Package 'shinytest2'

August 26, 2023

Title Testing for Shiny Applications

Version 0.3.1

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

License MIT + file LICENSE

Encoding UTF-8

Language en-US

RoxygenNote 7.2.3

URL https://rstudio.github.io/shinytest2/,
https://github.com/rstudio/shinytest2

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

VignetteBuilder knitr

Depends testthat (>= 3.1.2)

Imports R6 (>= 2.4.0), callr, checkmate (>= 2.0.0), chromote (>=
0.1.2), crayon, ellipsis, fs, globals (>= 0.14.0), httr,
jsonlite, pingr, rlang (>= 0.3.0), rmarkdown, shiny, withr

Suggests deSolve, diffobj, ggplot2, knitr, plotly, png, rstudioapi,
shinyWidgets, shinytest (>= 1.5.1), shinyvalidate (>= 0.1.2),
showimage, usethis, vdiffr (>= 1.0.0), spelling

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-timeout.R'
'app-driver-upload-file.R' 'app-driver-variant.R'

1

'app-driver-wait.R' 'app-driver-window.R' 'app-driver.R'
'chromote-methods.R' 'compare-screenshot-threshold.R' 'cpp11.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'
'shinytest2-package.R' 'test-app.R' 'use.R'

R topics documented:

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 underutilized 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 = missing_arg(),
    timeout = missing_arg(),
    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 This value can be many different things:

- A directory containing your Shiny application or a run-time Shiny R Markdown document.
- A URL pointing to your shiny application. (Don't forget to set testmode = TRUE when running your application!)
- A Shiny application object which inherits from "shiny.appobj".

By default, app_dir is set to test_path("../../") to work in both interactive and testing usage.

If a file path is not provided to app_dir, snapshots will be saved as if the root of the Shiny application was 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 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 15s.

If load_timeout is missing, the first numeric value found will be used:

- R option options(shinytest2.load_timeout=)
- System environment variable SHINYTEST2_LOAD_TIMEOUT
- 15 * 1000 (15 seconds)

timeout Default number of milliseconds for any timeout or timeout_ parameter in the AppDriver class. Defaults to 4s.

If timeout is missing, the first numeric value found will be used:

- R option options(shinytest2.timeout=)

- System environment variable SHINYTEST2_TIMEOUT
- 4 * 1000 (4 seconds)

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 inital 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 an 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 speci-
   fied `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_ = missing_arg(),
  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). Defaults to the resolved `timeout` value during the `AppDriver` initialization.

`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_ = missing_arg())
```

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). Defaults to the resolved `timeout` value during the `AppDriver` initialization.

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 browser's scrollable area 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 temp file 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 = missing_arg(),
  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). Defaults to the resolved timeout value during the `AppDriver` initialization.

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 = missing_arg()
)
```

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). Defaults to the resolved timeout value during the `AppDriver` initialization.

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 = missing_arg()
)
```

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). Defaults to the resolved
    timeout value during the AppDriver initialization.

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(
  ...,
  threshold = NULL,
  kernel_size = 5,
  screenshot_args = missing_arg(),
  delay = missing_arg(),
  selector = missing_arg(),
  compare = missing_arg(),
  quiet = FALSE,
  name = NULL,
  cran = FALSE
)
```

Arguments:

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

threshold Parameter supplied to [compare_screenshot_threshold()](#) when using the default compare method. If the value of threshold is NULL, [compare_screenshot_threshold()](#) will act like [testthat::compare_file_binary](#). However, if threshold is a positive number, it will be compared against the largest convolution value found if the two images fail a [testthat::compare_file_binary](#) comparison.

Which value should I use? Threshold values values below 5 help deter false-positive screen-shot comparisons (such as inconsistent rounded corners). Larger values in the 10s and 100s will help find *real* changes. However, not all values are one size fits all and you will need to play with a threshold that fits your needs.

kernel_size Parameter supplied to [compare_screenshot_threshold()](#) when using the default compare method. The kernel_size represents the height and width of the convolution kernel applied to the pixel differences. This integer-like value should be relatively small.

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 screenshot_args is:

- TRUE: A screenshot of the browser's scrollable area will be taken with no delay

- A named list of arguments: Arguments passed directly to [chromote::ChromoteSession](#)'s $get_screenshot() method. The delay argument will default to 0 seconds. The selector argument can take two special values in addition to being a CSS DOM selector.

  - "scrollable_area" (default): The entire scrollable area will be captured. Typically this is your browser's viewport size, but it can be larger if the page is scrollable. This value works well with Apps that contain elements whose calculated dimensions may be different than their presented size.

  - "viewport": This value will capture the browser's viewport in its current viewing location, height, and width. It will only capture what is currently being seen with $view().

  In v0.3.0, the default selector value was changed from the HTML DOM selector ("html") to entire scrollable area ("scrollable_area").

delay The number of **seconds** to wait before taking the screenshot. This value can be supplied as delay or screenshot_args$delay, with the delay parameter having 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 be supplied as `selector` or `screenshot_args$selector`, with the `selector` parameter having preference.

In `v0.3.0`, two special `selector` values were added:

- `"scrollable_area"` (default): The entire scrollable area will be captured. Typically this is your browser's viewport size, but it can be larger if the page is scrollable. This value works well with Apps that contain elements whose calculated dimensions may be different than their presented size.
- `"viewport"`: This value will capture the browser's viewport in its current viewing location, height, and width. It will only capture what is currently being seen with `$view()`.

In `v0.3.0`, the default `selector` value was changed from the HTML DOM selector (`"html"`) to entire scrollable area (`"scrollable_area"`).

compare A function used to compare the screenshot snapshot files. The function should take two inputs, the paths to the `old` and `new` snapshot, and return either `TRUE` or `FALSE`.

compare defaults to a function that wraps around `compare_screenshot_threshold(old, new, threshold = threshold, kernel_size = kernel_size, quiet = quiet)`. Note: if threshold is `NULL` (default), compare will behave as if [`testthat::compare_file_binary()`](testthat::compare_file_binary()) was provided, comparing the two images byte-by-byte.

quiet Parameter supplied to [`compare_screenshot_threshold()`](compare_screenshot_threshold()) when using the default compare method. If `FALSE`, diagnostic information will be presented when the computed value is larger than a non-NULL `threshold` value.

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{
# These example lines should be performed in a `./tests/testthat`
# test file so that snapshot files can be properly saved

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

# Expect a full size screenshot to be pixel perfect
app$expect_screenshot()

# Images are brittle when containing plots
app$expect_screenshot(selector = "#distPlot")

# Test with more threshold in pixel value differences
# Helps with rounded corners
app$expect_screenshot(threshold = 10)

# Equivalent expectations
app$expect_screenshot() # default
app$expect_screenshot(threshold = NULL)
```

```
  app$expect_screenshot(compare = testthat::compare_file_binary)
  expect_snapshot_file(
    app$get_screenshot(),
    variant = app$get_variant(),
    compare = testthat::compare_file_binary
  )

  # Equivalent expectations
  app$expect_screenshot(threshold = 3, kernel_size = 5)
  app$expect_screenshot(compare = function(old, new) {
    compare_screenshot_threshold(
      old, new,
      threshold = 3,
      kernel_size = 5
    )
  })
  expect_screenshot_file(
    app$get_screenshot(),
    variant = app$get_variant(),
    compare = function(old, new) {
      compare_screenshot_threshold(
        old, new,
        threshold = 3,
        kernel_size = 5
      )
    }
  )

  # Take a screenshot of the entire scrollable area
  app$expect_screenshot()
  app$expect_screenshot(selector = "scrollable_area")

  ## Take a screenshot of the current viewport
  # Shrink the window to be smaller than the app
  app$set_window_size(400, 500)
  # Scroll the viewport just a bit
  app$run_js("window.scroll(30, 70)")
  # Take screenshot of browser viewport
  app$expect_screenshot(selector = "viewport")
}
```

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 screenshot_args is:

- TRUE: A screenshot of the browser's scrollable area will be taken with no delay
- A named list of arguments: Arguments passed directly to chromote::ChromoteSession's $get_screenshot() method. The delay argument will default to 0 seconds. The selector argument can take two special values in addition to being a CSS DOM selector.
  - "scrollable_area" (default): The entire scrollable area will be captured. Typically this is your browser's viewport size, but it can be larger if the page is scrollable. This value works well with Apps that contain elements whose calculated dimensions may be different than their presented size.
  - "viewport": This value will capture the browser's viewport in its current viewing location, height, and width. It will only capture what is currently being seen with $view().

  In v0.3.0, the default selector value was changed from the HTML DOM selector ("html") to entire scrollable area ("scrollable_area").

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

delay The number of **seconds** to wait before taking the screenshot. This value can be supplied as delay or screenshot_args$delay, with the delay parameter having 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 be supplied as selector or screenshot_args$selector, with the selector parameter having preference.
In v0.3.0, two special selector values were added:

- "scrollable_area" (default): The entire scrollable area will be captured. Typically this is your browser's viewport size, but it can be larger if the page is scrollable. This value works well with Apps that contain elements whose calculated dimensions may be different than their presented size.
- "viewport": This value will capture the browser's viewport in its current viewing location, height, and width. It will only capture what is currently being seen with $view().

In v0.3.0, the default selector value was changed from the HTML DOM selector ("html") to entire scrollable area ("scrollable_area").

Examples:

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

```
# Display in graphics device
app$get_screenshot()

# Update bins then display `"disPlot"` in graphics device
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 = missing_arg())
```

Arguments:

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

timeout Amount of time to wait before giving up (milliseconds). Defaults to the resolved `timeout` value during the `AppDriver` initialization.

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 = missing_arg(),
  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` Amount of time to wait before giving up (milliseconds). Defaults to the resolved `timeout` value during the `AppDriver` initialization.

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

`timeout_` Amount of time to wait for a new output value before giving up (milliseconds). Defaults to the resolved `timeout` value during the `AppDriver` initialization.

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 = missing_arg(), 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 (milliseconds). Defaults to the resolved timeout value during the AppDriver initialization.

interval How often to check for the condition (milliseconds).

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
app$stop()

# 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
app$stop()
}
```

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.

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": "stdout" or "stderr"; Note, message() output is sent to stderr.
  - "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 recorded as "websocket"`.

Examples:

```
\dontrun{
app1 <- AppDriver$new(system.file("examples/01_hello", package = "shiny"))

app1$get_logs()
#> {shinytest2} R  info    10:00:28.86 Start AppDriver initialization
#> {shinytest2} R  info    10:00:28.86 Starting Shiny app
#> {shinytest2} R  info    10:00:29.76 Creating new ChromoteSession
#> {shinytest2} R  info    10:00:30.56 Navigating to Shiny app
#> {shinytest2} R  info    10:00:30.70 Injecting shiny-tracer.js
#> {chromote}   JS info    10:00:30.75 shinytest2; jQuery found
#> {chromote}   JS info  10:00:30.77 shinytest2; Waiting for shiny session to connect
#> {chromote}   JS info    10:00:30.77 shinytest2; Loaded
#> {shinytest2} R  info    10:00:30.77 Waiting for Shiny to become ready
#> {chromote}   JS info    10:00:30.90 shinytest2; Connected
#> {chromote}   JS info    10:00:30.95 shinytest2; shiny:busy
#> {shinytest2} R  info  10:00:30.98 Waiting for Shiny to become idle for 200ms within 15000ms
#> {chromote}   JS info  10:00:30.98 shinytest2; Waiting for Shiny to be stable
#> {chromote}   JS info    10:00:31.37 shinytest2; shiny:idle
#> {chromote}   JS info    10:00:31.38 shinytest2; shiny:value distPlot
#> {chromote}   JS info    10:00:31.57 shinytest2; Shiny has been idle for 200ms
#> {shinytest2} R  info    10:00:31.57 Shiny app started
#> {shiny}       R  stderr ----------- Loading required package: shiny
#> {shiny}       R  stderr ----------- Running application in test mode.
#> {shiny}       R  stderr -----------
#> {shiny}       R  stderr ----------- Listening on http://127.0.0.1:4679


# To capture all websocket traffic, set `options = list(shiny.trace = TRUE)`
app2 <- AppDriver$new(
  system.file("examples/01_hello", package = "shiny"),
  options = list(shiny.trace = TRUE)
)

app2$get_logs()
```

```
## (All WebSocket messages have been replaced with `WEBSOCKET_MSG` in example below)
#> {shinytest2} R  info      10:01:57.49 Start AppDriver initialization
#> {shinytest2} R  info      10:01:57.50 Starting Shiny app
#> {shinytest2} R  info      10:01:58.20 Creating new ChromoteSession
#> {shinytest2} R  info      10:01:58.35 Navigating to Shiny app
#> {shinytest2} R  info      10:01:58.47 Injecting shiny-tracer.js
#> {chromote}   JS info      10:01:58.49 shinytest2; jQuery not found
#> {chromote}   JS info      10:01:58.49 shinytest2; Loaded
#> {shinytest2} R  info      10:01:58.50 Waiting for Shiny to become ready
#> {chromote}   JS info      10:01:58.55 shinytest2; jQuery found
#> {chromote}   JS info    10:01:58.55 shinytest2; Waiting for shiny session to connect
#> {chromote}   JS websocket 10:01:58.64 send WEBSOCKET_MSG
#> {chromote}   JS websocket 10:01:58.67 recv WEBSOCKET_MSG
#> {chromote}   JS info      10:01:58.67 shinytest2; Connected
#> {chromote}   JS websocket 10:01:58.71 recv WEBSOCKET_MSG
#> {chromote}   JS websocket 10:01:58.72 recv WEBSOCKET_MSG
#> {chromote}   JS info      10:01:58.72 shinytest2; shiny:busy
#> {chromote}   JS websocket 10:01:58.73 recv WEBSOCKET_MSG
#> {chromote}   JS websocket 10:01:58.73 recv WEBSOCKET_MSG
#> {shinytest2} R  info    10:01:58.75 Waiting for Shiny to become idle for 200ms within 15000ms
#> {chromote}   JS info    10:01:58.75 shinytest2; Waiting for Shiny to be stable
#> {chromote}   JS websocket 10:01:58.81 recv WEBSOCKET_MSG
#> {chromote}   JS websocket 10:01:58.81 recv WEBSOCKET_MSG
#> {chromote}   JS info      10:01:58.81 shinytest2; shiny:idle
#> {chromote}   JS websocket 10:01:58.82 recv WEBSOCKET_MSG
#> {chromote}   JS info      10:01:58.82 shinytest2; shiny:value distPlot
#> {chromote}   JS info    10:01:59.01 shinytest2; Shiny has been idle for 200ms
#> {shinytest2} R  info      10:01:59.01 Shiny app started
#> {shiny}      R  stderr   ----------- Loading required package: shiny
#> {shiny}      R  stderr   ----------- Running application in test mode.
#> {shiny}      R  stderr   -----------
#> {shiny}      R  stderr   ----------- Listening on http://127.0.0.1:4560
#> {shiny}    R stderr   ----------- SEND {"config":{"workerId":"","sessionId"|truncated
#> {shiny}    R stderr   ----------- RECV {"method":"init","data":{"bins":30,|truncated
#> {shiny}    R stderr   ----------- SEND {"custom":{"showcase-src":{"srcref":|truncated
#> {shiny}      R  stderr   ----------- SEND {"busy":"busy"}
#> {shiny}    R stderr   ----------- SEND {"custom":{"showcase-src":{"srcref":|truncated
#> {shiny}    R stderr   ----------- SEND {"recalculating":{"name":"distPlot",|truncated
#> {shiny}    R stderr   ----------- SEND {"recalculating":{"name":"distPlot",|truncated
#> {shiny}      R  stderr   ----------- SEND {"busy":"idle"}
#> {shiny}    R stderr   ----------- SEND {"errors":{},"values":{"distPlot":|truncated

# The log that is returned is a `data.frame()`.
log <- app2$get_logs()
tibble::glimpse(log)
#> Rows: 43
#> Columns: 5
#> $ workerid <chr> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
```

```
#> $ timestamp <dttm> 2022-09-19 10:01:57, 2022-09-19 10:01:57, 2022-09-19 10:01:58, 2022...
#> $ location  <chr> "shinytest2", "shinytest2", "shinytest2", "shinytest2", "shinytest2"...
#> $ level     <chr> "info", "info", "info", "info", "info", "info", "info", "info", "inf...
#> $ message   <chr> "Start AppDriver initialization", "Starting Shiny app", "Creating ne...
#> $ workerid  <chr> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
#> $ timestamp <dttm> 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", "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 10:01:58.64 send WEBSOCKET_MSG
#> {chromote} JS websocket 10:01:58.67 recv WEBSOCKET_MSG
#> {chromote} JS websocket 10:01:58.71 recv WEBSOCKET_MSG
#> {chromote} JS websocket 10:01:58.72 recv WEBSOCKET_MSG
#> {chromote} JS websocket 10:01:58.73 recv WEBSOCKET_MSG
#> {chromote} JS websocket 10:01:58.73 recv WEBSOCKET_MSG
#> {chromote} JS websocket 10:01:58.81 recv WEBSOCKET_MSG
#> {chromote} JS websocket 10:01:58.81 recv WEBSOCKET_MSG
#> {chromote} JS websocket 10:01:58.82 recv 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(signal_timeout = missing_arg())
```

Arguments:

signal_timeout Milliseconds to wait between sending a SIGINT, SIGTERM, and SIGKILL to the Shiny process. Defaults to 500ms and does not utilize the resolved value from `AppDriver$new(timeout=)`. However, if **covr** is currently executing, then the `timeout` is set to 20,000ms to allow for the coverage report to be generated.

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 inital 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:
# These example lines should be performed in a `./tests/testthat`
# test file so that snapshot files can be properly saved

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

# Expect a full size screenshot to be pixel perfect
app$expect_screenshot()

# Images are brittle when containing plots
app$expect_screenshot(selector = "#distPlot")

# Test with more threshold in pixel value differences
# Helps with rounded corners
app$expect_screenshot(threshold = 10)

# Equivalent expectations
app$expect_screenshot() # default
app$expect_screenshot(threshold = NULL)
app$expect_screenshot(compare = testthat::compare_file_binary)
expect_snapshot_file(
  app$get_screenshot(),
```

```
  variant = app$get_variant(),
  compare = testthat::compare_file_binary
)

# Equivalent expectations
app$expect_screenshot(threshold = 3, kernel_size = 5)
app$expect_screenshot(compare = function(old, new) {
  compare_screenshot_threshold(
    old, new,
    threshold = 3,
    kernel_size = 5
  )
})
expect_screenshot_file(
  app$get_screenshot(),
  variant = app$get_variant(),
  compare = function(old, new) {
    compare_screenshot_threshold(
      old, new,
      threshold = 3,
      kernel_size = 5
    )
  }
)

# Take a screenshot of the entire scrollable area
app$expect_screenshot()
app$expect_screenshot(selector = "scrollable_area")

## Take a screenshot of the current viewport
# Shrink the window to be smaller than the app
app$set_window_size(400, 500)
# Scroll the viewport just a bit
app$run_js("window.scroll(30, 70)")
# Take screenshot of browser viewport
app$expect_screenshot(selector = "viewport")

## 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 graphics device
app$get_screenshot()

# Update bins then display `"disPlot"` in graphics device
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$new(shiny_app, check_names = TRUE)
#> Warning:
#> ! Shiny inputs should have unique HTML id values.
#> i The following HTML id values are not unique:
#> · text
app$stop()

# 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
app$stop()

## 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:
app1 <- AppDriver$new(system.file("examples/01_hello", package = "shiny"))

app1$get_logs()
#> {shinytest2} R  info   10:00:28.86 Start AppDriver initialization
#> {shinytest2} R  info   10:00:28.86 Starting Shiny app
```

```
#> {shinytest2} R  info   10:00:29.76 Creating new ChromoteSession
#> {shinytest2} R  info   10:00:30.56 Navigating to Shiny app
#> {shinytest2} R  info   10:00:30.70 Injecting shiny-tracer.js
#> {chromote}   JS info   10:00:30.75 shinytest2; jQuery found
#> {chromote}   JS info   10:00:30.77 shinytest2; Waiting for shiny session to connect
#> {chromote}   JS info   10:00:30.77 shinytest2; Loaded
#> {shinytest2} R  info   10:00:30.77 Waiting for Shiny to become ready
#> {chromote}   JS info   10:00:30.90 shinytest2; Connected
#> {chromote}   JS info   10:00:30.95 shinytest2; shiny:busy
#> {shinytest2} R info  10:00:30.98 Waiting for Shiny to become idle for 200ms within 15000ms
#> {chromote}   JS info   10:00:30.98 shinytest2; Waiting for Shiny to be stable
#> {chromote}   JS info   10:00:31.37 shinytest2; shiny:idle
#> {chromote}   JS info   10:00:31.38 shinytest2; shiny:value distPlot
#> {chromote}   JS info   10:00:31.57 shinytest2; Shiny has been idle for 200ms
#> {shinytest2} R  info   10:00:31.57 Shiny app started
#> {shiny}      R  stderr ----------- Loading required package: shiny
#> {shiny}      R  stderr ----------- Running application in test mode.
#> {shiny}      R  stderr -----------
#> {shiny}      R  stderr ----------- Listening on http://127.0.0.1:4679


# To capture all websocket traffic, set `options = list(shiny.trace = TRUE)`
app2 <- AppDriver$new(
  system.file("examples/01_hello", package = "shiny"),
  options = list(shiny.trace = TRUE)
)

app2$get_logs()
## (All WebSocket messages have been replaced with `WEBSOCKET_MSG` in example below)
#> {shinytest2} R  info      10:01:57.49 Start AppDriver initialization
#> {shinytest2} R  info      10:01:57.50 Starting Shiny app
#> {shinytest2} R  info      10:01:58.20 Creating new ChromoteSession
#> {shinytest2} R  info      10:01:58.35 Navigating to Shiny app
#> {shinytest2} R  info      10:01:58.47 Injecting shiny-tracer.js
#> {chromote}   JS info      10:01:58.49 shinytest2; jQuery not found
#> {chromote}   JS info      10:01:58.49 shinytest2; Loaded
#> {shinytest2} R  info      10:01:58.50 Waiting for Shiny to become ready
#> {chromote}   JS info      10:01:58.55 shinytest2; jQuery found
#> {chromote}   JS info      10:01:58.55 shinytest2; Waiting for shiny session to connect
#> {chromote}   JS websocket 10:01:58.64 send WEBSOCKET_MSG
#> {chromote}   JS websocket 10:01:58.67 recv WEBSOCKET_MSG
#> {chromote}   JS info      10:01:58.67 shinytest2; Connected
#> {chromote}   JS websocket 10:01:58.71 recv WEBSOCKET_MSG
#> {chromote}   JS websocket 10:01:58.72 recv WEBSOCKET_MSG
#> {chromote}   JS info      10:01:58.72 shinytest2; shiny:busy
#> {chromote}   JS websocket 10:01:58.73 recv WEBSOCKET_MSG
#> {chromote}   JS websocket 10:01:58.73 recv WEBSOCKET_MSG
#> {shinytest2} R info    10:01:58.75 Waiting for Shiny to become idle for 200ms within 15000ms
#> {chromote}   JS info      10:01:58.75 shinytest2; Waiting for Shiny to be stable
#> {chromote}   JS websocket 10:01:58.81 recv WEBSOCKET_MSG
#> {chromote}   JS websocket 10:01:58.81 recv WEBSOCKET_MSG
#> {chromote}   JS info      10:01:58.81 shinytest2; shiny:idle
#> {chromote}   JS websocket 10:01:58.82 recv WEBSOCKET_MSG
```

```
#> {chromote}  JS info      10:01:58.82 shinytest2; shiny:value distPlot
#> {chromote}  JS info      10:01:59.01 shinytest2; Shiny has been idle for 200ms
#> {shinytest2} R info      10:01:59.01 Shiny app started
#> {shiny}      R  stderr    ----------- Loading required package: shiny
#> {shiny}      R  stderr    ----------- Running application in test mode.
#> {shiny}      R  stderr    -----------
#> {shiny}      R  stderr    ----------- Listening on http://127.0.0.1:4560
#> {shiny}    R stderr    ----------- SEND {"config":{"workerId":"","sessionId"|truncated
#> {shiny}     R stderr     ----------- RECV {"method":"init","data":{"bins":30,|truncated
#> {shiny}     R stderr    ----------- SEND {"custom":{"showcase-src":{"srcref":|truncated
#> {shiny}       R  stderr    ----------- SEND {"busy":"busy"}
#> {shiny}     R stderr    ----------- SEND {"custom":{"showcase-src":{"srcref":|truncated
#> {shiny}     R stderr    ----------- SEND {"recalculating":{"name":"distPlot",|truncated
#> {shiny}     R stderr    ----------- SEND {"recalculating":{"name":"distPlot",|truncated
#> {shiny}       R  stderr    ----------- SEND {"busy":"idle"}
#> {shiny}      R  stderr    ----------- SEND {"errors":{},"values":{"distPlot":|truncated

# The log that is returned is a `data.frame()`.
log <- app2$get_logs()
tibble::glimpse(log)
#> Rows: 43
#> Columns: 5
#> $ workerid  <chr> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
#> $ timestamp <dttm> 2022-09-19 10:01:57, 2022-09-19 10:01:57, 2022-09-19 10:01:58, 2022...
#> $ location  <chr> "shinytest2", "shinytest2", "shinytest2", "shinytest2", "shinytest2"...
#> $ level     <chr> "info", "info", "info", "info", "info", "info", "info", "info", "inf...
#> $ message   <chr> "Start AppDriver initialization", "Starting Shiny app", "Creating ne...
#> $ workerid  <chr> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, ...
#> $ timestamp <dttm> 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", "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 10:01:58.64 send WEBSOCKET_MSG
#> {chromote} JS websocket 10:01:58.67 recv WEBSOCKET_MSG
#> {chromote} JS websocket 10:01:58.71 recv WEBSOCKET_MSG
#> {chromote} JS websocket 10:01:58.72 recv WEBSOCKET_MSG
#> {chromote} JS websocket 10:01:58.73 recv WEBSOCKET_MSG
#> {chromote} JS websocket 10:01:58.73 recv WEBSOCKET_MSG
#> {chromote} JS websocket 10:01:58.81 recv WEBSOCKET_MSG
#> {chromote} JS websocket 10:01:58.81 recv WEBSOCKET_MSG
#> {chromote} JS websocket 10:01:58.82 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)
```

---

compare_screenshot_threshold

Compare screenshots given threshold value

Description

chromote can sometimes produce screenshot images with non-deterministic (yet close) color values. This can happen in locations such as rounded corners of divs or textareas.

Usage

```
compare_screenshot_threshold(
  old,
  new,
  ...,
  threshold = NULL,
  kernel_size = 5,
  quiet = FALSE
)

screenshot_max_difference(old, new = missing_arg(), ..., kernel_size = 5)
```

Arguments

old	Current screenshot file path
new	New screenshot file path
...	Must be empty. Allows for parameter expansion.
threshold	If the value of threshold is NULL, compare_screenshot_threshold() will act like [testthat::compare_file_binary](). However, if threshold is a positive number, it will be compared against the largest convolution value found if the two images fail a [testthat::compare_file_binary]() comparison. The max value that can be found is 4 * kernel_size ^ 2.
	Threshold values values below 5 help deter false-positive screenshot comparisons (such as inconsistent rounded corners). Larger values in the 10s and 100s will help find *real* changes. However, not all values are one size fits all and you will need to play with a threshold that fits your needs.
	To find the current difference between two images, use screenshot_max_difference().

kernel_size   The kernel_size represents the height and width of the convolution kernel applied to the matrix of pixel differences. This integer-like value should be relatively small, such as 5.

quiet   If FALSE and the value is larger than threshold, then a message is printed to the console. This is helpful when getting a failing image and being informed about how different the new image is from the old image.

Details

These differences make comparing screenshots impractical using traditional expectation methods as false-positives are produced often over time. To mitigate this, we can use a *fuzzy matching* algorithm that can tolerate small regional differences throughout the image. If the local changes found are larger than the threshold, then the images are determined to be different. Both the screenshot difference threshold and the size of the kernel (kernel_size) can be set to tune the false positive rate.

Functions

- compare_screenshot_threshold(): Compares two images and allows for a threshold difference of *so many* units in each RGBA color channel.

  It is suggested to use this method with [AppDriver](#)$expect_screenshot(threshold=, kernel_size=) to make expectations on screenshots given particular threshold and kernel_size values.

- screenshot_max_difference(): Finds the difference between two screenshots.

  This value can be used in compare_screenshot_threshold(threshold=). It is recommended that the value used for compare_screenshot_threshold(threshold=) is larger than the immediate max difference found. This allows for random fluctuations when rounding sub pixels.

  If new is missing, it will use the file value of old (FILE.png) and default to FILE.new.png

Algorithm for the difference between two screenshots

1. First the two images are compared using [testthat::compare_file_binary()](#). If the files are identical, return TRUE that the screenshot images are the same.

2. If threshold is NULL, return FALSE as the convolution will not occur.

3. Prepare the screenshot difference matrix by reading the RGBA channels of each image and find their respective absolute differences

4. Sum the screenshot difference matrix channels at each pixel location

5. Perform a convolution using a small square kernel matrix that is kernel_size big and filled with 1s.

6. Find the largest value in the resulting convolution matrix.

7. If this max convolution value is larger than threshold, return FALSE, images are different.

8. Otherwise, return TRUE, images are the same.

Examples

```
img_folder <- system.file("example/imgs/", package = "shinytest2")
slider_old <- fs::path(img_folder, "slider-old.png")
slider_new <- fs::path(img_folder, "slider-new.png")

# Can you see the differences between these two images?
showimage::show_image(slider_old)
showimage::show_image(slider_new)

# You might have caught the difference between the two images!
slider_diff <- fs::path(img_folder, "slider-diff.png")
showimage::show_image(slider_diff)

# Let's find the difference between the two images
screenshot_max_difference(slider_old, slider_new)
# ~ 28

# Using different threshold values...
compare_screenshot_threshold(slider_old, slider_new, threshold = NULL)
#> FALSE # Images are not identical
compare_screenshot_threshold(slider_old, slider_new, threshold = 25)
#> FALSE # Images are more different than 25 units
compare_screenshot_threshold(slider_old, slider_new, threshold = 30)
#> TRUE # Images are not as different as 30 units

#########################

# Now let's look at two fairly similar images
bookmark_old <- fs::path(img_folder, "bookmark-old.png")
bookmark_new <- fs::path(img_folder, "bookmark-new.png")

# Can you see the difference between these two images?
# (Hint: Focused corners)
showimage::show_image(bookmark_old)
showimage::show_image(bookmark_new)

# Can you find the red pixels showing the differences?
# Hint: Look in the corners of the focused text
bookmark_diff <- fs::path(img_folder, "bookmark-diff.png")
showimage::show_image(bookmark_diff)

# Let's find the difference between the two images
screenshot_max_difference(bookmark_old, bookmark_new)
# ~ 0.25

# Using different threshold values...
compare_screenshot_threshold(bookmark_old, bookmark_new, threshold = NULL)
#> FALSE # Images are not identical
compare_screenshot_threshold(bookmark_old, bookmark_new, threshold = 5)
#> TRUE # Images are not as different than 5 units
```

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

app_dir	The base directory for the Shiny application.
renv	The environment in which the files in the 'R/" directory should be evaluated.
globalrenv	The environment in which `global.R` should be evaluated. If NULL, `global.R` 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-shinyte` 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

`app_dir`	Directory containing the Shiny application or Shiny Rmd file
`...`	Must be empty. Allows for parameter expansion.
`clean`	If TRUE, then the shinytest test directory and runner will be deleted after the migration to use **shinytest2**.
`include_expect_screenshot`	
	If TRUE, `ShinyDriver$snapshot()` will turn into both `AppDriver$expect_values()` and `AppDriver$expect_screenshot()`. If FALSE, `ShinyDriver$snapshot()` will only turn into `AppDriver$expect_values()`. If missing, `include_expect_screenshot` will behave as FALSE if `shinytest::testApp(compareImages = FALSE)` or `ShinyDriver$snapshotIni = FALSE)` is called.
`quiet`	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   *Platform specific variant*

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   *Launch test event recorder for a Shiny app*

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,
  record_screen_size = TRUE,
  run_test = TRUE
)
```

Arguments

`app`	A [`AppDriver`](AppDriver) object, or path to a Shiny application.
`...`	Must be empty. Allows for parameter expansion.
`name`	Name provided to [`AppDriver`](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 runApp(). 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 file.edit() before executing.

allow_no_input_binding

This value controls if events without input bindings are recorded.

- 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 AppDriver$set_inputs() for more information.

record_screen_size

If TRUE, the screen size will be recorded when initialized and changed.

run_test	If TRUE, test_file 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(),
  ...,
  name = missing_arg(),
  check_setup = TRUE,
  reporter = testthat::get_reporter(),
  stop_on_failure = missing_arg()
)
```

Arguments

app_dir	The base directory for the Shiny application. • If app_dir is missing and test_app() is called within the ./tests/testthat.R file, the parent directory ("../") is used. • Otherwise, the default path of "." is used.
...	Parameters passed to testthat::test_dir()
name	Name to display in the middle of the test name. This value is only used when calling test_app() inside of **testthat** test. The final testing context will have the format of "{test_context} - {name} - {app_test_context}".
check_setup	If TRUE, the app will be checked for the presence of ./tests/testthat/setup-shinytest2.R. This file must contain a call to load_app_env().
reporter	Reporter to pass through to testthat::test_dir().
stop_on_failure	
	If missing, the default value of TRUE will be used. However, if missing and currently testing, FALSE will be used to seamlessly integrate the app reporter to reporter.

Details

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 be 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.

---

use_shinytest2   *Use* **shinytest2** *with your Shiny application*

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-shinytest2.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-shinytest2.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()
```

Index