

**Returns** *True* when *self* is within *other*.

**Return type** boolean

**xpath** (*xpath\_selector*, *query\_info=None*)

Find nodes within this node by a *css* selector.

**Parameters** **css\_selector** (*string*) – The CSS selector.

**Returns** Object containing matches.

**Return type** *ftw.testbrowser.nodes.Nodes*

**class** *ftw.testbrowser.nodes.LinkNode* (*node*, *browser*)

Bases: *ftw.testbrowser.nodes.NodeWrapper*

Wraps an `<a>` node.

**click()**

Clicks on the link, which opens the target in the current browser.

**class** `ftw.testbrowser.nodes.DefinitionListNode` (*node*, *browser*)

Bases: `ftw.testbrowser.nodes.NodeWrapper`

Wrapps a `<dl>` node.

**definitions**

Returns the normalized text of each `<dd>`-tag of this definition list.

**Returns** A list of text of each `<dd>`-node.

**Return type** list of unicode

**items()**

Returns a mapping (list with tuples) from `<dt>`-tags to `<dd>`-tags of this definition list.

**Returns** a dict where the key is the `<dt>`-node and the value is the `<dd>`-node.

**Return type** *dict*

**items\_text()**

Returns a terms (`<dt>`) to definition (`<dd>`) mapping as list with tuples, each as normalized text.

**Returns** key is the text of the `<dt>`-node, value is the text of the `<dd>`-node.

**Return type** *dict*

**keys()**

Returns all `<dt>`-tags which are direct children of this definition list.

**Returns** A list of `<dt>`-tags.

**Return type** `ftw.testbrowser.nodes.Nodes`

**terms**

Returns the normalized text of each `<dt>`-tag of this definition list.

**Returns** A list of text of each `<dt>`-node.

**Return type** list of unicode

**text\_to\_nodes()**

Returns a dict with a mapping of text-terms to `<dd>`-nodes.

**Returns** key is the text of the `<dt>`-node, value is the `<dd>`-node.

**Return type** *dict*

**values()**

Returns all `<dd>`-tags which are direct children of this definition list.

**Returns** A list of `<dd>`-tags.

**Return type** `ftw.testbrowser.nodes.Nodes`

## Forms, fields and widgets

### Tables

**class** `ftw.testbrowser.table.Table` (*node*, *browser*)

Bases: `ftw.testbrowser.nodes.NodeWrapper`

Represents a table tag.

**body\_rows**

All body rows of this table. Body rows are those rows which are neither heading rows nor footer rows.

**See also:**

`ftw.testbrowser.table.Table.head_rows()`, `ftw.testbrowser.table.Table.foot_rows()`

**Returns** A list of body rows which are part of this table.

**Return type** `ftw.testbrowser.nodes.Nodes`

**cells**

All cells of this table.

**Returns** A list of cells which are part of this table.

**Return type** `ftw.testbrowser.nodes.Nodes`

**column** (*index\_or\_titles*, *head=True*, *body=True*, *foot=True*, *head\_offset=0*, *as\_text=True*)

Returns a list of values of a specific column. The column may be identified by its index (integer) or by the title (string).

**Parameters**

- **index\_or\_titles** (*int or string or list of strings*) – Index or title of column
- **head** (boolean (Default: `True`)) – Include head rows.
- **body** (boolean (Default: `True`)) – Include body rows.
- **foot** (boolean (Default: `True`)) – Include foot rows.
- **head\_offset** (int (Default: `0`)) – Offset for the header for removing header rows.
- **as\_text** (Boolean (Default: `True`)) – Converts cell values to text.

**Returns** A list of lists of texts.

**Return type** list

**dicts** (*body=True*, *foot=True*, *head\_offset=0*, *as\_text=True*)

Returns a list of dicts, where each dict is a row (of either table body or table foot). The keys of the row dicts are the table headings and the values are the cell texts. Cells with colspan are repeated.

**Parameters**

- **body** (boolean (Default: `True`)) – Include body rows.
- **foot** (boolean (Default: `True`)) – Include foot rows.
- **head\_offset** (int (Default: `0`)) – Offset for the header for removing header rows.
- **as\_text** (Boolean (Default: `True`)) – Converts cell values to text.

**Returns** A list of lists of texts.

**Return type** list

**filter\_unfamiliar**s (*nodes*)

Returns all nodes from the *nodes* list which are part of this table, filtering all other nodes (unfamiliar).

**Parameters** **nodes** – The list of nodes to filter.

**Returns** The filtered list of nodes.

**Return type** `ftw.testbrowser.nodes.Nodes`

**find**(*text*)

Find a cell of this table by text. When nothing is found, it falls back to the default `find` behavior.

**See also:**

`ftw.testbrowser.nodes.NodeWrapper.find()`

**Parameters** **text** (*string*) – The text to be looked for.

**Returns** A single node object or *None* if nothing matches.

**Return type** `ftw.testbrowser.nodes.NodeWrapper`

**foot\_rows**

All footer rows of this table. Footer rows are those rows (`tr`) which are within the `tfoot` tag.

**Returns** A list of footer rows.

**Return type** `ftw.testbrowser.nodes.Nodes`

**get\_rows** (*head=False, body=False, foot=False, head\_offset=0*)

Returns merged head, body or foot rows. Set the keyword arguments to `True` for selecting the type of rows.

**Parameters**

- **head** (boolean (Default: `False`)) – Selects head rows.
- **body** (boolean (Default: `False`)) – Selects body rows.
- **foot** (boolean (Default: `False`)) – Selects foot rows.
- **head\_offset** (int (Default: `0`)) – Offset for the header for removing header rows.

**Returns** A list of rows which are part of this table.

**Return type** `ftw.testbrowser.nodes.Nodes`

**get\_titles** (*head\_offset=0*)

Returns the titles (thead) of the table. If there are multiple table head rows, the cells of the rows are merged per column (with newline as separator).

**Parameters** **head\_offset** (int (Default: `0`)) – Offset for the header for removing header rows.

**Returns** A list of table head texts per column.

**Return type** `list`

**head\_rows**

All heading rows of this table. Heading rows are those rows (`tr`) which are within the `thead` tag.

**Returns** A list of heading rows.

**Return type** `ftw.testbrowser.nodes.Nodes`

**is\_familiar** (*node*)

Returns `True` when *node* is a component of the this table. Returns `False` when *node* is a table component but is part of a nested table.

**Parameters** **node** (`ftw.testbrowser.nodes.NodeWrapper`) – The node to check.

**Returns** whether *node* is part of this table

**Return type** `boolean`



**lists** (*head=True, body=True, foot=True, head\_offset=0, as\_text=True*)

Returns a list of lists, where each list represents a row and contains the texts of the cells. Cells with colspan are repeated (padding) so that row lengths are equal.

**Parameters**

- **head** (boolean (Default: True)) – Include head rows.
- **body** (boolean (Default: True)) – Include body rows.
- **foot** (boolean (Default: True)) – Include foot rows.
- **head\_offset** (int (Default: 0)) – Offset for the header for removing header rows.
- **as\_text** (Boolean (Default: True)) – Converts cell values to text.

**Returns** A list of lists of texts.

**Return type** list

**rows**

All rows of this table.

**Returns** A list of rows which are part of this table.

**Return type** *ftw.testbrowser.nodes.Nodes*

**titles**

Returns the titles (thead) of the table. If there are multiple table head rows, the cells of the rows are merged per column (with newline as separator).

**Returns** A list of table head texts per column.

**Return type** list

**class** *ftw.testbrowser.table.TableCell* (*node, browser*)

Bases: *ftw.testbrowser.table.TableComponent*

Represents a table cell (td or th).

**row**

Returns the row (tr node) of this cell.

**Returns** The row node.

**Return type** *ftw.testbrowser.table.TableRow*

**class** *ftw.testbrowser.table.TableComponent* (*node, browser*)

Bases: *ftw.testbrowser.nodes.NodeWrapper*

Represents any component of a table tag. This includes: 'colgroup', 'col', 'thead', 'tbody', 'tfoot', 'tr', 'td', 'th'

**table**

Returns the table of which this button is parent. It returns the first table node if it is a nested table.

**Returns** the table node

**Return type** *ftw.testbrowser.table.Table*

**class** *ftw.testbrowser.table.TableRow* (*node, browser*)

Bases: *ftw.testbrowser.table.TableComponent*

Represents a table row (tr).

**cells**

The cell nodes of this row.

**Returns** A Node list of cell nodes.

**Return type** `ftw.testbrowser.nodes.Nodes`

**dict ()**

Returns this row as dict. The keys of the dict are the column titles of the table, the values are the cell texts of this row.

**Returns** A dict with the cell texts.

**Return type** `dict`

`ftw.testbrowser.table.colspan_padded_text (row)`

Returns a list with the `normalized_text` of each cell of the `row`, but adds empty padding-cells for cells with a `colspan`.

**Parameters** `node` (`ftw.testbrowser.nodes.TableRow`) – The row node.

**Returns** A list of cell texts

**Return type** `list`

## Page objects

- *Plone page object*
- *Factories menu page object*
- *Status messages page object*
- *dexterity page object*
- *z3cform page object*

### Plone page object

`ftw.testbrowser.pages.plone.document_description (browser=<ftw.browser.core.Browser instance>)`

Returns the whitespace-normalized document description of the current page or None.

`ftw.testbrowser.pages.plone.first_heading (browser=<ftw.browser.core.Browser instance>)`

Returns the whitespace-normalized first heading of the current page.

`ftw.testbrowser.pages.plone.logged_in (browser=<ftw.browser.core.Browser instance>)`

If a user is logged in in the current browser session (last request), it returns the user-ID, otherwise False.

`ftw.testbrowser.pages.plone.portal_type (browser=<ftw.browser.core.Browser instance>)`

Returns the current content type, extracted from the body css classes.

`ftw.testbrowser.pages.plone.view (browser=<ftw.browser.core.Browser instance>)`

Returns the view, taken from the template class, of the current page.

`ftw.testbrowser.pages.plone.view_and_portal_type (browser=<ftw.browser.core.Browser instance>)`

Returns a tuple of the view and the content type, both taken from the body css classes.

## Factories menu page object

`ftw.testbrowser.pages.factoriesmenu.add` (*type\_name*, *browser=<ftw.browser.core.Browser instance>*)

Clicks on the add-link in the factories menu for the passed type name. The type name is the literal link label. This opens the add form for this type.

**Parameters** *type\_name* (*string*) – The name (label) of the type to add.

`ftw.testbrowser.pages.factoriesmenu.addable_types` (*browser=<ftw.browser.core.Browser instance>*)

Returns a list of addable types. Each addable types is the link label in the factories menu.

`ftw.testbrowser.pages.factoriesmenu.menu` (*browser=<ftw.browser.core.Browser instance>*)

Returns the factories menu container node or None if it is not visible.

`ftw.testbrowser.pages.factoriesmenu.visible` (*browser=<ftw.browser.core.Browser instance>*)

Returns True when the factories menu is visible on the current page.

## Status messages page object

`ftw.testbrowser.pages.statusmessages.as_string` (*filter\_=None*)

All status messages as string instead of dict, so that it can be used for formatting assertion errors. Pass a type (“info”, “warning” or “error”) for filter\_ing the messages.

`ftw.testbrowser.pages.statusmessages.assert_message` (*text*, *browser=<ftw.browser.core.Browser instance>*)

Assert that a status message is visible.

`ftw.testbrowser.pages.statusmessages.assert_no_error_messages` (*browser=<ftw.browser.core.Browser instance>*)

Assert that there are no error messages.

`ftw.testbrowser.pages.statusmessages.assert_no_messages` (*browser=<ftw.browser.core.Browser instance>*)

Assert that there are no status messages at all.

`ftw.testbrowser.pages.statusmessages.error_messages` (*browser=<ftw.browser.core.Browser instance>*)

Returns all “error” statusmessages.

`ftw.testbrowser.pages.statusmessages.info_messages` (*browser=<ftw.browser.core.Browser instance>*)

Returns all “info” statusmessages.

`ftw.testbrowser.pages.statusmessages.messages` (*browser=<ftw.browser.core.Browser instance>*)

Returns a dict with lists of status messages (normalized text) for “info”, “warning” and “error”.

`ftw.testbrowser.pages.statusmessages.warning_messages` (*browser=<ftw.browser.core.Browser instance>*)

Returns all “warning” statusmessages.

## dexterity page object

`ftw.testbrowser.pages.dexterity.erroneous_fields` (*browser=<ftw.browser.core.Browser instance>*)

Returns a mapping of erroneous fields (key is label or name of the field) to a list of error messages for the fields on a dexterity add and edit forms (*form#form*).

**Returns** A dict of erroneous fields with error messages.

**Return type** *dict*

## z3cform page object

`ftw.testbrowser.pages.z3cform.erroneous_fields(form)`

Returns a mapping of erroneous fields (key is label or name of the field) to a list of error messages for the fields on the form passed as argument.

**Parameters** **form** (`ftw.testbrowser.form.Form`) – The form node to check for errors.

**Returns** A dict of erroneous fields with error messages.

**Return type** *dict*

## Exceptions

**exception** `ftw.testbrowser.exceptions.AmbiguousFormFields`

Bases: `ftw.testbrowser.exceptions.BrowserException`

Trying to change fields over multiple forms is not possible.

**exception** `ftw.testbrowser.exceptions.BlankPage(message='')`

Bases: `ftw.testbrowser.exceptions.BrowserException`

The browser is on a blank page.

**exception** `ftw.testbrowser.exceptions.BrowserException`

Bases: `exceptions.Exception`

`ftw.testbrowser` exception base class.

**exception** `ftw.testbrowser.exceptions.BrowserNotSetUpException`

Bases: `ftw.testbrowser.exceptions.BrowserException`

The browser is not set up properly. Use the browser as a context manager with the “with” statement.

**exception** `ftw.testbrowser.exceptions.ContextNotFound(message=None)`

Bases: `ftw.testbrowser.exceptions.BrowserException`

When trying to access a context but the current page has no context information, this exception is raised.

**exception** `ftw.testbrowser.exceptions.FormFieldNotFound(label_or_name, labels=None)`

Bases: `ftw.testbrowser.exceptions.BrowserException`

Could not find a form field.

**exception** `ftw.testbrowser.exceptions.HTTPClientError(status_code, status_reason)`

Bases: `ftw.testbrowser.exceptions.HTTPError`

The request caused a client error with status codes 400-499.

### Variables

- **`status_code`** – The status code number, e.g. 404
- **`status_reason`** – The status reason, e.g. "Not Found"

**exception** `ftw.testbrowser.exceptions.HTTPError(status_code, status_reason)`

Bases: `exceptions.IOError`

The request has failed.

#### Variables

- **`status_code`** – The status code number
- **`status_reason`** – The status reason.

**exception** `ftw.testbrowser.exceptions.HTTPServerError(status_code, status_reason)`

Bases: `ftw.testbrowser.exceptions.HTTPError`

The request caused a server error with status codes 500-599.

#### Variables

- **`status_code`** – The status code number, e.g. 500
- **`status_reason`** – The status reason, e.g. "Internal Server Error"

**exception** `ftw.testbrowser.exceptions.NoElementFound(query_info=None)`

Bases: `ftw.testbrowser.exceptions.BrowserException`

Empty result set has no elements.

**exception** `ftw.testbrowser.exceptions.OnlyOneValueAllowed`

Bases: `ftw.testbrowser.exceptions.BrowserException`

The field or widget does not allow to set multiple values.

**exception** `ftw.testbrowser.exceptions.OptionsNotFound(field_label, options, labels=None)`

Bases: `ftw.testbrowser.exceptions.BrowserException`

Could not find the options for a widget.

**exception** `ftw.testbrowser.exceptions.ZServerRequired`

Bases: `ftw.testbrowser.exceptions.BrowserException`

The requests driver can only be used with a running ZServer. Use the `plone.app.testing.PLONE_ZSERVER` testing layer.



### 1.22.2 (2017-04-28)

- `HTTPError`: include code and reason in exception. [jone]
- Docs: Fix wrong `expect_http_error` argument names. [jone]

### 1.22.1 (2017-04-28)

- Docs: switch to RTD, update URLs. [jone]
- Docs: Switch to RTD Sphinx theme. [lgraf]

### 1.22.0 (2017-04-28)

- Forbid setting of “x-zope-handle-errors” header. [jone]
- Add an option `browser.exception_bubbling`, disabled by default. [jone]
- Mechanize: no longer disable “x-zope-handle-errors”. [jone]
- Introduce `browser.expect_http_error()` context manager. [jone]
- Add an option `browser.raise_http_errors`, enabled by default. [jone]
- Raise `HTTPClientError` and `HTTPServerError` by default. [jone]
- Introduce `browser.status_reason`. [jone]
- Introduce `browser.status_code`. [jone]

## 1.21.0 (2017-04-19)

- Make `zope.globalrequest` support optional. [jone]
- Add testing layers for setting the default driver. [jone]
- Add `default_driver` option to the driver. [jone]
- Refactoring: introduce request drivers. [jone]

## 1.20.0 (2017-04-10)

- Add Support for Button tag. [tschanzt]
- No longer test with Archetypes, test only with dexterity. [jone]
- Support latest Plone 4.3.x release. [mathias.leimgruber]

## 1.19.3 (2016-07-25)

- Declare some previously missing test requirements. [lgraf]
- Declare previously missing dependency on `zope.globalrequest` (introduced in #35). [lgraf]

## 1.19.2 (2016-06-27)

- Preserve the request of `zope.globalrequest` when opening pages with mechanize. [deiferni]
- Also provide advice for available options in exception message. [lgraf]

## 1.19.1 (2015-08-20)

- Preserve radio-button input when filling forms with radio buttons. [deiferni]

## 1.19.0 (2015-07-31)

- Implement `browser.click_on(tex)` short cut for clicking links. [jone]
- Fix encoding error in assertion message when selecting a missing select option. [mbaechtold]

## 1.18.1 (2015-07-23)

- Fix GET form submission to actually submit it with GET. [jone]



## 1.18.0 (2015-07-22)

- Table: add new `column` method for getting all cells of a column. [jone]

## 1.17.0 (2015-07-22)

- Add support for filling `collective.z3cform.datagridfield`. [jone, mbaechtold]

## 1.16.1 (2015-07-13)

- Autocomplete widget: extract URL from javascript. [jone]

## 1.16.0 (2015-07-08)

- Add image upload widget support (archetypes and dexterity). [jone]

## 1.15.0 (2015-05-07)

- Parse XML responses with XML parser instead of HTML parser. New methods for parsing the response: `parse_as_html`, `parse_as_xml` and `parse`. [jone]
- Add browser properties `contenttype`, `mimetype` and `encoding`. [jone]

## 1.14.6 (2015-04-17)

- Use `cssselect` in favor of `lxml.cssselect`. This allows us to use `lxml >= 3`. [jone]
- Added tests for z3c date fields. [phgross]

## 1.14.5 (2015-01-30)

- AutocompleteWidget: Drop query string from base URL when building query URL. [lgraf]

## 1.14.4 (2014-10-03)

- Widgets: test for sequence widget after testing for autocomplete widgets. Some widgets match both, autocomplete and sequence widgets. In this case we want to have the autocomplete widget. [jone]

## 1.14.3 (2014-10-02)

- Fix error with textarea tags without id-attributes. [jone]

## 1.14.2 (2014-09-29)

- Fix an issue with relative urls. [jone, deiferni]

## 1.14.1 (2014-09-26)

- Set the HTTP `REFERER` header correctly. [jone]

## 1.14.0 (2014-09-26)

- Add `folder_contents` page object. [jone]
- Update table methods with keyword arguments:
  - `head_offset`: used for stripping rows from the header
  - `as_text`: set to `False` for getting cell nodes

[jone]

## 1.13.4 (2014-09-22)

- Filling selects: verbose error message when option not found. The available options are now included in the message. [jone]

## 1.13.3 (2014-09-02)

- `Node.text`: remove multiple spaces in a row caused by nesting. [jone]

## 1.13.2 (2014-08-06)

- Fix problems when filling forms which have checked checkbox. [phgross]

## 1.13.1 (2014-07-15)

- Fix encoding problem on binary file uploads. [jone]

## 1.13.0 (2014-06-12)

- Add a Dexterity namedfile upload widget. [lgraf]

### 1.12.4 (2014-05-30)

- Fix python 2.6 support. [jone]

### 1.12.3 (2014-05-30)

- Fix z3cform choice collection widget to support Plone < 4.3. [jone]

### 1.12.2 (2014-05-29)

- Fix z3cform choice collection widget submit value. The widget creates hidden input fields on submit. [jone]

### 1.12.1 (2014-05-29)

- Fix error in z3cform choice collection widget when using paths. [jone]

### 1.12.0 (2014-05-29)

- Add a z3cform choice collection widget. This is used for z3cform List fields with Choice value\_type. [jone]
- Add select field node wrapper with methods for getting available options. [jone]

### 1.11.4 (2014-05-22)

- browser.open(data): support multiple values for the same data name. The values can either be passed as a dict with lists as values or as a sequence of two-element tuples. [jone]

### 1.11.3 (2014-05-19)

- Fix browser.url regression when the previous request raised an exception. [jone]

### 1.11.2 (2014-05-17)

- Make NoElementFound exception message more verbose. When a *.first* on an empty result set raises a NoElementFound exception, the exception message now includes the original query. [jone]

### 1.11.1 (2014-05-17)

- Fix browser cloning regression in autocomplete widget “query”. The cloned browser did no longer have the same headers / cookies, causing authenticated access to be no longer possible. [jone]
- New browser.clone method for creating browser clones. [jone]
- Update standard page objects to accept browser instance as keyword arguments. This makes it possible to use the page objects with non-standard browsers. [jone]

### 1.11.0 (2014-05-14)

- New browser.base\_url property, respecting the <base> tag. [jone]
- New browser.debug method, opening the current page in your real browser. [jone]
- New browser.on method, a lazy variant of browser.open. [jone]
- New browser.reload method, reloading the current page. [jone]
- Improve requests library support:
  - Support choosing requests library, make Zope app setup optional. When no Zope app is set up, the `requests` library is set as default, otherwise mechanize.
  - Support form submitting with requests library.
  - Improve login and header support for requests library requests.
  - Add browser.cookies support for requests library requests.
  - Use requests library sessions, so that cookies and headers persist.
  - Automatically use “POST” when data is submitted.
- [jone]
- Login improvements:
  - Support passing member objects to browser.login(). The users / members are still expected to have TEST\_USER\_PASSWORD as password.
  - Refactor login to use the new request header methods.
- [jone]
- Add request header methods for managing permanent request headers:
  - browser.append\_request\_header
  - browser.replace\_request\_header
  - browser.clear\_request\_header
- [jone]
- Refactor Form: eliminate class methods and do not use the global browser. This improves form support when running multiple browser instances concurrently.
  - Form.field\_labels (class method) is now an instance property and public API.
  - Form.find\_widget\_in\_form (class method) is removed and replaced with Form.find\_widget (instance method).
  - Form.find\_field\_in\_form (class method) is removed and replaced with Form.get\_field (instance method).

- `Form.find_form_element_by_label_or_name` (class method) is removed and replaced with `browser.find_form_by_field`.
- `Form.find_form_by_labels_or_names` (class method) is removed and replaced with `browser.find_form_by_fields`.
- New `Form.action_url` property with the full qualified action URL.
- Fix form action URL bug when using relative paths in combination with document-style base url.

[jone]

- Fix wrapping `input.label` - this did only work for a part of field types. [jone]
- Fix `UnicodeDecodeError` in node string representation. [mathias.leimgruber]

## 1.10.0 (2014-03-19)

- Add `NodeWrapper`-properties:
  - `innerHTML`
  - `normalized_innerHTML`
  - `outerHTML`
  - `normalized_outerHTML`

[jone, elioschmutz]

## 1.9.0 (2014-03-18)

- Add support for filling `AT MultiSelectionWidget`. [jone]

## 1.8.0 (2014-03-04)

- Add a `context` property to the browser with the current context (`Plone` object) of the currently viewed page. [jone]

## 1.7.3 (2014-02-28)

- Fix encoding problem in factories menu page object. The problem occurred when having a “Restrictions...” entry in the menu. [jone]

## 1.7.2 (2014-02-25)

- Form: Support checking checkboxes without a value. Checkboxes without a value attribute are invalid but common. The default browser behavior is to fallback to the value “on”. [jone]

## 1.7.0 (2014-02-03)

- ContentTreeWidget: support filling objects as values. [jone]

## 1.6.1 (2014-01-31)

- Implement *logout* on browser, logout before each login. [jone]

## 1.6.0 (2014-01-29)

- Add *cookies* property to the browser. [jone]

## 1.5.3 (2014-01-28)

- Fix multiple wrapping on browser.forms. [jone]

## 1.5.2 (2014-01-17)

- Implement archetypes datetime widget form filling. [jone]

## 1.5.1 (2014-01-07)

- Fix encoding problems when posting unicode data directly with Browser.open. [jone]
- Support form filling with bytestrings. [jone]
- Fix form filling with umlauts. [jone]
- Fix form fill for single select fields. [jone]

## 1.5.0 (2014-01-03)

- Implement AT file upload widget, because the label does not work. [jone]
- Implement file uploads. [jone]
- Add “headers” property on the browser. [jone]

## 1.4.0 (2013-12-27)

- Deprecate *normalized\_text* method, replace it with *text* property. The *text* property is more intuitive and easier to remember. The *text* property has almost the same result as *normalized\_text*, but it represents `<br/>` and `<p>` with single and double newlines respectively. *text* is to be the lxml *text* property, which contained the raw, non-recursive text of the current node and is now available as *raw\_text* property. [jone]

- `open_html`: make debugging file contain passed HTML. [jone]
- Sequence widget: implement custom form filling with label support and validation. [jone]
- Sequence widget: add additional properties with inputs and options. [jone]

### 1.3.0 (2013-12-11)

- Implement “query” method on autocomplete widget. [jone]
- Implement form fill for z3cform datetime widget. [jone]
- Fix setting attributes on nodes when wrapped with NodeWrapper. [jone]
- Implement form fill for z3cform autocomplete widgets. [jone]
- Implement form fill for z3cform sequence widgets. [jone]
- Add `webdav` method for doing WebDAV requests with a ZServer. [jone]

### 1.2.0 (2013-11-24)

- Add `open_html` method to browser object, allowing to pass in HTML directly. [jone]

### 1.1.0 (2013-11-07)

- Add dexterity page object, refactor z3cform page object. [jone]
- Add table nodes with helpers for table testing. [jone]
- Merging “Nodes” lists returns a new “Nodes” list, not a “list”. [jone]
- Show containing elements in string representation of “Nodes” list. [jone]
- Fix direct child selection with CSS (`node.css(">tag")`). [jone]
- Add a `recursive` option to `normalized_text`. [jone]

### 1.0.2 (2013-10-31)

- When normalizing whitespaces, do also replace non-breaking spaces. [jone]

### 1.0.1 (2013-10-31)

- Add `first_or_none` property to Nodes. [jone]

### 1.0.0 (2013-10-28)

- Initial implementation. [jone]





## CHAPTER 6

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### Links

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- Source code on github: <https://github.com/4teamwork/ftw.testbrowser>
- Releases on pypi: <https://pypi.python.org/pypi/ftw.testbrowser>
- Issues on github: <https://github.com/4teamwork/ftw.testbrowser/issues>
- Continuous integration: <https://jenkins.4teamwork.ch/search?q=ftw.testbrowser>



## CHAPTER 7

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