

Package ‘shinytest2’

September 6, 2022

Title Testing for Shiny Applications

Version 0.1.1

Description Automated unit testing of Shiny applications through a headless 'Chromium' browser.

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Encoding UTF-8

Language en-US

RoxygenNote 7.2.1

URL <https://github.com/rstudio/shinytest2>

BugReports <https://github.com/rstudio/shinytest2/issues>

VignetteBuilder knitr

Depends testthat (>= 3.1.2)

Imports R6 (>= 2.4.0), chromote (>= 0.1.0), fs, callr, crayon, rlang (>= 0.3.0), checkmate (>= 2.0.0), ellipsis, httr, jsonlite, pingr, rmarkdown, shiny, withr

Suggests diffobj, globals (>= 0.14.0), ggplot2, vdiff (>= 1.0.0), plotly, rstudioapi, shinyWidgets, shinytest (>= 1.5.1), shinyvalidate (>= 0.1.2), showimage, knitr, usethis

Config/Needs/check rstudio/shiny

Config/Needs/website pkgdown, tidyverse/tidytemplate

Config/testthat/edition 3

Collate 'R6-helper.R' 'app-driver-chromote.R' 'app-driver-dir.R' 'app-driver-expect-download.R' 'app-driver-expect-js.R' 'app-driver-expect-screenshot.R' 'app-driver-expect-unique-names.R' 'app-driver-expect-values.R' 'app-driver-get-log.R' 'app-driver-initialize.R' 'app-driver-log-message.R' 'app-driver-message.R' 'app-driver-node.R' 'app-driver-set-inputs.R' 'app-driver-start.R' 'app-driver-stop.R' 'app-driver-upload-file.R' 'app-driver-variant.R' 'app-driver-wait.R' 'app-driver-window.R' 'app-driver.R'

'chromote-methods.R' 'expect-snapshot.R' 'expr-recurse.R'
 'httr.R' 'migrate.R' 'missing-value.R' 'utils.R' 'platform.R'
 'record-test-unique-name.R' 'record-test.R' 'rstudio.R'
 'save-app.R' 'shiny-browser.R' 'shinytest2-logs.R' 'test-app.R'
 'use.R'

NeedsCompilation yes

Author Barret Schloerke [cre, aut] (<<https://orcid.org/0000-0001-9986-114X>>),
 RStudio [cph, fnd],
 Winston Chang [ctb] (Original author to rstudio/shinytest),
 Gábor Csárdi [ctb] (Original author to rstudio/shinytest),
 Hadley Wickham [ctb] (Original author to rstudio/shinytest),
 Mango Solutions [cph, ccp] (Original author to rstudio/shinytest)

Maintainer Barret Schloerke <barret@rstudio.com>

Repository CRAN

Date/Publication 2022-09-06 16:20:02 UTC

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AppDriver *Drive a Shiny application*

Description

This class starts a Shiny app in a new R session, along with **chromote**'s headless browser that can be used to simulate user actions. This provides a full simulation of a Shiny app so that you can test user interactions with a live app.

Methods described below are ordered by perceived popularity. *Expect* methods are grouped next to their corresponding *get* methods.

Vignettes

Please see [Testing in depth](#) for more details about the different expectation methods.

Please see [Robust testing](#) for more details about the cost / benefits for each expectation method.

Test mode

To have your AppDriver retrieve values from your Shiny app, be sure to set `shiny::runApp(test.mode = TRUE)` when running your Shiny app.

If you are deploying your Shiny app where you do not have control over the call to `shiny::runApp()`, you can set `options(shiny.testmode = TRUE)` in a `.Rprofile` file within your Shiny app directory.

Start-up failure

If the app throws an error during initialization, the AppDriver will be stored in `rlang::last_error()$app`. This allows for the "failure to initialize" to be signaled while also allowing for the app to be retrieved after any initialization error has been thrown.

Exporting reactive values

Reactive values from within your Shiny application can be exported using the method: `shiny::exportTestValues()`. This under utilized method exposes internal values of your app without needing to create a corresponding input value or output value.

For example:

```
library(shiny)
shiny_app <- shinyApp(
  fluidPage(
    h1("Pythagorean theorem"),
    numericInput("A", "A", 3),
    numericInput("B", "B", 4),
    verbatimTextOutput("C"),
  ),
  function(input, output) {
    a_squared <- reactive({ req(input$A); input$A * input$A })
    b_squared <- reactive({ req(input$B); input$B * input$B })
    c_squared <- reactive({ a_squared() + b_squared() })
    c_value <- reactive({ sqrt(c_squared()) })
    output$C <- renderText({ c_value() })

    exportTestValues(
      a_squared = { a_squared() },
      b_squared = { b_squared() },
      c_squared = { c_squared() }
    )
  }
)

app <- AppDriver$new(shiny_app)
init_vals <- app$get_values()
str(init_vals)
#> List of 3
#> $ input :List of 2
```

```
#> ..$ A: int 3
#> ..$ B: int 4
#> $ output:List of 1
#> ..$ C: chr "5"
#> $ export:List of 3
#> ..$ a_squared: int 9
#> ..$ b_squared: int 16
#> ..$ c_squared: int 25
```

These exported test values are only exposed when `shiny::runApp(test.mode = TRUE)` is set. **shinytest2** sets this variable when running Shiny based app or document.

testthat wrappers

The two main expectation methods: `$expect_values()` and `$expect_screenshot()` eventually wrap `testthat::expect_snapshot_file()`.

Their underlying logic is similar to:

```
## Expect values
tmpfile <- tempfile(fileext = ".json")
jsonlite::write_json(app$get_values(), tmpfile)
expect_snapshot_file(
  tmpfile,
  variant = app$get_variant(),
  compare = testthat::compare_file_text,
  cran = cran
)
```

```
## Expect screenshot
tmpfile <- tempfile(fileext = ".png")
app$get_screenshot(tmpfile)
expect_snapshot_file(
  tmpfile,
  variant = app$get_variant(),
  compare = testthat::compare_file_binary,
  cran = cran
)
```

To update the snapshot values, you will need to run a variation of `testthat::snapshot_review()`.

Methods

Public methods:

- `AppDriver$new()`
- `AppDriver$view()`
- `AppDriver$click()`
- `AppDriver$set_inputs()`

- AppDriver\$upload_file()
- AppDriver\$expect_values()
- AppDriver\$get_value()
- AppDriver\$get_values()
- AppDriver\$expect_download()
- AppDriver\$get_download()
- AppDriver\$expect_text()
- AppDriver\$get_text()
- AppDriver\$expect_html()
- AppDriver\$get_html()
- AppDriver\$expect_js()
- AppDriver\$get_js()
- AppDriver\$run_js()
- AppDriver\$expect_screenshot()
- AppDriver\$get_screenshot()
- AppDriver\$wait_for_idle()
- AppDriver\$wait_for_value()
- AppDriver\$wait_for_js()
- AppDriver\$expect_unique_names()
- AppDriver\$get_dir()
- AppDriver\$get_url()
- AppDriver\$get_window_size()
- AppDriver\$set_window_size()
- AppDriver\$get_chromote_session()
- AppDriver\$get_variant()
- AppDriver\$get_logs()
- AppDriver\$log_message()
- AppDriver\$stop()

Method new(): Initialize an AppDriver object

Usage:

```
AppDriver$new(
  app_dir = testthat::test_path("../.."),
  ...,
  name = NULL,
  variant = missing_arg(),
  seed = NULL,
  load_timeout = NULL,
  wait = TRUE,
  screenshot_args = missing_arg(),
  expect_values_screenshot_args = TRUE,
  check_names = TRUE,
  view = missing_arg(),
  height = NULL,
```

```

width = NULL,
clean_logs = TRUE,
shiny_args = list(),
render_args = NULL,
options = list()
)

```

Arguments:

`app_dir` Directory containing your Shiny application or a run-time Shiny R Markdown document. By default, it retrieves `test_path(".././")` to allow for interactive and testing usage. A Shiny application URL can be provided, however snapshots will be saved in the current directory.

`...` Must be empty. Allows for parameter expansion.

`name` Prefix value to use when saving testthat snapshot files. Ex: `NAME-001.json`. Name **must** be unique when saving multiple snapshots from within the same testing file. Otherwise, two different AppDriver objects will be referencing the same files.

`variant` If not-NULL, results will be saved in `_snaps/variant/test.md`, so `variant` must be a single string of alphanumeric characters suitable for use as a directory name.

You can use variants to deal with cases where the snapshot output varies and you want to capture and test the variations. Common use cases include variations for operating system, R version, or version of key dependency. For example usage, see `platform_variant()`.

`seed` An optional random seed to use before starting the application. For apps that use R's random number generator, this can make their behavior repeatable.

`load_timeout` How long to wait for the app to load, in ms. This includes the time to start R. Defaults to 10s when running locally and 20s when running on CI.

`wait` If TRUE, `$wait_for_idle(duration = 200, timeout = load_timeout)` will be called once the app has connected a new session, blocking until the Shiny app is idle for 200ms.

`screenshot_args` Default set of arguments to pass in to `chromote::ChromoteSession`'s `$get_screenshot()` method when taking screenshots within `$expect_screenshot()`. To disable screenshots by default, set to FALSE.

`expect_values_screenshot_args` The value for `screenshot_args` when producing a debug screenshot for `$expect_values()`. To disable debug screenshots by default, set to FALSE.

`check_names` Check if widget names are unique once the application initially loads? If duplicate names are found on initialization, a warning will be displayed.

`view` Opens the `ChromoteSession` in an interactive browser tab before attempting to navigate to the Shiny app.

`height, width` Window size to use when opening the `ChromoteSession`. Both height and width values must be non-null values to be used.

`clean_logs` Whether to remove the stdout and stderr Shiny app logs when the AppDriver object is garbage collected.

`shiny_args` A list of options to pass to `shiny::runApp()`. Ex: `list(port = 8080)`.

`render_args` Passed to `rmarkdown::run(render_args=)` for interactive `.Rmds`. Ex: `list(quiet = TRUE)`

`options` A list of `base::options()` to set in the Shiny application's child R process. See `shiny::shinyOptions()` for inspiration. If `shiny.trace = TRUE`, then all WebSocket traffic will be captured by chromote and time-stamped for logging purposes.

Returns: An object with class `AppDriver` and the many methods described in this documentation.

Examples:

```
\dontrun{
# Create an AppDriver from the Shiny app in the current directory
app <- AppDriver()

# Create an AppDriver object from a different Shiny app directory
example_app <- system.file("examples/01_hello", package = "shiny")
app <- AppDriver(example_app)

# Expect consistent initial values
app$expect_values()
}
```

Method `view()`: View the Shiny application

Calls `$view()` on the `ChromoteSession` object to *view* your Shiny application in a Chrome browser.

This method is very helpful for debugging while writing your tests.

Usage:

```
AppDriver$view()
```

Examples:

```
\dontrun{
# Open app in Chrome
app$view()
}
```

Method `click()`: Click an element

Find a Shiny input/output value or DOM CSS selector and click it using the **DOM method** `TAG.click()`.

This method can be used to click input buttons and other elements that need to simulate a click action.

Usage:

```
AppDriver$click(
  input = missing_arg(),
  output = missing_arg(),
  selector = missing_arg(),
  ...
)
```

Arguments:

`input`, `output`, `selector` A name of a Shiny input/output value or a DOM CSS selector. Only one of these may be used.

... If `input` is used, all extra arguments are passed to `$set_inputs(!input := "click", ...)`. This means that the `AppDriver` will wait until an output has been updated within the specified `timeout_`. When clicking any other content, ... must be empty.

Examples:

```
\dontrun{
app_path <- system.file("examples/07_widgets", package = "shiny")
app <- AppDriver$new(app_path)

tmpfile <- write.csv(cars, "cars.csv")
app$upload_file(file1 = tmpfile)
cat(app$get_text("#view"))
app$set_inputs(dataset = "cars", obs = 6)
app$click("update")
cat(app$get_text("#view"))
}
```

Method `set_inputs()`: Set input values

Set Shiny inputs by sending the value to the Chrome browser and programmatically updating the values. Given `wait_ = TRUE`, the method will not return until an output value has been updated.

Usage:

```
AppDriver$set_inputs(
  ...,
  wait_ = TRUE,
  timeout_ = 3 * 1000,
  allow_no_input_binding_ = FALSE,
  priority_ = c("input", "event")
)
```

Arguments:

... Name-value pairs, `component_name_1 = value_1`, `component_name_2 = value_2` etc. Input with name `component_name_1` will be assigned value `value_1`.

`wait_` Wait until all reactive updates have completed?

`timeout_` Amount of time to wait before giving up (milliseconds).

`allow_no_input_binding_` When setting the value of an input, allow it to set the value of an input even if that input does not have an input binding. This is useful to replicate behavior like hovering over a **plotly** plot.

`priority_` Sets the event priority. For expert use only: see <https://shiny.rstudio.com/articles/communicating-with-js.html#values-vs-events> for details.

Examples:

```
\dontrun{
app_path <- system.file("examples/07_widgets", package = "shiny")
app <- AppDriver$new(app_path)
cat(app$get_text("#view"))
app$set_inputs(dataset = "cars", obs = 6)
app$click("update")
cat(app$get_text("#view"))
}
```

Method `upload_file()`: Upload a file

Uploads a file to the specified file input.

Usage:

```
AppDriver$upload_file(..., wait_ = TRUE, timeout_ = 3 * 1000)
```

Arguments:

... Name-path pair, e.g. component_name = file_path. The file located at file_path will be uploaded to file input with name component_name.

wait_ Wait until all reactive updates have completed?

timeout_ Amount of time to wait before giving up (milliseconds).

Examples:

```
\dontrun{
app_path <- system.file("examples/09_upload", package = "shiny")
app <- AppDriver$new(app_path)

# Save example file
tmpfile <- tempfile(fileext = ".csv")
write.csv(cars, tmpfile, row.names = FALSE)

# Upload file to input named: file1
app$upload_file(file1 = tmpfile)
}
```

Method expect_values(): Expect input, output, and export values

A JSON snapshot is saved of given the results from the underlying call to \$get_values().

Note, values that contain environments or other values that will have trouble serializing may not work well. Instead, these objects should be manually inspected and have their components tested individually.

Please see [Robust testing](#) for more details.

Usage:

```
AppDriver$expect_values(
  ...,
  input = missing_arg(),
  output = missing_arg(),
  export = missing_arg(),
  screenshot_args = missing_arg(),
  name = NULL,
  cran = FALSE
)
```

Arguments:

... Must be empty. Allows for parameter expansion.

input, output, export Depending on which parameters are supplied, different return values can occur: * If input, output, and export are all missing, then all values are included in the snapshot. * If at least one input, output, or export is specified, then only the requested values are included in the snapshot.

The values supplied to each variable can be: * A character vector of specific names to only include in the snapshot. * TRUE to request that all values of that type are included in the snapshot. * Anything else (e.g. NULL or FALSE) will result in the parameter being ignored.

`screenshot_args` This value is passed along to `$expect_screenshot()` where the resulting snapshot expectation is ignored. If missing, the default value will be `$new(expect_values_screenshot_args=)`. The final value can either be:

- TRUE: A screenshot of the whole page will be taken with no delay
- FALSE: No screenshot will be taken
- A named list of arguments. These arguments are passed directly to `chromote::ChromoteSession`'s `$get_screenshot()` method. The selector and delay will default to "html" and 0 respectively.

`name` The file name to be used for the snapshot. The file extension will be overwritten to `.json`. By default, the name supplied to app on initialization with a counter will be used (e.g. "NAME-001.json").

`cran` Should these expectations be verified on CRAN? By default, they are not because snapshot tests tend to be fragile because they often rely on minor details of dependencies.

Returns: The result of the snapshot expectation

Examples:

```
\dontrun{
library(shiny)
shiny_app <- shinyApp(
  fluidPage(
    h1("Pythagorean theorem"),
    numericInput("A", "A", 3),
    numericInput("B", "B", 4),
    verbatimTextOutput("C"),
  ),
  function(input, output) {
    a_squared <- reactive({ req(input$A); input$A * input$A })
    b_squared <- reactive({ req(input$B); input$B * input$B })
    c_squared <- reactive({ a_squared() + b_squared() })
    c_value <- reactive({ sqrt(c_squared()) })
    output$C <- renderText({ c_value() })

    exportTestValues(
      a_squared = { a_squared() },
      b_squared = { b_squared() },
      c_squared = { c_squared() }
    )
  }
)

app <- AppDriver$new(shiny_app)

# Snapshot all known values
app$expect_values()

# Snapshot only `export` values
app$expect_values(export = TRUE)
```

```
# Snapshot values `A` from `input` and `C` from `output`
app$expect_values(input = "A", output = "C")
}
```

Method `get_value()`: Get a single input, output, or export value

This is a helper function around `$get_values()` to retrieve a single input, output, or export value. Only a single input, output, or export value can be used.

Note, values that contain environments or other values that will have trouble serializing to RDS may not work well.

Usage:

```
AppDriver$get_value(
  ...,
  input = missing_arg(),
  output = missing_arg(),
  export = missing_arg(),
  hash_images = FALSE
)
```

Arguments:

`...` Must be empty. Allows for parameter expansion.

`input`, `output`, `export` One of these variable should contain a single string value. If more than one value is specified or no values are specified, an error will be thrown.

`hash_images` If TRUE, images will be hashed before being returned. Otherwise, all images will return their full data64 encoded value.

Returns: The requested input, output, or export value.

Examples:

```
\dontrun{
app_path <- system.file("examples/04_mpg", package = "shiny")
app <- AppDriver$new(app_path)
# Retrieve a single value
app$get_value(output = "caption")
#> [1] "mpg ~ cyl"
# Equivalent code using `get_values()`
app$get_values(output = "caption")$output$caption
#> [1] "mpg ~ cyl"
}
```

Method `get_values()`: Get input, output, and export values

Retrieves a list of all known input, output, or export values. This method is a core method when inspecting your Shiny app.

Note, values that contain environments or other values that will have trouble serializing may not work well.

Usage:

```
AppDriver$get_values(
  ...,
  input = missing_arg(),
```

```

    output = missing_arg(),
    export = missing_arg(),
    hash_images = FALSE
  )

```

Arguments:

... Must be empty. Allows for parameter expansion.

`input`, `output`, `export` Depending on which parameters are supplied, different return values can occur: * If `input`, `output`, and `export` are all missing, then all values are included in the snapshot. * If at least one `input`, `output`, or `export` is specified, then only the requested values are included in the snapshot.

The values supplied to each variable can be: * A character vector of specific names to only include in the snapshot. * TRUE to request that all values of that type are included in the snapshot. * Anything else (e.g. NULL or FALSE) will result in the parameter being ignored.

`hash_images` If TRUE, images will be hashed before being returned. Otherwise, all images will return their full data64 encoded value.

Returns: A named list of all inputs, outputs, and export values.

Examples:

```

\dontrun{
library(shiny)
shiny_app <- shinyApp(
  fluidPage(
    h1("Pythagorean theorem"),
    numericInput("A", "A", 3),
    numericInput("B", "B", 4),
    verbatimTextOutput("C"),
  ),
  function(input, output) {
    a_squared <- reactive({ req(input$A); input$A * input$A })
    b_squared <- reactive({ req(input$B); input$B * input$B })
    c_squared <- reactive({ a_squared() + b_squared() })
    c_value <- reactive({ sqrt(c_squared()) })
    output$C <- renderText({ c_value() })

    exportTestValues(
      a_squared = { a_squared() },
      b_squared = { b_squared() },
      c_squared = { c_squared() }
    )
  }
)

app <- AppDriver$new(shiny_app)

# Show all known values
str(app$get_values())
#> List of 3
#> $ input :List of 2

```

```

#> ..$ A: int 3
#> ..$ B: int 4
#> $ output:List of 1
#> ..$ C: chr "5"
#> $ export:List of 3
#> ..$ a_squared: int 9
#> ..$ b_squared: int 16
#> ..$ c_squared: int 25

# Get only `export` values
str(app$get_values(export = TRUE))
#> List of 1
#> $ export:List of 3
#> ..$ a_squared: int 9
#> ..$ b_squared: int 16
#> ..$ c_squared: int 25

# Get values `A` from `input` and `C` from `output`
str(app$get_values(input = "A", output = "C"))
#> List of 2
#> $ input :List of 1
#> ..$ A: int 3
#> $ output:List of 1
#> ..$ C: chr "5"
}

```

Method `expect_download()`: Expect a downloadable file

Given a `shiny::downloadButton()/shiny::downloadLink()` output ID, the corresponding file will be downloaded and saved as a snapshot file.

Usage:

```

AppDriver$expect_download(
  output,
  ...,
  compare = NULL,
  name = NULL,
  cran = FALSE
)

```

Arguments:

`output` output ID of `shiny::downloadButton()/shiny::downloadLink()`

... Must be empty. Allows for parameter expansion.

`compare` This value is passed through to `testthat::expect_snapshot_file()`. By default it is set to `NULL` which will default to `testthat::compare_file_text` if name has extension `.r`, `.R`, `.Rmd`, `.md`, or `.txt`, and otherwise uses `testthat::compare_file_binary`.

`name` File name to save file to (including file name extension). The default, `NULL`, generates an ascending sequence of names: `001.download`, `002.download`, etc.

`cran` Should these expectations be verified on CRAN? By default, they are not because snapshot tests tend to be fragile because they often rely on minor details of dependencies.

Examples:

```
\dontrun{
app_path <- system.file("examples/10_download", package = "shiny")
app <- AppDriver$new(app_path)

# Save snapshot of rock.csv as 001.download
# Save snapshot value of `rock.csv` to capture default file name
app$expect_download("downloadData", compare = testthat::compare_file_text)
}
```

Method `get_download()`: Get downloadable file

Given a `shiny::downloadButton()/shiny::downloadLink()` output ID, the corresponding file will be downloaded and saved as a file.

Usage:

```
AppDriver$get_download(output, filename = NULL)
```

Arguments:

`output` output ID of `shiny::downloadButton()/shiny::downloadLink()`
`filename` File path to save the downloaded file to.

Returns: `$get_download()` will return the final save location of the file. This location can change depending on the value of `filename` and response headers.

Location logic:

- If `filename` is not `NULL`, `filename` will be returned.
- If a `content-disposition filename` is provided, then a temp file containing this `filename` will be returned.
- Otherwise, a tempfile ending in `.download` will be returned.

Examples:

```
\dontrun{
app_path <- system.file("examples/10_download", package = "shiny")
app <- AppDriver$new(app_path)

# Get rock.csv as a tempfile
app$get_download("downloadData")
#> [1] "/TEMP/PATH/rock.csv"

# Get rock.csv as a "./myfile.csv"
app$get_download("downloadData", filename = "./myfile.csv")
#> [1] "./myfile.csv"
}
```

Method `expect_text()`: Expect snapshot of UI text

`$expect_text()` will extract the text value of all matching elements via `TAG.textContent` and store them in a snapshot file. This method is more robust to internal package change as only the text values will be maintained. Note, this method will not retrieve any `<input />` value's text content, e.g. text inputs or text areas, as the input values are not stored in the live HTML.

When possible, use `$expect_text()` over `$expect_html()` to allow package authors room to alter their HTML structures. The resulting array of `TAG.textContent` values found will be stored in a snapshot file.

Please see [Robust testing](#) for more details.

Usage:

```
AppDriver$expect_text(selector, ..., cran = FALSE)
```

Arguments:

`selector` A DOM CSS selector to be passed into `document.querySelectorAll()`

... Must be empty. Allows for parameter expansion.

`cran` Should these expectations be verified on CRAN? By default, they are not because snapshot tests tend to be fragile because they often rely on minor details of dependencies.

Examples:

```
\dontrun{
hello_app <- system.file("examples/01_hello", package = "shiny")
app <- AppDriver$new(hello_app)

# Make a snapshot of `Hello Shiny!`
app$expect_text("h2")
}
```

Method `get_text()`: Get UI text

`$get_text()` will extract the text value of all matching elements via `TAG.textContent`. Note, this method will not retrieve any `<input />` value's text content, e.g. text inputs or text areas, as the input values are not stored in the live HTML.

Usage:

```
AppDriver$get_text(selector)
```

Arguments:

`selector` A DOM CSS selector to be passed into `document.querySelectorAll()`

Returns: A vector of character values

Examples:

```
\dontrun{
hello_app <- system.file("examples/01_hello", package = "shiny")
app <- AppDriver$new(hello_app)

app$get_text("h2")
#> [1] "Hello Shiny!"
}
```

Method `expect_html()`: Expect snapshot of UI HTML

`$expect_html()` will extract the full DOM structures of each matching element and store them in a snapshot file. This method captures internal DOM structure which may be brittle to changes by external authors or dependencies.

Note, this method will not retrieve any `<input />` value's text content, e.g. text inputs or text areas, as the input values are not stored in the live HTML.

When possible, use `$expect_text()` over `$expect_html()` to allow package authors room to alter their HTML structures. The resulting array of `TAG.textContent` values found will be stored in a snapshot file.

Please see [Robust testing](#) for more details.

Usage:

```
AppDriver$expect_html(selector, ..., outer_html = TRUE, cran = FALSE)
```

Arguments:

`selector` A DOM selector to be passed into `document.querySelectorAll()`

... Must be empty. Allows for parameter expansion.

`outer_html` If TRUE (default), the full DOM structure will be returned (`TAG.outerHTML`). If FALSE, the full DOM structure of the child elements will be returned (`TAG.innerHTML`).

`cran` Should these expectations be verified on CRAN? By default, they are not because snapshot tests tend to be fragile because they often rely on minor details of dependencies.

Examples:

```
\dontrun{
app_path <- system.file("examples/04_mpg", package = "shiny")
app <- AppDriver$new(app_path)
# Save a snapshot of the `caption` output
app$expect_html("#caption")
}
```

Method `get_html()`: Get UI HTML

`$get()` will extract the full DOM structures of each matching element. This method captures internal DOM structure which may be brittle to changes by external authors or dependencies.

Note, this method will not retrieve any `<input />` value's text content, e.g. text inputs or text areas, as the input values are not stored in the live HTML.

Please see [Robust testing](#) for more details.

Usage:

```
AppDriver$get_html(selector, ..., outer_html = TRUE)
```

Arguments:

`selector` A DOM selector to be passed into `document.querySelectorAll()`

... Must be empty. Allows for parameter expansion.

`outer_html` If TRUE, the full DOM structure will be returned (`TAG.outerHTML`). If FALSE, the full DOM structure of the child elements will be returned (`TAG.innerHTML`).

Examples:

```
\dontrun{
app_path <- system.file("examples/03_reactivity", package = "shiny")
app <- AppDriver$new(app_path, check_names = FALSE)
app$set_inputs(caption = "Custom value!")
cat(app$get_html(".shiny-input-container")[1])
#> <div class="form-group shiny-input-container">
#> <label class="control-label" id="caption-label" for="caption">Caption:</label>
#> <input id="caption" type="text" class="form-control shiny-bound-input" value="Data Summary">
#> </div>
## ^^ No update to the DOM of `caption`
}
```

Method `expect_js()`: Expect snapshot of JavaScript script output

This is a building block function that may be called by other functions. For example, `$expect_text()` and `$expect_html()` are thin wrappers around this function.

Once the script has executed, the JSON result will be saved to a snapshot file.

Usage:

```
AppDriver$expect_js(
  script = missing_arg(),
  ...,
  file = missing_arg(),
  timeout = 15 * 1000,
  pre_snapshot = NULL,
  cran = FALSE
)
```

Arguments:

`script` A string containing the JavaScript script to be executed.

... Must be empty. Allows for parameter expansion.

`file` A file containing JavaScript code to be read and used as the script. Only one of `script` or `file` can be specified.

`timeout` Amount of time to wait before giving up (milliseconds).

`pre_snapshot` A function to be called on the result of the script before taking the snapshot. `$expect_html()` and `$expect_text()` both use `unlist()`.

`cran` Should these expectations be verified on CRAN? By default, they are not because snapshot tests tend to be fragile because they often rely on minor details of dependencies.

Examples:

```
\dontrun{
app_path <- system.file("examples/07_widgets", package = "shiny")
app <- AppDriver$new(app_path)

# Track how many clicks are given to `#update` button
app$run_js("
  window.test_counter = 0;
  $('#update').click(() => window.test_counter++);
")
app$set_inputs(obs = 20)
# Click the update button, incrementing the counter
app$click("update")
# Save a snapshot of number of clicks (1)
app$expect_js("window.test_counter;")
}
```

Method `get_js()`: Execute JavaScript code in the browser and return the result

This function will block the local R session until the code has finished executing its *tick* in the browser. If a Promise is returned from the script, `$get_js()` will wait for the promise to resolve. To have JavaScript code execute asynchronously, wrap the code in a Promise object and have the script return an atomic value.

Arguments will have to be inserted into the script as there is not access to arguments. This can be done with commands like `paste()`. If using `glue::glue()`, be sure to use uncommon `.open` and `.close` values to avoid having to double all `{` and `}`.

Usage:

```
AppDriver$get_js(
  script = missing_arg(),
  ...,
  file = missing_arg(),
  timeout = 15 * 1000
)
```

Arguments:

`script` JavaScript to execute. If a JavaScript Promise is returned, the R session will block until the promise has been resolved and return the value.

`...` Must be empty. Allows for parameter expansion.

`file` A (local) file containing JavaScript code to be read and used as the script. Only one of `script` or `file` can be specified.

`timeout` Amount of time to wait before giving up (milliseconds).

Returns: Result of the script (or file contents)

Examples:

```
\dontrun{
library(shiny)
shiny_app <- shinyApp(h1("Empty App"), function(input, output) { })
app <- AppDriver$new(shiny_app)

# Execute JavaScript code in the app's browser
app$get_js("1 + 1;")
#> [1] 2

# Execute a JavaScript Promise. Return the resolved value.
app$get_js("
  new Promise((resolve) => {
    setTimeout(() => resolve(1 + 1), 1000)
  }).
  then((value) => value + 1);
")
#> [1] 3

# With escaped arguments
loc_field <- "hostname"
js_txt <- paste0("window.location[", jsonlite::toJSON(loc_field, auto_unbox = TRUE), "]")
app$get_js(js_txt)
#> [1] "127.0.0.1"

# With `glue::glue()`
js_txt <- glue::glue_data(
  lapply(
    list(x = 40, y = 2),
    jsonlite::toJSON,
    auto_unbox = TRUE
  ),
```

```

    .open = "<", .close = ">",
    "let answer = function(a, b) {\n",
    "  return a + b;\n",
    "};\n",
    "answer(<x>, <y>);\n"
  )
  app$get_js(js_txt)
#> [1] 42
}

```

Method `run_js()`: Execute JavaScript code in the browser

This function will block the local R session until the code has finished executing its *tick* in the browser.

The final result of the code will be ignored and not returned to the R session.

Usage:

```

AppDriver$run_js(
  script = missing_arg(),
  ...,
  file = missing_arg(),
  timeout = 15 * 1000
)

```

Arguments:

`script` JavaScript to execute.

`...` Must be empty. Allows for parameter expansion.

`file` A (local) file containing JavaScript code to be read and used as the script. Only one of `script` or `file` can be specified.

`timeout` Amount of time to wait before giving up (milliseconds).

Examples:

```

\dontrun{
library(shiny)
shiny_app <- shinyApp(h1("Empty App"), function(input, output) { })
app <- AppDriver$new(shiny_app)

# Get JavaScript answer from the app's browser
app$get_js("1 + 1")
#> [1] 2
# Execute JavaScript code in the app's browser
app$run_js("1 + 1")
# (Returns `app` invisibly)

# With escaped arguments
loc_field <- "hostname"
js_txt <- paste0("window.location[", jsonlite::toJSON(loc_field, auto_unbox = TRUE), "]")
app$run_js(js_txt)
app$get_js(js_txt)
#> [1] "127.0.0.1"
}

```

Method `expect_screenshot()`: Expect a screenshot of the Shiny application

This method takes a screenshot of the application (of only the selector area) and compares the image to the expected image.

Please be aware that this method is very brittle to changes outside of your Shiny application. These changes can include:

- running on a different R version
- running on a different in operating system
- using a different default system font
- using different package versions These differences are explicitly clear when working with plots.

Unless absolutely necessary for application consistency, it is strongly recommended to use other expectation methods.

Usage:

```
AppDriver$expect_screenshot(
  ...,
  screenshot_args = missing_arg(),
  delay = missing_arg(),
  selector = missing_arg(),
  name = NULL,
  cran = FALSE
)
```

Arguments:

`...` Must be empty. Allows for parameter expansion.

`screenshot_args` This named list of arguments is passed along to `chromote::ChromoteSession`'s `$get_screenshot()` method. If missing, the value will default to `$new(screenshot_args=)`. If the value is:

- TRUE: A screenshot of the whole page will be taken with no delay
- A named list of arguments: Arguments passed directly to `chromote::ChromoteSession`'s `$get_screenshot()` method. The selector and delay will default to "html" and 0 respectively.

If FALSE is provided, the parameter will be ignored and a screenshot will be taken with default behavior.

`delay` The number of milliseconds to wait before taking the screenshot. This value can either be supplied as `delay` or `screenshot_args`'s `delay` slot. The `delay` parameter will have preference.

`selector` The selector is a CSS selector that will be used to select a portion of the page to be captured. This value can either be supplied as `selector` or `screenshot_args`'s `selector` slot. The `selector` parameter will have preference.

`name` The file name to be used for the snapshot. The file extension will overwritten to `.png`. By default, the name supplied to app on initialization with a counter will be used (e.g. "NAME-001.png").

`cran` Should these expectations be verified on CRAN? By default, they are not because snapshot tests tend to be fragile because they often rely on minor details of dependencies.

Examples:

```

\dontrun{
app_path <- system.file("examples/01_hello", package = "shiny")
app <- AppDriver$new(app_path, variant = platform_variant())

# Expect a full size screenshot
app$expect_screenshot()

# Very brittle test
app$expect_screenshot(selector = "#distPlot")
}

```

Method `get_screenshot()`: Take a screenshot

Take a screenshot of the Shiny application.

Usage:

```

AppDriver$get_screenshot(
  file = NULL,
  ...,
  screenshot_args = missing_arg(),
  delay = missing_arg(),
  selector = missing_arg()
)

```

Arguments:

`file` If NULL, then the image will be displayed to the current Graphics Device. If a file path, then the screenshot will be saved to that file.

`...` Must be empty. Allows for parameter expansion.

`screenshot_args` This named list of arguments is passed along to `chromote::ChromoteSession`'s `$get_screenshot()` method. If missing, the value will default to `$new(screenshot_args=)`.

If the value is:

- TRUE: A screenshot of the whole page will be taken with no delay
- A named list of arguments: Arguments passed directly to `chromote::ChromoteSession`'s `$get_screenshot()` method. The `selector` and `delay` will default to "html" and 0 respectively.

If a FALSE value is provided, the parameter will be ignored and a screenshot will be taken with default behavior.

`delay` The number of milliseconds to wait before taking the screenshot. This value can either be supplied as `delay` or `screenshot_args`'s `delay` slot. The `delay` parameter will have preference.

`selector` The selector is a CSS selector that will be used to select a portion of the page to be captured. This value can either be supplied as `selector` or `screenshot_args`'s `selector` slot. The `selector` parameter will have preference.

Examples:

```

\dontrun{
app_path <- system.file("examples/01_hello", package = "shiny")
app <- AppDriver$new(app_path)

# Display in viewer

```

```

app$get_screenshot()

# Update bins then display `disPlot` in viewer
app$set_inputs(bins = 10)
app$get_screenshot(selector = "#distPlot")

# Save screenshot to file and view it
tmpfile <- tempfile(fileext = ".png")
app$get_screenshot(tmpfile)
showimage::show_image(tmpfile)
}

```

Method `wait_for_idle()`: Wait for Shiny to not be busy (idle) for a set amount of time
 Waits until Shiny has not been busy for a set duration of time, e.g. no reactivity is updating or has occurred.

This is useful, for example, when waiting for your application to initialize or if you've resized the window with `$set_window_size()` and want to make sure all plot redrawing is complete before take a screenshot.

By default,

- `$new(wait = TRUE)` waits for Shiny to not be busy after initializing the application
- `$set_window_size(wait = TRUE)` waits for Shiny to not be busy after resizing the window.)

Usage:

```
AppDriver$wait_for_idle(duration = 500, timeout = 30 * 1000)
```

Arguments:

`duration` How long Shiny must be idle (in ms) before unblocking the R session.

`timeout` How often to check for the condition, in ms.

Returns: `invisible(self)` if Shiny stabilizes within the timeout. Otherwise an error will be thrown

Examples:

```

\dontrun{
app_path <- system.file("examples/01_hello", package = "shiny")
app <- AppDriver$new(app_path)

pre_value <- app$get_value(output = "distPlot")
# Update bins value
app$set_inputs(bins = 10, wait_ = FALSE)
middle_value <- app$get_value(output = "distPlot")
app$wait_for_idle()
post_value <- app$get_value(output = "distPlot")

# No guarantee that these values are different
identical(pre_value, middle_value)
# Will not be equal
identical(pre_value, post_value)

# -----

```

```

## Change the screen size to trigger a plot update
pre_value <- app$get_value(output = "distPlot")
app$set_window_size(height = 1080, width = 1920, wait = FALSE)
middle_value <- app$get_value(output = "distPlot")
app$wait_for_idle()
post_value <- app$get_value(output = "distPlot")

# No guarantee that these values are different
identical(pre_value, middle_value)
# Will not be equal
identical(pre_value, post_value)
}

```

Method `wait_for_value()`: Wait for a new Shiny value

Waits until an input, output, or export Shiny value is not one of ignored values, or the timeout is reached.

Only a single input, output, or export value may be used.

This function can be useful in helping determine if an application has finished processing a complex reactive situation.

Usage:

```

AppDriver$wait_for_value(
  ...,
  input = missing_arg(),
  output = missing_arg(),
  export = missing_arg(),
  ignore = list(NULL, ""),
  timeout = 15 * 1000,
  interval = 400
)

```

Arguments:

`...` Must be empty. Allows for parameter expansion.

`input`, `output`, `export` A name of an input, output, or export value. Only one of these parameters may be used.

`ignore` List of possible values to ignore when checking for updates.

`timeout` How long to wait (in ms) before throwing an error.

`interval` How often to check for the condition, in ms.

Returns: Newly found value

Examples:

```

\dontrun{
library(shiny)
shiny_app <- shinyApp(
  fluidPage(
    h1("Dynamic output"),
    actionButton("display", "Display UI"),
    uiOutput("dym1"),
  ),
)

```

```

function(input, output) {
  output$dym1 <- renderUI({
    req(input$display)
    Sys.sleep(runif(1, max = 2)) # Artificial calculations
    tagList(
      sliderInput("slider1", "Slider #1", 0, 100, 25),
      uiOutput("dym2")
    )
  })
  output$dym2 <- renderUI({
    Sys.sleep(runif(1, max = 2)) # Artificial calculations
    tagList(
      sliderInput("slider2", "Slider #2", 0, 100, 50),
      "Total:", verbatimTextOutput("total")
    )
  })
  output$total <- renderText({
    req(input$slider1, input$slider2)
    input$slider1 + input$slider2
  })
}
)

app <- AppDriver$new(shiny_app)

# Create UI / output values
app$click("display")
# Wait for total to be calculated (or have a non-NULL value)
new_total_value <- app$wait_for_value(output = "total")
#> [1] "75"
app$get_value(output = "total")
#> [1] "75"
}

```

Method `wait_for_js()`: Wait for a JavaScript expression to be true

Waits until a JavaScript expression evaluates to true or the timeout is exceeded.

Usage:

```
AppDriver$wait_for_js(script, timeout = 30 * 1000, interval = 100)
```

Arguments:

`script` A string containing JavaScript code. This code must eventually return a **truethy value** or a timeout error will be thrown.

`timeout` How long the script has to return a truethy value, in ms.

`interval` How often to check for the condition, in ms.

Returns: `invisible(self)` if expression evaluates to true without error within the timeout. Otherwise an error will be thrown

Examples:


```

\dontrun{
shiny_app <- shinyApp(h1("Empty App"), function(input, output) { })
app <- AppDriver$new(shiny_app)

# Contrived example:
# Wait until `Date.now()` returns a number that ends in a 5. (0 - 10 seconds)
system.time(
  app$wait_for_js("Math.floor((Date.now() / 1000) % 10) == 5;")
)

## A second example where we run the contents of a JavaScript file
## and use the result to wait for a condition
app$run_js(file = "complicated_file.js")
app$wait_for_js("complicated_condition();")
}

```

Method `expect_unique_names()`: Expect unique input and output names.

If the HTML has duplicate input or output elements with matching id values, this function will throw an error. It is similar to `AppDriver$new(check_names = TRUE)`, but asserts that no warnings are displayed.

This method will not throw if a single input and a single output have the same name.

Usage:

```
AppDriver$expect_unique_names()
```

Examples:

```

\dontrun{
shiny_app <- shinyApp(
  ui = fluidPage(
    # Duplicate input IDs: `text`
    textInput("text", "Text 1"),
    textInput("text", "Text 2")
  ),
  server = function(input, output) {
    # empty
  }
)
# Initial checking for unique names (default behavior)
app <- AppDriver$new(shiny_app, check_names = TRUE)
#> Warning:
#> ! Shiny inputs should have unique HTML id values.
#> i The following HTML id values are not unique:
#> • text

# Manually assert that all names are unique
app <- AppDriver$new(shiny_app, check_names = FALSE)
app$expect_unique_names()
#> Error: `app_check_unique_names(self, private)` threw an unexpected warning.
#> Message: ! Shiny inputs should have unique HTML id values.
#> i The following HTML id values are not unique:

```

```
#>   · text
#> Class:   rlang_warning/warning/condition
}
```

Method `get_dir()`: Retrieve the Shiny app path

Usage:

```
AppDriver$get_dir()
```

Returns: The directory containing the Shiny application or Shiny runtime document. If a URL was provided to `app_dir` during initialization, the current directory will be returned.

Examples:

```
\dontrun{
app_path <- system.file("examples/01_hello", package = "shiny")
app <- AppDriver$new(app_path)
identical(app$get_dir(), app_path)
#> [1] TRUE
}
```

Method `get_url()`: Retrieve the Shiny app URL

Usage:

```
AppDriver$get_url()
```

Returns: URL where the Shiny app is being hosted

Examples:

```
\dontrun{
app_path <- system.file("examples/01_hello", package = "shiny")
app <- AppDriver$new(app_path)
browseURL(app$get_url())
}
```

Method `get_window_size()`: Get window size

Get current size of the browser window, as list of numeric scalars named width and height.

Usage:

```
AppDriver$get_window_size()
```

Examples:

```
\dontrun{
app_path <- system.file("examples/01_hello", package = "shiny")
app <- AppDriver$new(app_path)
app$get_window_size()
#> $width
#> [1] 992
#>
#> $height
#> [1] 1323
}
```

Method `set_window_size()`: Sets size of the browser window.

Usage:

```
AppDriver$set_window_size(width, height, wait = TRUE)
```

Arguments:

width, height Height and width of browser, in pixels.

wait If TRUE, `$wait_for_idle()` will be called after setting the window size. This will block until any width specific items (such as plots) that need to be re-rendered.

Examples:

```
\dontrun{
app_path <- system.file("examples/01_hello", package = "shiny")
# Set init window size
app <- AppDriver$new(app_path, height = 1400, width = 1000)

app$get_window_size()
#> $width
#> [1] 1000
#>
#> $height
#> [1] 1400

# Manually set the window size
app$set_window_size(height = 1080, width = 1920)
app$get_window_size()
#> $width
#> [1] 1920
#>
#> $height
#> [1] 1080
}
```

Method `get_chromote_session()`: Get Chromote Session

Get the [ChromoteSession](#) object from the **chromote** package.

Usage:

```
AppDriver$get_chromote_session()
```

Returns: [ChromoteSession](#) R6 object

Examples:

```
\dontrun{
app_path <- system.file("examples/01_hello", package = "shiny")
app <- AppDriver$new(app_path)
b <- app$get_chromote_session()
b$Runtime$evaluate("1 + 1")
#> $result
#> $result$type
#> [1] "number"
#>
#> $result$value
#> [1] 2
}
```

```
#>
#> $result$description
#> [1] "2"
}
```

Method `get_variant()`: Get the variant

Get the variant supplied during initialization

Usage:

```
AppDriver$get_variant()
```

Returns: The variant value supplied during initialization or NULL if no value was supplied.

Examples:

```
\dontrun{
app_path <- system.file("examples/01_hello", package = "shiny")
```

```
app <- AppDriver$new(app_path)
app$get_variant()
#> NULL
```

```
app <- AppDriver$new(app_path, variant = platform_variant())
app$get_variant()
#> [1] "mac-4.1"
}
```

Method `get_logs()`: Get all logs

Retrieve all of the debug logs that have been recorded. There are a few standard debug types that may be used:

- "shiny_console": Displays the console messages from the Shiny server when `$get_logs()` is called.
- "browser": Displays the browser console messages when `$get_logs()` is called.
- "shinytest2": Displays the messages saved by the window. `shinytest2` object in the browser when `$get_logs()` is called.
- "ws_messages": Saves all messages sent by Shiny to the

Usage:

```
AppDriver$get_logs()
```

Returns: A data.frame with the following columns:

- `workerid`: The shiny worker ID found within the browser
- `timestamp`: POSIXct timestamp of the message
- `location`: The location of the message was found. One of three values:
 - "shinytest2": Occurs when `$log_message()` is called
 - "shiny": stdin and stdout messages from the Shiny server. Note `message()` output is sent to stdout.
 - "chromote": Captured by the **chromote** event handlers. See [console API](#), [exception thrown](#), [websocket sent](#), and [websocket received](#) for more details
- `level`: For a given location, there are different types of log levels.

- "shinytest2": "log"; Only log messages are captured.
- "shiny": "log" or "error"; These two levels correspond to the stdin or stdout messages. Note, message() output is sent to stderr which is recorded as "error".
- "chromote": Correspond to any level of a JavaScript console.LEVEL() function call. Typically, these are "log" and "error" but can include "info", "debug", and "warn". If options(shiny.trace = TRUE), then the level will be recorded as "websocket".

Examples:

```
\dontrun{
app <- AppDriver$new(system.file("examples/01_hello", package = "shiny"))
app$get_logs()
# {shinytest2} R info 11:15:20.11 Start AppDriver initialization
# {shinytest2} R info 11:15:20.11 Starting Shiny app
# {shinytest2} R info 11:15:20.99 Creating new chromote session
# {shinytest2} R info 11:15:21.14 Navigating to Shiny app
# {shinytest2} R info 11:15:21.27 Injecting shiny-tracer.js
# {chromote} JS info 11:15:21.28 shinytest2; jQuery not found
# {chromote} JS info 11:15:21.28 shinytest2; Loaded
# {shinytest2} R info 11:15:21.28 Waiting until Shiny app starts
# {chromote} JS info 11:15:21.35 shinytest2; jQuery found
# {chromote} JS info 11:15:21.35 shinytest2; Waiting for shiny session to connect
# {chromote} JS info 11:15:21.57 shinytest2; Connected
# {chromote} JS info 11:15:21.57 shinytest2; Ready
# {chromote} JS info 11:15:21.65 shinytest2; shiny:busy
# {shinytest2} R info 11:15:21.65 Shiny app started
# {chromote} JS info 11:15:21.88 shinytest2; shiny:idle
# {chromote} JS info 11:15:21.88 shinytest2; shiny:value distPlot
# {shiny} R error ----- Loading required package: shiny
# {shiny} R error ----- Running application in test mode.
# {shiny} R error -----
# {shiny} R error ----- Listening on http://127.0.0.1:42558

# To capture all websocket traffic, set `options = list(shiny.trace = TRUE)`
app <- AppDriver$new(
  system.file("examples/01_hello", package = "shiny"),
  options = list(shiny.trace = TRUE)
)
app$get_logs()
## (All WebSocket messages have been replaced with `WEBSOCKET_MSG` in example below)
# {shinytest2} R info 11:09:57.43 Start AppDriver initialization
# {shinytest2} R info 11:09:57.43 Starting Shiny app
# {shinytest2} R info 11:09:58.27 Creating new chromote session
# {shinytest2} R info 11:09:58.40 Navigating to Shiny app
# {shinytest2} R info 11:09:58.53 Injecting shiny-tracer.js
# {chromote} JS info 11:09:58.53 shinytest2; jQuery not found
# {chromote} JS info 11:09:58.53 shinytest2; Loaded
# {shinytest2} R info 11:09:58.54 Waiting until Shiny app starts
# {chromote} JS info 11:09:58.61 shinytest2; jQuery found
```

```

# {chromote} JS info    11:09:58.61 shinytest2; Waiting for shiny session to connect
# {chromote} JS websocket 11:09:58.73 send WEBSOCKET_MSG
# {chromote} JS websocket 11:09:58.78 rcv WEBSOCKET_MSG
# {chromote} JS info    11:09:58.78 shinytest2; Connected
# {chromote} JS info    11:09:58.78 shinytest2; Ready
# {chromote} JS websocket 11:09:58.85 rcv WEBSOCKET_MSG
# {chromote} JS websocket 11:09:58.85 rcv WEBSOCKET_MSG
# {chromote} JS info    11:09:58.85 shinytest2; shiny:busy
# {chromote} JS websocket 11:09:58.86 rcv WEBSOCKET_MSG
# {chromote} JS websocket 11:09:58.86 rcv WEBSOCKET_MSG
# {shinytest2} R info    11:09:58.87 Shiny app started
# {shinytest2} R info    11:09:59.07 Setting inputs: 'bins'
# {chromote} JS websocket 11:09:59.08 rcv WEBSOCKET_MSG
# {chromote} JS websocket 11:09:59.08 rcv WEBSOCKET_MSG
# {chromote} JS info    11:09:59.08 shinytest2; shiny:idle
# {chromote} JS websocket 11:09:59.08 rcv WEBSOCKET_MSG
# {chromote} JS info    11:09:59.08 shinytest2; shiny:value distPlot
# {chromote} JS info    11:09:59.08 shinytest2; inputQueue: adding bins
# {chromote} JS info    11:09:59.09 shinytest2; inputQueue: flushing bins
# {chromote} JS websocket 11:09:59.10 send WEBSOCKET_MSG
# {chromote} JS websocket 11:09:59.11 rcv WEBSOCKET_MSG
# {chromote} JS websocket 11:09:59.11 rcv WEBSOCKET_MSG
# {chromote} JS info    11:09:59.11 shinytest2; shiny:busy
# {chromote} JS websocket 11:09:59.12 rcv WEBSOCKET_MSG
# {chromote} JS websocket 11:09:59.14 rcv WEBSOCKET_MSG
# {chromote} JS websocket 11:09:59.18 rcv WEBSOCKET_MSG
# {chromote} JS websocket 11:09:59.19 rcv WEBSOCKET_MSG
# {chromote} JS info    11:09:59.19 shinytest2; shiny:idle
# {chromote} JS websocket 11:09:59.21 rcv WEBSOCKET_MSG
# {chromote} JS info    11:09:59.21 shinytest2; shiny:value distPlot
# {shinytest2} R info    11:09:59.21 Finished setting inputs. Timeout: FALSE
# {shinytest2} R info    11:09:59.21 Getting all values
# {shiny}      R error   ----- Loading required package: shiny
# {shiny}      R error   ----- Running application in test mode.
# {shiny}      R error   -----
# {shiny}      R error   ----- Listening on http://127.0.0.1:1505
# {shiny}      R error   ----- SEND {"config":{"workerId":"","sessionId":|truncated
# {shiny}      R error   ----- RECV {"method":"init","data":{"bins":30,|truncated
# {shiny}      R error   ----- SEND {"custom":{"showcase-src":{"srcref"|truncated
# {shiny}      R error   ----- SEND {"busy":"busy"}
# {shiny}      R error   ----- SEND {"custom":{"showcase-src":{"srcref"|truncated
# {shiny}      R error   ----- SEND {"recalculating":{"name":"distPlot",|truncated
# {shiny}      R error   ----- SEND {"recalculating":{"name":"distPlot",|truncated
# {shiny}      R error   ----- SEND {"busy":"idle"}
# {shiny}      R error   ----- SEND {"errors":{},"values":{"distPlot"|truncated
# {shiny}      R error   ----- RECV {"method":"update","data":{"bins":20}}
# {shiny}      R error   ----- SEND {"progress":{"type":"binding",|truncated
# {shiny}      R error   ----- SEND {"busy":"busy"}

```

```

# {shiny} R error ----- SEND {"custom":{"showcase-src":{"srcref":|truncated
# {shiny} R error ----- SEND {"recalculating":{"name":"distPlot",|truncated
# {shiny} R error ----- SEND {"recalculating":{"name":"distPlot",|truncated
# {shiny} R error ----- SEND {"busy":"idle"}
# {shiny} R error ----- SEND {"errors":{},"values":{"distPlot"|truncated

# The log that is returned is a `data.frame()`.
log <- app$get_logs()
tibble::glimpse(log)
#> $ workerid <chr> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, . . .
#> $ timestamp <dtm> 2022-03-16 11:09:57, 2022-03-16 11:09:57, 2022-03-16 11:09:57, . . .
#> $ location <chr> "shinytest2", "shinytest2", "shinytest2", "shinytest2", "shinytest2", . . .
#> $ level <chr> "info", "info", "info", "info", "info", "info", "info", "info", "info", . . .
#> $ message <chr> "Start AppDriver initialization", "Starting Shiny app", "Creating . . .

# It may be filtered to find desired logs
subset(log, level == "websocket")
## (All WebSocket messages have been replaced with `WEBSOCKET_MSG` in example below)
# {chromote} JS websocket 11:09:58.73 send WEBSOCKET_MSG
# {chromote} JS websocket 11:09:58.78 rcv WEBSOCKET_MSG
# {chromote} JS websocket 11:09:58.85 rcv WEBSOCKET_MSG
# {chromote} JS websocket 11:09:58.85 rcv WEBSOCKET_MSG
# {chromote} JS websocket 11:09:58.86 rcv WEBSOCKET_MSG
# {chromote} JS websocket 11:09:58.86 rcv WEBSOCKET_MSG
# {chromote} JS websocket 11:09:59.08 rcv WEBSOCKET_MSG
# {chromote} JS websocket 11:09:59.08 rcv WEBSOCKET_MSG
# {chromote} JS websocket 11:09:59.08 rcv WEBSOCKET_MSG
# {chromote} JS websocket 11:09:59.10 send WEBSOCKET_MSG
# {chromote} JS websocket 11:09:59.11 rcv WEBSOCKET_MSG
# {chromote} JS websocket 11:09:59.11 rcv WEBSOCKET_MSG
# {chromote} JS websocket 11:09:59.12 rcv WEBSOCKET_MSG
# {chromote} JS websocket 11:09:59.14 rcv WEBSOCKET_MSG
# {chromote} JS websocket 11:09:59.18 rcv WEBSOCKET_MSG
# {chromote} JS websocket 11:09:59.19 rcv WEBSOCKET_MSG
# {chromote} JS websocket 11:09:59.21 rcv WEBSOCKET_MSG
}

```

Method `log_message()`: Add a message to the `shinytest2` log.

Usage:

```
AppDriver$log_message(message)
```

Arguments:

message Single message to store in log

Examples:

```

\dontrun{
app_path <- system.file("examples/01_hello", package = "shiny")
app <- AppDriver$new(app_path)
app$log_message("Setting bins to smaller value")
}

```

```

app$set_inputs(bins = 10)
app$get_logs()
}

```

Method `stop()`: Stop the Shiny application driver

This method stops all known processes:

- The Shiny application in the background R process,
- the background R process hosting the Shiny application, and
- the Chromote Session instance.

To stop your shiny application and return a value from `$stop()`, see `shiny::stopApp()`. This is useful in testing to return context information.

Typically, this can be paired with a button that when clicked will call `shiny::stopApp(info)` to return `info` from the test app back to the main R session.

Usage:

```
AppDriver$stop()
```

Returns: The result of the background process if the Shiny application has already been terminated.

Examples:

```

\dontrun{
rlang::check_installed("reactlog")

library(shiny)
shiny_app <- shinyApp(
  ui = fluidPage(
    actionButton("button", "Stop app and return Reactlog"),
    "Click count:", textOutput("count")
  ),
  server = function(input, output) {
    output$count <- renderText({ input$button })
    observe({
      req(input$button)
      stopApp(shiny::reactlog())
    })
  }
)

app <- AppDriver$new(
  shiny_app,
  # Enable reactlog in background R session
  options = list(shiny.reactlog = TRUE)
)
app$click("button")
rlog <- app$stop()
str(head(rlog, 2))
#> List of 2
#> $ :List of 7

```



```

#> ..$ action : chr "define"
#> ..$ reactId: chr "r3"
#> ..$ label  : chr "Theme Counter"
#> ..$ type   : chr "reactiveVal"
#> ..$ value  : chr " num 0"
#> ..$ session: chr "bdc7417f2fc8c84fc05c9518e36fdc44"
#> ..$ time   : num 1.65e+09
#> $ :List of 7
#> ..$ action : chr "define"
#> ..$ reactId: chr "r4"
#> ..$ label  : chr "output$count"
#> .. ..- attr(*, "srcref")= int [1:6] 7 32 7 45 32 45
#> .. ..- attr(*, "srcfile")= chr ""
#> ..$ type   : chr "observer"
#> ..$ value  : chr " NULL"
#> ..$ session: chr "bdc7417f2fc8c84fc05c9518e36fdc44"
#> ..$ time   : num 1.65e+09
}

```

See Also

[platform_variant\(\)](#), [use_shinytest2_test\(\)](#)

Examples

```

## -----
## Method `AppDriver$new`
## -----

## Not run:
# Create an AppDriver from the Shiny app in the current directory
app <- AppDriver()

# Create an AppDriver object from a different Shiny app directory
example_app <- system.file("examples/01_hello", package = "shiny")
app <- AppDriver(example_app)

# Expect consistent initial values
app$expect_values()

## End(Not run)

## -----
## Method `AppDriver$view`
## -----

## Not run:
# Open app in Chrome
app$view()

```

```

## End(Not run)

## -----
## Method `AppDriver$click`
## -----

## Not run:
app_path <- system.file("examples/07_widgets", package = "shiny")
app <- AppDriver$new(app_path)

tmpfile <- write.csv(cars, "cars.csv")
app$upload_file(file1 = tmpfile)
cat(app$get_text("#view"))
app$set_inputs(dataset = "cars", obs = 6)
app$click("update")
cat(app$get_text("#view"))

## End(Not run)

## -----
## Method `AppDriver$set_inputs`
## -----

## Not run:
app_path <- system.file("examples/07_widgets", package = "shiny")
app <- AppDriver$new(app_path)
cat(app$get_text("#view"))
app$set_inputs(dataset = "cars", obs = 6)
app$click("update")
cat(app$get_text("#view"))

## End(Not run)

## -----
## Method `AppDriver$upload_file`
## -----

## Not run:
app_path <- system.file("examples/09_upload", package = "shiny")
app <- AppDriver$new(app_path)

# Save example file
tmpfile <- tempfile(fileext = ".csv")
write.csv(cars, tmpfile, row.names = FALSE)

# Upload file to input named: file1
app$upload_file(file1 = tmpfile)

## End(Not run)

## -----
## Method `AppDriver$expect_values`
## -----

```

```

## Not run:
library(shiny)
shiny_app <- shinyApp(
  fluidPage(
    h1("Pythagorean theorem"),
    numericInput("A", "A", 3),
    numericInput("B", "B", 4),
    verbatimTextOutput("C"),
  ),
  function(input, output) {
    a_squared <- reactive({ req(input$A); input$A * input$A })
    b_squared <- reactive({ req(input$B); input$B * input$B })
    c_squared <- reactive({ a_squared() + b_squared() })
    c_value <- reactive({ sqrt(c_squared()) })
    output$C <- renderText({ c_value() })

    exportTestValues(
      a_squared = { a_squared() },
      b_squared = { b_squared() },
      c_squared = { c_squared() }
    )
  }
)

app <- AppDriver$new(shiny_app)

# Snapshot all known values
app$expect_values()

# Snapshot only `export` values
app$expect_values(export = TRUE)

# Snapshot values `A` from `input` and `C` from `output`
app$expect_values(input = "A", output = "C")

## End(Not run)

## -----
## Method `AppDriver$get_value`
## -----

## Not run:
app_path <- system.file("examples/04_mpg", package = "shiny")
app <- AppDriver$new(app_path)
# Retrieve a single value
app$get_value(output = "caption")
#> [1] "mpg ~ cyl"
# Equivalent code using `get_values()`
app$get_values(output = "caption")$output$caption
#> [1] "mpg ~ cyl"

## End(Not run)

```

```

## -----
## Method `AppDriver$get_values`
## -----

## Not run:
library(shiny)
shiny_app <- shinyApp(
  fluidPage(
    h1("Pythagorean theorem"),
    numericInput("A", "A", 3),
    numericInput("B", "B", 4),
    verbatimTextOutput("C"),
  ),
  function(input, output) {
    a_squared <- reactive({ req(input$A); input$A * input$A })
    b_squared <- reactive({ req(input$B); input$B * input$B })
    c_squared <- reactive({ a_squared() + b_squared() })
    c_value <- reactive({ sqrt(c_squared()) })
    output$C <- renderText({ c_value() })

    exportTestValues(
      a_squared = { a_squared() },
      b_squared = { b_squared() },
      c_squared = { c_squared() }
    )
  }
)

app <- AppDriver$new(shiny_app)

# Show all known values
str(app$get_values())
#> List of 3
#> $ input :List of 2
#> ..$ A: int 3
#> ..$ B: int 4
#> $ output:List of 1
#> ..$ C: chr "5"
#> $ export:List of 3
#> ..$ a_squared: int 9
#> ..$ b_squared: int 16
#> ..$ c_squared: int 25

# Get only `export` values
str(app$get_values(export = TRUE))
#> List of 1
#> $ export:List of 3
#> ..$ a_squared: int 9
#> ..$ b_squared: int 16
#> ..$ c_squared: int 25

# Get values `A` from `input` and `C` from `output`

```

```

str(app$get_values(input = "A", output = "C"))
#> List of 2
#> $ input :List of 1
#> ..$ A: int 3
#> $ output:List of 1
#> ..$ C: chr "5"

## End(Not run)

## -----
## Method `AppDriver$expect_download`
## -----

## Not run:
app_path <- system.file("examples/10_download", package = "shiny")
app <- AppDriver$new(app_path)

# Save snapshot of rock.csv as 001.download
# Save snapshot value of `rock.csv` to capture default file name
app$expect_download("downloadData", compare = testthat::compare_file_text)

## End(Not run)

## -----
## Method `AppDriver$get_download`
## -----

## Not run:
app_path <- system.file("examples/10_download", package = "shiny")
app <- AppDriver$new(app_path)

# Get rock.csv as a tempfile
app$get_download("downloadData")
#> [1] "/TEMP/PATH/rock.csv"

# Get rock.csv as a "./myfile.csv"
app$get_download("downloadData", filename = "./myfile.csv")
#> [1] "./myfile.csv"

## End(Not run)

## -----
## Method `AppDriver$expect_text`
## -----

## Not run:
hello_app <- system.file("examples/01_hello", package = "shiny")
app <- AppDriver$new(hello_app)

# Make a snapshot of `Hello Shiny!`
app$expect_text("h2")

## End(Not run)

```

```

## -----
## Method `AppDriver$get_text`
## -----

## Not run:
hello_app <- system.file("examples/01_hello", package = "shiny")
app <- AppDriver$new(hello_app)

app$get_text("h2")
#> [1] "Hello Shiny!"

## End(Not run)

## -----
## Method `AppDriver$expect_html`
## -----

## Not run:
app_path <- system.file("examples/04_mpg", package = "shiny")
app <- AppDriver$new(app_path)
# Save a snapshot of the `caption` output
app$expect_html("#caption")

## End(Not run)

## -----
## Method `AppDriver$get_html`
## -----

## Not run:
app_path <- system.file("examples/03_reactivity", package = "shiny")
app <- AppDriver$new(app_path, check_names = FALSE)
app$set_inputs(caption = "Custom value!")
cat(app$get_html(".shiny-input-container")[1])
#> <div class="form-group shiny-input-container">
#>   <label class="control-label" id="caption-label" for="caption">Caption:</label>
#>   <input id="caption" type="text" class="form-control shiny-bound-input" value="Data Summary">
#> </div>
## ^^ No update to the DOM of `caption`

## End(Not run)

## -----
## Method `AppDriver$expect_js`
## -----

## Not run:
app_path <- system.file("examples/07_widgets", package = "shiny")
app <- AppDriver$new(app_path)

# Track how many clicks are given to `#update` button
app$run_js("

```

```

    window.test_counter = 0;
    $('#update').click(() => window.test_counter++);
  ")
app$set_inputs(obs = 20)
# Click the update button, incrementing the counter
app$click("update")
# Save a snapshot of number of clicks (1)
app$expect_js("window.test_counter;")

## End(Not run)

## -----
## Method `AppDriver$get_js`
## -----

## Not run:
library(shiny)
shiny_app <- shinyApp(h1("Empty App"), function(input, output) { })
app <- AppDriver$new(shiny_app)

# Execute JavaScript code in the app's browser
app$get_js("1 + 1;")
#> [1] 2

# Execute a JavaScript Promise. Return the resolved value.
app$get_js("
  new Promise((resolve) => {
    setTimeout(() => resolve(1 + 1), 1000)
  }).
  then((value) => value + 1);
")
#> [1] 3

# With escaped arguments
loc_field <- "hostname"
js_txt <- paste0("window.location[", jsonlite::toJSON(loc_field, auto_unbox = TRUE), "]")
app$get_js(js_txt)
#> [1] "127.0.0.1"

# With `glue::glue()`
js_txt <- glue::glue_data(
  lapply(
    list(x = 40, y = 2),
    jsonlite::toJSON,
    auto_unbox = TRUE
  ),
  .open = "<", .close = ">",
  "let answer = function(a, b) {\n",
  "  return a + b;\n",
  "};\n",
  "answer(<x>, <y>);\n"
)
app$get_js(js_txt)

```

```

#> [1] 42

## End(Not run)

## -----
## Method `AppDriver$run_js`
## -----

## Not run:
library(shiny)
shiny_app <- shinyApp(h1("Empty App"), function(input, output) { })
app <- AppDriver$new(shiny_app)

# Get JavaScript answer from the app's browser
app$get_js("1 + 1")
#> [1] 2
# Execute JavaScript code in the app's browser
app$run_js("1 + 1")
# (Returns `app` invisibly)

# With escaped arguments
loc_field <- "hostname"
js_txt <- paste0("window.location[", jsonlite::toJSON(loc_field, auto_unbox = TRUE), "]")
app$run_js(js_txt)
app$get_js(js_txt)
#> [1] "127.0.0.1"

## End(Not run)

## -----
## Method `AppDriver$expect_screenshot`
## -----

## Not run:
app_path <- system.file("examples/01_hello", package = "shiny")
app <- AppDriver$new(app_path, variant = platform_variant())

# Expect a full size screenshot
app$expect_screenshot()

# Very brittle test
app$expect_screenshot(selector = "#distPlot")

## End(Not run)

## -----
## Method `AppDriver$get_screenshot`
## -----

## Not run:
app_path <- system.file("examples/01_hello", package = "shiny")
app <- AppDriver$new(app_path)

```



```

# Display in viewer
app$get_screenshot()

# Update bins then display `disPlot` in viewer
app$set_inputs(bins = 10)
app$get_screenshot(selector = "#distPlot")

# Save screenshot to file and view it
tmpfile <- tempfile(fileext = ".png")
app$get_screenshot(tmpfile)
showimage::show_image(tmpfile)

## End(Not run)

## -----
## Method `AppDriver$wait_for_idle`
## -----

## Not run:
app_path <- system.file("examples/01_hello", package = "shiny")
app <- AppDriver$new(app_path)

pre_value <- app$get_value(output = "distPlot")
# Update bins value
app$set_inputs(bins = 10, wait_ = FALSE)
middle_value <- app$get_value(output = "distPlot")
app$wait_for_idle()
post_value <- app$get_value(output = "distPlot")

# No guarantee that these values are different
identical(pre_value, middle_value)
# Will not be equal
identical(pre_value, post_value)

# -----
## Change the screen size to trigger a plot update
pre_value <- app$get_value(output = "distPlot")
app$set_window_size(height = 1080, width = 1920, wait = FALSE)
middle_value <- app$get_value(output = "distPlot")
app$wait_for_idle()
post_value <- app$get_value(output = "distPlot")

# No guarantee that these values are different
identical(pre_value, middle_value)
# Will not be equal
identical(pre_value, post_value)

## End(Not run)

## -----
## Method `AppDriver$wait_for_value`
## -----

```

```

## Not run:
library(shiny)
shiny_app <- shinyApp(
  fluidPage(
    h1("Dynamic output"),
    actionButton("display", "Display UI"),
    uiOutput("dym1"),
  ),
  function(input, output) {
    output$dym1 <- renderUI({
      req(input$display)
      Sys.sleep(runif(1, max = 2)) # Artificial calculations
      tagList(
        sliderInput("slider1", "Slider #1", 0, 100, 25),
        uiOutput("dym2")
      )
    })
    output$dym2 <- renderUI({
      Sys.sleep(runif(1, max = 2)) # Artificial calculations
      tagList(
        sliderInput("slider2", "Slider #2", 0, 100, 50),
        "Total:", verbatimTextOutput("total")
      )
    })
    output$total <- renderText({
      req(input$slider1, input$slider2)
      input$slider1 + input$slider2
    })
  }
)

app <- AppDriver$new(shiny_app)

# Create UI / output values
app$click("display")
# Wait for total to be calculated (or have a non-NULL value)
new_total_value <- app$wait_for_value(output = "total")
#> [1] "75"
app$get_value(output = "total")
#> [1] "75"

## End(Not run)

## -----
## Method `AppDriver$wait_for_js`
## -----

## Not run:
shiny_app <- shinyApp(h1("Empty App"), function(input, output) { })
app <- AppDriver$new(shiny_app)

# Contrived example:
# Wait until `Date.now()` returns a number that ends in a 5. (0 - 10 seconds)

```

```

system.time(
  app$wait_for_js("Math.floor((Date.now() / 1000) % 10) == 5;")
)

## A second example where we run the contents of a JavaScript file
## and use the result to wait for a condition
app$run_js(file = "complicated_file.js")
app$wait_for_js("complicated_condition();")

## End(Not run)

## -----
## Method `AppDriver$expect_unique_names`
## -----

## Not run:
shiny_app <- shinyApp(
  ui = fluidPage(
    # Duplicate input IDs: `text`
    textInput("text", "Text 1"),
    textInput("text", "Text 2")
  ),
  server = function(input, output) {
    # empty
  }
)
# Initial checking for unique names (default behavior)
app <- AppDriver$new(shiny_app, check_names = TRUE)
#> Warning:
#> ! Shiny inputs should have unique HTML id values.
#> i The following HTML id values are not unique:
#> · text

# Manually assert that all names are unique
app <- AppDriver$new(shiny_app, check_names = FALSE)
app$expect_unique_names()
#> Error: `app_check_unique_names(self, private)` threw an unexpected warning.
#> Message: ! Shiny inputs should have unique HTML id values.
#> i The following HTML id values are not unique:
#> · text
#> Class:   rlang_warning/warning/condition

## End(Not run)

## -----
## Method `AppDriver$get_dir`
## -----

## Not run:
app_path <- system.file("examples/01_hello", package = "shiny")
app <- AppDriver$new(app_path)
identical(app$get_dir(), app_path)
#> [1] TRUE

```

```

## End(Not run)

## -----
## Method `AppDriver$get_url`
## -----

## Not run:
app_path <- system.file("examples/01_hello", package = "shiny")
app <- AppDriver$new(app_path)
browseURL(app$get_url())

## End(Not run)

## -----
## Method `AppDriver$get_window_size`
## -----

## Not run:
app_path <- system.file("examples/01_hello", package = "shiny")
app <- AppDriver$new(app_path)
app$get_window_size()
#> $width
#> [1] 992
#>
#> $height
#> [1] 1323

## End(Not run)

## -----
## Method `AppDriver$set_window_size`
## -----

## Not run:
app_path <- system.file("examples/01_hello", package = "shiny")
# Set init window size
app <- AppDriver$new(app_path, height = 1400, width = 1000)

app$get_window_size()
#> $width
#> [1] 1000
#>
#> $height
#> [1] 1400

# Manually set the window size
app$set_window_size(height = 1080, width = 1920)
app$get_window_size()
#> $width
#> [1] 1920
#>
#> $height

```

```

#> [1] 1080

## End(Not run)

## -----
## Method `AppDriver$get_chromote_session`
## -----

## Not run:
app_path <- system.file("examples/01_hello", package = "shiny")
app <- AppDriver$new(app_path)
b <- app$get_chromote_session()
b$Runtime$evaluate("1 + 1")
#> $result
#> $result$type
#> [1] "number"
#>
#> $result$value
#> [1] 2
#>
#> $result$description
#> [1] "2"

## End(Not run)

## -----
## Method `AppDriver$get_variant`
## -----

## Not run:
app_path <- system.file("examples/01_hello", package = "shiny")

app <- AppDriver$new(app_path)
app$get_variant()
#> NULL

app <- AppDriver$new(app_path, variant = platform_variant())
app$get_variant()
#> [1] "mac-4.1"

## End(Not run)

## -----
## Method `AppDriver$get_logs`
## -----

## Not run:
app <- AppDriver$new(system.file("examples/01_hello", package = "shiny"))
app$get_logs()
# {shinytest2} R info 11:15:20.11 Start AppDriver initialization
# {shinytest2} R info 11:15:20.11 Starting Shiny app
# {shinytest2} R info 11:15:20.99 Creating new chromote session
# {shinytest2} R info 11:15:21.14 Navigating to Shiny app

```

```

# {shinytest2} R info 11:15:21.27 Injecting shiny-tracer.js
# {chromote} JS info 11:15:21.28 shinytest2; jQuery not found
# {chromote} JS info 11:15:21.28 shinytest2; Loaded
# {shinytest2} R info 11:15:21.28 Waiting until Shiny app starts
# {chromote} JS info 11:15:21.35 shinytest2; jQuery found
# {chromote} JS info 11:15:21.35 shinytest2; Waiting for shiny session to connect
# {chromote} JS info 11:15:21.57 shinytest2; Connected
# {chromote} JS info 11:15:21.57 shinytest2; Ready
# {chromote} JS info 11:15:21.65 shinytest2; shiny:busy
# {shinytest2} R info 11:15:21.65 Shiny app started
# {chromote} JS info 11:15:21.88 shinytest2; shiny:idle
# {chromote} JS info 11:15:21.88 shinytest2; shiny:value distPlot
# {shiny} R error ----- Loading required package: shiny
# {shiny} R error ----- Running application in test mode.
# {shiny} R error -----
# {shiny} R error ----- Listening on http://127.0.0.1:42558

# To capture all websocket traffic, set `options = list(shiny.trace = TRUE)`
app <- AppDriver$new(
  system.file("examples/01_hello", package = "shiny"),
  options = list(shiny.trace = TRUE)
)
app$get_logs()
## (All WebSocket messages have been replaced with `WEBSOCKET_MSG` in example below)
# {shinytest2} R info 11:09:57.43 Start AppDriver initialization
# {shinytest2} R info 11:09:57.43 Starting Shiny app
# {shinytest2} R info 11:09:58.27 Creating new chromote session
# {shinytest2} R info 11:09:58.40 Navigating to Shiny app
# {shinytest2} R info 11:09:58.53 Injecting shiny-tracer.js
# {chromote} JS info 11:09:58.53 shinytest2; jQuery not found
# {chromote} JS info 11:09:58.53 shinytest2; Loaded
# {shinytest2} R info 11:09:58.54 Waiting until Shiny app starts
# {chromote} JS info 11:09:58.61 shinytest2; jQuery found
# {chromote} JS info 11:09:58.61 shinytest2; Waiting for shiny session to connect
# {chromote} JS websocket 11:09:58.73 send WEBSOCKET_MSG
# {chromote} JS websocket 11:09:58.78 recv WEBSOCKET_MSG
# {chromote} JS info 11:09:58.78 shinytest2; Connected
# {chromote} JS info 11:09:58.78 shinytest2; Ready
# {chromote} JS websocket 11:09:58.85 recv WEBSOCKET_MSG
# {chromote} JS websocket 11:09:58.85 recv WEBSOCKET_MSG
# {chromote} JS info 11:09:58.85 shinytest2; shiny:busy
# {chromote} JS websocket 11:09:58.86 recv WEBSOCKET_MSG
# {chromote} JS websocket 11:09:58.86 recv WEBSOCKET_MSG
# {shinytest2} R info 11:09:58.87 Shiny app started
# {shinytest2} R info 11:09:59.07 Setting inputs: 'bins'
# {chromote} JS websocket 11:09:59.08 recv WEBSOCKET_MSG
# {chromote} JS websocket 11:09:59.08 recv WEBSOCKET_MSG
# {chromote} JS info 11:09:59.08 shinytest2; shiny:idle
# {chromote} JS websocket 11:09:59.08 recv WEBSOCKET_MSG
# {chromote} JS info 11:09:59.08 shinytest2; shiny:value distPlot
# {chromote} JS info 11:09:59.08 shinytest2; inputQueue: adding bins
# {chromote} JS info 11:09:59.09 shinytest2; inputQueue: flushing bins

```

```

# {chromote} JS websocket 11:09:59.10 send WEBSOCKET_MSG
# {chromote} JS websocket 11:09:59.11 recv WEBSOCKET_MSG
# {chromote} JS websocket 11:09:59.11 recv WEBSOCKET_MSG
# {chromote} JS info      11:09:59.11 shinytest2; shiny:busy
# {chromote} JS websocket 11:09:59.12 recv WEBSOCKET_MSG
# {chromote} JS websocket 11:09:59.14 recv WEBSOCKET_MSG
# {chromote} JS websocket 11:09:59.18 recv WEBSOCKET_MSG
# {chromote} JS websocket 11:09:59.19 recv WEBSOCKET_MSG
# {chromote} JS info      11:09:59.19 shinytest2; shiny:idle
# {chromote} JS websocket 11:09:59.21 recv WEBSOCKET_MSG
# {chromote} JS info      11:09:59.21 shinytest2; shiny:value distPlot
# {shinytest2} R info      11:09:59.21 Finished setting inputs. Timeout: FALSE
# {shinytest2} R info      11:09:59.21 Getting all values
# {shiny}      R error      ----- Loading required package: shiny
# {shiny}      R error      ----- Running application in test mode.
# {shiny}      R error      -----
# {shiny}      R error      ----- Listening on http://127.0.0.1:1505
# {shiny}      R error      ----- SEND {"config":{"workerId":"","sessionId":|truncated
# {shiny}      R error      ----- RECV {"method":"init","data":{"bins":30,|truncated
# {shiny}      R error      ----- SEND {"custom":{"showcase-src":{"srcref"|truncated
# {shiny}      R error      ----- SEND {"busy":"busy"}
# {shiny}      R error      ----- SEND {"custom":{"showcase-src":{"srcref"|truncated
# {shiny}      R error      ----- SEND {"recalculating":{"name":"distPlot",|truncated
# {shiny}      R error      ----- SEND {"recalculating":{"name":"distPlot",|truncated
# {shiny}      R error      ----- SEND {"busy":"idle"}
# {shiny}      R error      ----- SEND {"errors":{},"values":{"distPlot"|truncated
# {shiny}      R error      ----- RECV {"method":"update","data":{"bins":20}}
# {shiny}      R error      ----- SEND {"progress":{"type":"binding",|truncated
# {shiny}      R error      ----- SEND {"busy":"busy"}
# {shiny}      R error      ----- SEND {"custom":{"showcase-src":{"srcref":|truncated
# {shiny}      R error      ----- SEND {"recalculating":{"name":"distPlot",|truncated
# {shiny}      R error      ----- SEND {"recalculating":{"name":"distPlot",|truncated
# {shiny}      R error      ----- SEND {"busy":"idle"}
# {shiny}      R error      ----- SEND {"errors":{},"values":{"distPlot"|truncated

# The log that is returned is a `data.frame()`.
log <- app$get_logs()
tibble::glimpse(log)
#> $ workerid <chr> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
#> $ timestamp <dtm> 2022-03-16 11:09:57, 2022-03-16 11:09:57, 2022-03-16 11:09:...
#> $ location <chr> "shinytest2", "shinytest2", "shinytest2", "shinytest2", "shi...
#> $ level <chr> "info", "info", "info", "info", "info", "info", "info", "info", "inf...
#> $ message <chr> "Start AppDriver initialization", "Starting Shiny app", "Cre...

# It may be filtered to find desired logs
subset(log, level == "websocket")
## (All WebSocket messages have been replaced with `WEBSOCKET_MSG` in example below)
# {chromote} JS websocket 11:09:58.73 send WEBSOCKET_MSG
# {chromote} JS websocket 11:09:58.78 recv WEBSOCKET_MSG
# {chromote} JS websocket 11:09:58.85 recv WEBSOCKET_MSG
# {chromote} JS websocket 11:09:58.85 recv WEBSOCKET_MSG
# {chromote} JS websocket 11:09:58.86 recv WEBSOCKET_MSG
# {chromote} JS websocket 11:09:58.86 recv WEBSOCKET_MSG

```

```

# {chromote} JS websocket 11:09:59.08 recv WEBSOCKET_MSG
# {chromote} JS websocket 11:09:59.08 recv WEBSOCKET_MSG
# {chromote} JS websocket 11:09:59.08 recv WEBSOCKET_MSG
# {chromote} JS websocket 11:09:59.10 send WEBSOCKET_MSG
# {chromote} JS websocket 11:09:59.11 recv WEBSOCKET_MSG
# {chromote} JS websocket 11:09:59.11 recv WEBSOCKET_MSG
# {chromote} JS websocket 11:09:59.12 recv WEBSOCKET_MSG
# {chromote} JS websocket 11:09:59.14 recv WEBSOCKET_MSG
# {chromote} JS websocket 11:09:59.18 recv WEBSOCKET_MSG
# {chromote} JS websocket 11:09:59.19 recv WEBSOCKET_MSG
# {chromote} JS websocket 11:09:59.21 recv WEBSOCKET_MSG

## End(Not run)

## -----
## Method `AppDriver$log_message`
## -----

## Not run:
app_path <- system.file("examples/01_hello", package = "shiny")
app <- AppDriver$new(app_path)
app$log_message("Setting bins to smaller value")
app$set_inputs(bins = 10)
app$get_logs()

## End(Not run)

## -----
## Method `AppDriver$stop`
## -----

## Not run:
rlang::check_installed("reactlog")

library(shiny)
shiny_app <- shinyApp(
  ui = fluidPage(
    actionButton("button", "Stop app and return Reactlog"),
    "Click count:", textOutput("count")
  ),
  server = function(input, output) {
    output$count <- renderText({ input$button })
    observe({
      req(input$button)
      stopApp(shiny::reactlog())
    })
  }
)

app <- AppDriver$new(
  shiny_app,
  # Enable reactlog in background R session
  options = list(shiny.reactlog = TRUE)
)

```



```

)
app$click("button")
rlog <- app$stop()
str(head(rlog, 2))
#> List of 2
#> $ :List of 7
#> ..$ action : chr "define"
#> ..$ reactId: chr "r3"
#> ..$ label  : chr "Theme Counter"
#> ..$ type   : chr "reactiveVal"
#> ..$ value  : chr " num 0"
#> ..$ session: chr "bdc7417f2fc8c84fc05c9518e36fdc44"
#> ..$ time   : num 1.65e+09
#> $ :List of 7
#> ..$ action : chr "define"
#> ..$ reactId: chr "r4"
#> ..$ label  : chr "output$count"
#> .. ..- attr(*, "srcref")= int [1:6] 7 32 7 45 32 45
#> .. ..- attr(*, "srcfile")= chr ""
#> ..$ type   : chr "observer"
#> ..$ value  : chr " NULL"
#> ..$ session: chr "bdc7417f2fc8c84fc05c9518e36fdc44"
#> ..$ time   : num 1.65e+09

## End(Not run)

```

load_app_env

Load the Shiny application's support environment

Description

Executes all `./R` files and `global.R` into the current environment. This is useful when wanting access to functions or values created in the `./R` folder for testing purposes.

Usage

```

load_app_env(
  app_dir = "../..",
  renv = rlang::caller_env(),
  globalrenv = rlang::caller_env()
)

```

Arguments

<code>app_dir</code>	The base directory for the Shiny application.
<code>renv</code>	The environment in which the files in the <code>'R/'</code> directory should be evaluated.
<code>globalrenv</code>	The environment in which <code>global.R</code> should be evaluated. If <code>NULL</code> , <code>global.R</code> will not be evaluated at all.

Details

Loading these files is not automatically performed by `test_app()` and must be called in `./tests/testthat/setup.R` if access to support file objects is desired.

See Also

[use_shinytest2\(\)](#) for creating a testing setup file that loads your Shiny app support environment into the testing environment.

migrate_from_shinytest

*Migrate **shinytest** tests*

Description

This function will migrate standard shinytest test files to the new **shinytest2** + **testthat** ed 3 snapshot format.

Usage

```
migrate_from_shinytest(
  app_dir,
  ...,
  clean = TRUE,
  include_expect_screenshot = missing_arg(),
  quiet = FALSE
)
```

Arguments

<code>app_dir</code>	Directory containing the Shiny application or Shiny Rmd file
<code>...</code>	Must be empty. Allows for parameter expansion.
<code>clean</code>	If TRUE, then the shinytest test directory and runner will be deleted after the migration to use shinytest2 .
<code>include_expect_screenshot</code>	If TRUE, <code>ShinyDriver\$snapshot()</code> will turn into both <code>AppDriver\$expect_values()</code> and <code>AppDriver\$expect_screenshot()</code> . If FALSE, <code>ShinyDriver\$snapshot()</code> will only turn into <code>AppDriver\$expect_values()</code> . If missing, <code>include_expect_screenshot</code> will behave as FALSE if <code>shinytest::testApp(compareImages = FALSE)</code> or <code>ShinyDriver\$snapshotIni = FALSE</code> is called.
<code>quiet</code>	Logical that determines if migration information and steps should be printed to the console.

Details

shinytest file contents will be traversed and converted to the new **shinytest2** format. If the **shinytest** code can not be directly seen in the code, then it will not be converted.

Value

Invisible TRUE

platform_variant	<i>Platform specific variant</i>
------------------	----------------------------------

Description

Returns a string to be used within **testthat**'s' snapshot testing. Currently, the Operating System and R Version (major, minor, no patch version) are returned.

Usage

```
platform_variant(..., os_name = TRUE, r_version = TRUE)
```

Arguments

...	Must be empty. Allows for parameter expansion.
os_name	if TRUE, include the OS name in the output
r_version	if TRUE, include the major and minor version of the R version, no patch version

Details

If more information is needed in the future to distinguish standard testing environments, this function will be updated accordingly.

See Also

[testthat::test_dir\(\)](#)

record_test	<i>Launch test event recorder for a Shiny app</i>
-------------	---

Description

Once a recording is completed, it will create or append a new **shinytest2** test to the **testthat** test_file.

Usage

```
record_test(
  app = ".",
  ...,
  name = NULL,
  seed = NULL,
  load_timeout = NULL,
  shiny_args = list(),
  test_file = "test-shinytest2.R",
  open_test_file = rlang::is_interactive(),
  allow_no_input_binding = NULL,
  run_test = TRUE
)
```

Arguments

app	A AppDriver object, or path to a Shiny application.
...	Must be empty. Allows for parameter expansion.
name	Name provided to AppDriver . This value should be unique between all tests within a test file. If it is not unique, different expect methods may overwrite each other.
seed	A random seed to set before running the app. This seed will also be used in the test script.
load_timeout	Maximum time to wait for the Shiny application to load, in milliseconds. If a value is provided, it will be saved in the test script.
shiny_args	A list of options to pass to <code>runApp()</code> . If a value is provided, it will be saved in the test script.
test_file	Base file name of the testthat test file.
open_test_file	If TRUE, the test file will be opened in an editor via <code>file.edit()</code> before executing.
allow_no_input_binding	This value controls if events without input bindings are recorded. <ul style="list-style-type: none"> • If TRUE, events without input bindings are recorded. • If FALSE, events without input bindings are not recorded. • If NULL (default), if an updated input does not have a corresponding input, a modal dialog will be shown asking if unbound input events should be recorded. See <code>AppDriver\$set_inputs()</code> for more information.
run_test	If TRUE, <code>test_file</code> will be executed after saving the recording.

Uploading files

Files that are uploaded to your Shiny app must be located somewhere within the `tests/testthat` subdirectory or available via `system.file()`.

Files that are uploaded during recording that do not have a valid path will have a warning inserted into the code. Please fix the file path by moving the file to the `tests/testthat` subdirectory or by using `system.file()`. After fixing the path, remove the line of warning code.

See Also

[test_app\(\)](#)

Examples

```
## Not run:
record_test("path/to/app")

## End(Not run)
```

test_app

*Test Shiny applications with **testthat***

Description

This is a helper method that wraps around `testthat::test_dir()` to test your Shiny application or Shiny runtime document. This is similar to how `testthat::test_check()` tests your R package but for your app.

Usage

```
test_app(app_dir = missing_arg(), ..., check_setup = TRUE)
```

Arguments

<code>app_dir</code>	The base directory for the Shiny application. <ul style="list-style-type: none"> If <code>app_dir</code> is missing and <code>test_app()</code> is called within the <code>./tests/testthat.R</code> file, the parent directory (<code>"../"</code>) is used. Otherwise, the default path of <code>"."</code> is used.
<code>...</code>	Parameters passed to <code>testthat::test_dir()</code>
<code>check_setup</code>	If <code>TRUE</code> , the app will be checked for the presence of <code>./tests/testthat/setup.R</code> . This file must contain a call to <code>load_app_env()</code> .

Details

When setting up tests for your app,

Example usage:

```

## Interactive usage
# Test Shiny app in current working directory
shinytest2::test_app()

# Test Shiny app in another directory
path_to_app <- "path/to/app"
shinytest2::test_app(path_to_app)

## File: ./tests/testthat.R
# Will find Shiny app in "../"
shinytest2::test_app()

## File: ./tests/testthat/test-shinytest2.R
# Test a shiny application within your own {testthat} code
test_that("Testing a Shiny app in a package", {
  shinytest2::test_app(path_to_app)
})

```

Uploading files

When testing an application, all non-temp files that are uploaded should be located in the `./tests/testthat` directory. This allows for tests to be more portable and self contained.

When recording a test with `record_test()`, for every uploaded file that is located outside of `./tests/testthat`, a warning will be thrown. Once the file path has been fixed, you may remove the warning statement.

Different ways to test

`test_app()` is an opinionated testing function that will only execute **testthat** tests in the `./tests/testthat` folder. If (for some rare reason) you have other non-**testthat** tests to execute, you can call `shiny::runTests()`. This method will generically run all test runners and their associated tests.

```
# Execute a single Shiny app's {testthat} file such as `./tests/testthat/test-shinytest2.R`
test_app(filter = "shinytest2")
```

```
# Execute all {testthat} tests
test_app()
```

```
# Execute all tests for all test runners
shiny::runTests()
```

See Also

- `record_test()` to create tests to record against your Shiny application.
- `testthat::snapshot_review()` and `testthat::snapshot_accept()` if you want to compare or update snapshots after testing.
- `load_app_env()` to load the Shiny application's helper files. This is only necessary if you want access to the values while testing.

Description

Use **shinytest2** with your Shiny application

Usage

```
use_shinytest2(  
  app_dir = ".",  
  runner = missing_arg(),  
  setup = missing_arg(),  
  ignore = missing_arg(),  
  package = missing_arg(),  
  ...,  
  quiet = FALSE,  
  overwrite = FALSE  
)  
  
use_shinytest2_test(  
  app_dir = ".",  
  open = rlang::is_interactive(),  
  quiet = FALSE,  
  overwrite = FALSE  
)
```

Arguments

app_dir	The base directory for the Shiny application
runner	If TRUE, creates a shinytest2 test runner at ./tests/testthat.R
setup	If TRUE, creates a setup file called ./tests/testthat/setup.R containing a call to load_app_env()
ignore	If TRUE, adds entries to .Rbuildignore and .gitignore to ignore new debug screenshots. (*.new.png)
package	If TRUE, adds shinytest2 to Suggests in the DESCRIPTION file.
...	Must be empty. Allows for parameter expansion.
quiet	If TRUE, console output will be suppressed.
overwrite	If TRUE, the test file or test runner will be overwritten.
open	If TRUE, the test file will be opened in an editor via file.edit() after saving.

Functions

- `use_shinytest2()`: This **usethis**-style method initializes many different useful features when using **shinytest2**:
 - `runner`: Creates a **shinytest2** test runner at `./tests/testthat.R`. This file will contain a call to `test_app()`.
 - `setup`: Creates `./tests/testthat/setup.R` to add your Shiny `./R` objects and functions into the testing environment. This file will run before testing begins.
 - `ignore`: Add an entry to `./Rbuildignore` (if it exists) and `.gitignore` to ignore new debug screenshots. (`*_new.png`)
 - `package`: Adds shinytest to the Suggests packages in the DESCRIPTION file (if it exists).

If any of these values are *not* missing, the remaining missing values will be set to FALSE. This allows `use_shinytest2()` to add more flags in future versions without opting into all changes inadvertently.

- `use_shinytest2_test()`: Creates a test file called `./tests/testthat/test-shinytest2.R`. By default, this file's template test will initialize your Shiny application and expect the initial values.

This method will also set up a test runner if it does not exist.

Examples

```
# Set up shinytest2 testing configs
## Not run: use_shinytest2()
# Set up a shinytest2 test
## Not run: use_shinytest2_test()
```


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