# Package: webdriver (via r-universe)

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**Title** 'WebDriver' Client for 'PhantomJS'

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**Description** A client for the 'WebDriver' 'API'. It allows driving a (probably headless) web browser, and can be used to test web applications, including 'Shiny' apps. In theory it works with any 'WebDriver' implementation, but it was only tested with 'PhantomJS'.

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**LazyData** true

**URL** https://github.com/rstudio/webdriver

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**RoxygenNote** 7.1.2

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**Suggests** covr, pingr, rprojroot, servr, testthat

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**SystemRequirements** PhantomJS (http://phantomjs.org/)

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`Element` *HTML element*

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## Description

HTML element

## Usage

```
e <- s$findElement(css = NULL, linkText = NULL,
    partialLinkText = NULL, xpath = NULL)

e$findElement(css = NULL, linkText = NULL,
    partialLinkText = NULL, xpath = NULL)
e$findElements(css = NULL, linkText = NULL,
    partialLinkText = NULL, xpath = NULL)

e$isSelected()
e$getValue()
e$setValue(value)
e$getAttribute(name)
e$getClass()
e$getCssValue(name)
e$getText()
e$getName()
e$getData(name)
e$getRect()
e$isEnabled()
e$click()
e$clear()
e$sendKeys(...)
e$moveMouseTo(xoffset = NULL, yoffset = NULL)

e$executeScript(script, ...)
e$executeScriptAsync(script, ...)
```

## Arguments

**e** An `Element` object.

**s** A `Session` object.

**css** Css selector to find an HTML element.

**linkText** Find <a> HTML elements based on their `innerText`.

**partialLinkText** Find <a> HTML elements based on their `innerText`. It uses partial matching.

**xpath** Find HTML elements using XPath expressions.

**name** String scalar, named of attribute, property or css key. For `getData`, the key of the data attribute.

**xoffset** Horizontal offset for mouse movement, relative to the position of the element. If at least of of `xoffset` and `yoffset` is `NULL`, then they are ignored.

**yoffset** Vertical offset for mouse movement, relative to the position of the element. If at least of of `xoffset` and `yoffset` is `NULL`, then they are ignored.

**value** Value to set, a character string.

**...** For `sendKeys` the keys to send, see `key`. For `executeScript` and `executeScriptAsync` argument to supply to the script.

## Details

To create `Element` objects, you need to use the `findElement` (or `findElement`) method of a `Session` object.

`e$findElement()` finds the *next* HTML element from the current one. You need to specify one of the `css`, `linkText`, `partialLinkText` and `xpath` arguments. It returns a new `Element` object.

`e$findElements()` finds all matching HTML elements starting from the current element. You need to specify one of the `css`, `linkText`, `partialLinkText` and `xpath` arguments. It returns a list of newly created `Element` objects.

`e$isSelected()` returns `TRUE` is the element is currently selected, and `FALSE` otherwise.

`e$getValue()` returns the value of an input element, it is a shorthand for `e$getAttribute("value")`.

`e$setValue()` sets the value of an input element, it is essentially equivalent to sending keys via `e$sendKeys()`.

`e$getAttribute()` queries an arbitrary HTML attribute. It is does not exist, `NULL` is returned.

`e$getClass()` uses `e$getAttribute` to parse the 'class' attribute into a character vector.

`e$getCssValue()` queries a CSS property of an element.

`e$getText()` returns the `innerText` on an element.

`e$getName()` returns the tag name of an element.

`e$getData()` is a shorthand for querying `data-*` attributes.

`e$getRect()` returns the 'rectangle' of an element. It is named list with components `x`, `y`, `height` and `width`.

`e$isEnabled()` returns `TRUE` if the element is enabled, `FALSE` otherwise.

`e$click()` scrolls the element into view, and clicks the in-view centre point of it.

`e$clear()` scrolls the element into view, and then attempts to clear its value, checkedness or text content.

`e$sendKeys()` scrolls the form control element into view, and sends the provided keys to it. See `key` for a list of special keys that can be sent.

`e$uploadFile()` uploads a file to a `<input type="file">` element. The `filename` argument can contain a single filename, or multiple filenames, for file inputs that can take multiple files.

`e$moveMouseTo()` moves the mouse cursor to the element, with the specified offsets. If one or both offsets are `NULL`, then it places the cursor on the center of the element. If the element is not on the screen, then is scrolls it into the screen first.

`e$executeScript()` and `e$executeScriptAsync()` call the method of the same name on the `Session` object. The first argument of the script (`arguments[0]`) will always hold the element object itself.

---

`install_phantomjs` *Install PhantomJS*

---

## Description

Download the zip package, unzip it, and copy the executable to a system directory in which **webdriver** can look for the PhantomJS executable.

## Usage

```
install_phantomjs(
  version = "2.1.1",
  baseURL = "https://github.com/wch/webshot/releases/download/v0.3.1/",
  quiet = FALSE
)
```

## Arguments

| | |
|---|---|
| `version` | The version number of PhantomJS. |
| `baseURL` | The base URL for the location of PhantomJS binaries for download. If the default download site is unavailable, you may specify an alternative mirror, such as `"https://bitbucket.org/ariya/phantomjs/downloads/"`. |
| `quiet` | logical. If it is `TRUE`, reduce the amount of output. |

## Details

This function was designed primarily to help Windows users since it is cumbersome to modify the `PATH` variable. Mac OS X users may install PhantomJS via Homebrew. If you download the package from the PhantomJS website instead, please make sure the executable can be found via the `PATH` variable.

On Windows, the directory specified by the environment variable `APPDATA` is used to store '`phantomjs.exe`'. On OS X, the directory '`~/Library/Application Support`' is used. On other platforms (such as

Linux), the directory '~/bin' is used. If these directories are not writable, the directory 'PhantomJS' under the installation directory of the **webdriver** package will be tried. If this directory still fails, you will have to install PhantomJS by yourself.

## Value

NULL (the executable is written to a system directory).

---

key *Special keys, so that we can refer to them with an easier syntax*

---

## Description

Special keys, so that we can refer to them with an easier syntax

## Usage

```
key
```

## Format

An object of class list of length 51.

## Examples

```
## Not run:
el$sendKeys("xyz")
el$sendKeys("x", "y", "z")
el$sendKeys("username", key$enter, "password", key$enter)

## Sending CTRL+A
el$sendKeys(key$control, "a")

## Note that modifier keys (control, alt, shift, meta) are sticky,
## they remain in effect in the rest of the sendKeys() call. E.g.
## this sends CTRL+X and CTRL+S
el$sendKeys(key$control, "x", "s")

## You will need multiple calls to release control and send CTRL+X S
el$sendKeys(key$control, "x")
el$sendKeys("s")

## End(Not run)
```

## run_phantomjs *Start up phantomjs on localhost, and a random port*

### Description

Throws and error if phantom cannot be found, or cannot be started. It works with a timeout of five seconds.

### Usage

```
run_phantomjs(debugLevel = c("INFO", "ERROR", "WARN", "DEBUG"), timeout = 5000)
```

### Arguments

| | |
|---|---|
| debugLevel | Phantom.js debug level, possible values: "INFO", "ERROR", "WARN", "DEBUG". |
| timeout | How long to wait (in milliseconds) for the webdriver connection to be established to the phantomjs process. |

### Value

A list of process, the callr::process object, and port, the local port where phantom is running.

## Session *WebDriver session*

### Description

Drive a headless phantom.js browser via the WebDriver protocol. It needs phantom.js running in WebDriver mode.

### Usage

```
s <- Session$new(host = "127.0.0.1", port = 8910)

s$delete()
s$status()

s$go(url)
s$getUrl()
s$goBack()
s$goForward()
s$refresh()
s$getTitle()
s$getSource()
s$takeScreenshot(file = NULL)
```

```
s$findElement(css = NULL, linkText = NULL,
    partialLinkText = NULL, xpath = NULL)
s$findElements(css = NULL, linkText = NULL,
    partialLinkText = NULL, xpath = NULL)

s$executeScript(script, ...)
s$executeScriptAsync(script, ...)

s$setTimeout(script = NULL, pageLoad = NULL, implicit = NULL)

s$moveMouseTo(xoffset = 0, yoffset = 0)
s$click(button = c("left", "middle", "right"))
s$doubleClick(button = c("left", "middle", "right"))
s$mouseButtonDown(button = c("left", "middle", "right"))
s$mouseButtonUp(button = c("left", "middle", "right"))

s$readLog(type = c("browser", "har"))
s$getLogTypes()

s$waitFor(expr, checkInterval = 100, timeout = 3000)
```

## Arguments

**s** A `Session` object.

**host** Host name of phantom.js.

**port** Port of phantom.js.

**url** URL to nagivate to.

**file** File name to save the screenshot to. If `NULL`, then it will be shown on the R graphics device.

**css** Css selector to find an HTML element.

**linkText** Find HTML elements based on their `innerText`.

**partialLinkText** Find HTML elements based on their `innerText`. It uses partial matching.

**xpath** Find HTML elements using XPath expressions.

**script** For `executeScript` and `executeScriptAsync`. JavaScript code to execute. It will be placed in the body of a function.

**...** Arguments to the script, they will be put in a list called arguments. `Element` objects are automatically transformed to DOM element in JavaScript.

**script** For `setTimeout`. Script execution timeout, in milliseconds. More below.

**pageLoad** Page load timeout, in milliseconds. More below.

**implicit** Implicit wait before calls that find elements, in milliseconds. More below.

**xoffset** Horizontal offset for mouse movement, relative to the current position.

**yoffset** Vertical offset for mouse movement, relative to the current position.

**button** Mouse button. Either one of `"left"`, `"middle"`, `"right"`, or an integer between 1 and 3.

**type** Log type, a character scalar.

**expr** A string scalar containing JavaScript code that evaluates to the condition to wait for.

**checkInterval** How often to check for the condition, in milliseconds.

**timeout** Timeout for the condition, in milliseconds.

## Details

`Session$new()` creates a new WebDriver session.

`s$delete()` deletes a WebDriver session.

`s$status()` returns a status message from the server. It is a named list, and contains version numbers and capabilities.

`s$go()` navigates to the supplied URL.

`s$getUrl()` returns the current URL.

`s$goBack()` is like the web browser's back button. It goes back to the previous page.

`s$goForward()` is like the web browser's forward button.

`s$refresh()` is like the web browser's refresh button.

`s$getTitle()` returns the title of the current page.

`s$getSource()` returns the complete HTML source of a page, in a character scalar.

`s$takeScreenshot()` takes a screenshot of the current page. You can save it to a PNG file with the `file` argument, or show it on the graphics device (if `file` is `NULL`).

`s$findElement()` finds a HTML element using a CSS selector, XPath expression, or the `innerHTML` of the element. If multiple elements match, then the first one is returned. The return value is an `Element` object.

`s$findElements()` finds HTML elements using a CSS selector, XPath expression, or the `innerHTML` of the element. All matching elements are returned in a list of `Element` objects.

`s$executeScript()` executes JavaScript code. It places the code in the body of a function, and then calls the function with the additional arguments. These can be accessed from the function via the `arguments` array. Returned DOM elements are automatically converted to `Element` objects, even if they are inside a list (or list of list, etc.).

`s$executeScriptAsync()` is similar, for asynchronous execution. It place the script in a body of a function, and then calls the function with the additional arguments and a callback function as the last argument. The script must call this callback function when it finishes its work. The first argument passed to the callback function is returned. Returned DOM elements are automatically converted to `Element` objects, even if they are inside a list (or list of list, etc.).

`s$setTimeout()` sets various timeouts. The 'script' timeout specifies a time to wait for scripts to run. The sQuotepage load timeout specifies a time to wait for the page loading to complete. The 'implicit' specifies a time to wait for the implicit element location strategy when locating elements. Their defaults are different in the standard and in Phantom.js. In Phantom.js the 'script' and 'page load' timeouts are set to infinity, and the 'implicit' waiting time is 200ms.

`s$moveMouseTo()` moves the mouse cursor by the specified offsets.

`s$click()` clicks the mouse at its current position, using the specified button.

`s$doubleClick()` emulates a double click with the specified mouse button.

`s$button_down()` emulates pressing the specified mouse button down (and keeping it down).

`s$button_up()` emulates releasing the specified mouse button.

`s$getLogTypes()` returns the log types supported by the server, in a character vector.

`s$readLog()` returns the log messages since the last `readLog` call, in a data frame with columns `timestamp`, `level` and `message`.

`s$waitFor()` waits until a JavaScript expression evaluates to `true`, or a timeout happens. It returns `TRUE` is the expression evaluated to `true`, possible after some waiting. If the expression has a syntax error or a runtime error happens, it returns `NA`.

## See Also

The WebDriver standard at https://w3c.github.io/webdriver/webdriver-spec.html.

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`webdriver` *'WebDriver' Client for 'PhantomJS'*

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## Description

A client for the 'WebDriver' 'API'. It allows driving a (probably headless) web browser, and can be used to test web applications, including 'Shiny' apps. In theory it works with any 'WebDriver' implementation, but it was only tested with 'PhantomJS'.

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`Window` *A browser window*

---

## Description

A browser window

## Usage

```
w <- s$getWindow()
wlist <- s$getAllWindows()

w$close()
w$isActive()
w$switchTo()
w$maximize()
w$getSize()
w$setSize(width, height)
w$getPosition()
w$setPosition(x, y)
```

## Arguments

**s** A Session object.

**w** A Window object.

**wlist** A list of Window objects.

**width** Integer scalar, requested width of the window.

**height** Integer scalar, requested height of the window.

**x** Integer scalar, requested horizontal window position.

**y** Integer scalar, requested vertical window position.

## Details

The getWindow method of a Session object returns the current browser window as a Window object. The getAllWindows method returns a list of window objects, all browser windows.

w$close() closes the window.

w$isActive() returns TRUE if the window is active, FALSE otherwise.

w$switchTo makes the window active.

w$maximize maximizes the window. Currently it sets it to a fixed size.

w$getSize returns the size of the window, in a list with elementh width and height, both integers.

w$setSize sets the size of the window.

w$getPosition returns the position of the window on the screen. Phantom.js being headless, it always returns list(x = 0, y = 0), and it is included to have a complete impelementation of the WebDriver standard.

w$setPosition(x, y) sets the position of the window on the screen. Phantom.js being headless, it has no effect, and it is included to have a complete implementation of the WebDriver standard.

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