

Package ‘shiny.telemetry’

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Type Package

Title 'Shiny' App Usage Telemetry

Version 0.1.0

Description Enables instrumentation of 'Shiny' apps for tracking user session events such as input changes, browser type, and session duration. These events can be sent to any of the available storage backends and analyzed using the included 'Shiny' app to gain insights about app usage and adoption.

URL <https://appsilon.github.io/shiny.telemetry/>,
<https://github.com/Appsilon/shiny.telemetry>

BugReports <https://github.com/Appsilon/shiny.telemetry/issues>

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analytics_app	<i>Run example telemetry analytics dashboard</i>
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Description

Run example telemetry analytics dashboard

Usage

```
analytics_app(data_storage)
```

Arguments

data_storage data_storage instance that will handle all backend read and writes.

Value

An object that represents the analytics app. Printing the object or passing it to ‘shiny::runApp()’ will run it.

build_id_from_secret *Builds id from a secret that can be used in open communication*

Description

This is used in shiny.telemetry, but also externally with the Plumber endpoint.

Usage

```
build_id_from_secret(secret)
```

Arguments

secret string that contains information that should not be publicly available

Value

A string with an hash of the secret.

Examples

```
build_id_from_secret("some_random_secret_generated_with_uuid:UUIDgenerate")
```

build_token *Builds hash for a call*

Description

Function that takes creates a signature for the ‘values‘ using a secret.

Usage

```
build_token(values, secret = NULL)
```

Arguments

values R object that is going to be signed
secret string that contains the shared secret to sign the communication. It can be NULL on both telemetry and in plumber API to disable this communication feature

Details

This is used in shiny.telemetry, but also externally with the Plumber endpoint.

Value

A string that contains an hash to uniquely identify the parameters.

Examples

```

build_token(values = list(list(1, 2, 3), 2, 2, 3, "bb"))
build_token(values = list(list(1, 2, 3), 1, 2, 3, "bb"))
build_token(values = list(list(1, 2, 3), 1, 2, 3, "bb"), secret = "abc")
build_token(values = list(list(1, 2, 3), 1, 2, 3, "bb"), secret = "abd")

```

DataStorage

Data Storage abstract class to handle all the read/write operations

Description

Abstract R6 Class that encapsulates all the operations needed by Shiny.telemetry to read and write. This removes the complexity from the functions and uses a unified API.

Active bindings

event_bucket string that identifies the bucket to store user related and action data

Methods**Public methods:**

- [DataStorage\\$new\(\)](#)
- [DataStorage\\$insert\(\)](#)
- [DataStorage\\$read_event_data\(\)](#)
- [DataStorage\\$close\(\)](#)
- [DataStorage\\$clone\(\)](#)

Method new(): initialize data storage object common with all providers

Usage:

```
DataStorage$new()
```

Method insert(): Insert new data

Usage:

```
DataStorage$insert(app_name, type, session = NULL, details = NULL, time = NULL)
```

Arguments:

app_name string with name of dashboard (the version can be also included in this string)

type string that identifies the event type to store

session (optional) string that identifies a session where the event was logged

details atomic element of list with data to save in storage

time date time value indicates the moment the record was generated in UTC. By default it should be NULL and determined automatically, but in cases where it should be defined, use 'Sys.time()' or 'lubridate::now(tzone = "UTC")' to generate it.

Returns: Nothing. This method is called for side effects.

Method `read_event_data()`: read all user data from SQLite.

Usage:

```
DataStorage$read_event_data(date_from = NULL, date_to = NULL)
```

Arguments:

`date_from` (optional) date representing the starting day of results.

`date_to` (optional) date representing the last day of results.

Method `close()`: Close the connection if necessary

Usage:

```
DataStorage$close()
```

Method `clone()`: The objects of this class are cloneable with this method.

Usage:

```
DataStorage$clone(deep = FALSE)
```

Arguments:

`deep` Whether to make a deep clone.

DataStorageLogFile *Data storage class for JSON Log File*

Description

Implementation of the DataStorage R6 class to a JSON log file backend using a unified API for read/write operations

Super class

```
shiny.telemetry::DataStorage -> DataStorageLogFile
```

Active bindings

`event_bucket` string that identifies the file path to store user related and action data

Methods

Public methods:

- [DataStorageLogFile\\$new\(\)](#)
- [DataStorageLogFile\\$clone\(\)](#)

Method `new()`: Initialize the data storage class

Usage:

```
DataStorageLogFile$new(log_file_path)
```

Arguments:

`log_file_path` string with path to JSON log file user actions

Method `clone()`: The objects of this class are cloneable with this method.

Usage:

```
DataStorageLogFile$new(clone(deep = FALSE))
```

Arguments:

`deep` Whether to make a deep clone.

Examples

```
log_file_path <- tempfile(fileext = ".txt")
data_storage <- DataStorageLogFile$new(log_file_path = log_file_path)

data_storage$insert("example", "test_event", "session1")
data_storage$insert("example", "input", "s1", list(id = "id"))
data_storage$insert("example", "input", "s1", list(id = "id2", value = 32))

data_storage$insert(
  "example", "test_event_3_days_ago", "session1",
  time = lubridate::as_datetime(lubridate::today() - 3)
)

data_storage$read_event_data()
data_storage$read_event_data(Sys.Date() - 1, Sys.Date() + 1)

file.remove(log_file_path)
```

DataStorageMariaDB *Data storage class with MariaDB / MySQL provider*

Description

Implementation of the DataStorage R6 class to MariaDB backend using a unified API for read/write operations

Super classes

[shiny.telemetry::DataStorage](#) -> [shiny.telemetry::DataStorageSQLFamily](#) -> DataStorageMariaDB

Methods

Public methods:

- [DataStorageMariaDB\\$new\(\)](#)
- [DataStorageMariaDB\\$clone\(\)](#)

Method `new()`: Initialize the data storage class

Usage:

```
DataStorageMariaDB$new(  
  username = NULL,  
  password = NULL,  
  hostname = "127.0.0.1",  
  port = 3306,  
  dbname = "shiny_telemetry"  
)
```

Arguments:

username string with a MariaDB username.
password string with the password for the username.
hostname string with hostname of MariaDB instance.
port numeric value with the port number of MariaDB instance.
dbname string with the name of the database in the MariaDB instance.

Method clone(): The objects of this class are cloneable with this method.

Usage:

```
DataStorageMariaDB$clone(deep = FALSE)
```

Arguments:

deep Whether to make a deep clone.

Examples

```
## Not run:  
data_storage <- DataStorageMariaDB$new(user = "mariadb", password = "mysecretpassword")  
  
data_storage$insert("example", "test_event", "session1")  
data_storage$insert("example", "input", "s1", list(id = "id1"))  
data_storage$insert("example", "input", "s1", list(id = "id2", value = 32))  
  
data_storage$insert(  
  "example", "test_event_3_days_ago", "session1",  
  time = lubridate::as_datetime(lubridate::today() - 3)  
)  
  
data_storage$read_event_data()  
data_storage$read_event_data(Sys.Date() - 1, Sys.Date() + 1)  
data_storage$close()  
  
## End(Not run)
```

DataStoragePlumber *Data storage class with SQLite provider*

Description

Implementation of the DataStorage R6 class to SQLite backend using a unified API for read/write operations

Super class

`shiny.telemetry::DataStorage` -> DataStoragePlumber

Active bindings

`event_read_endpoint` string field that returns read action endpoint

`event_insert_endpoint` string field that returns insert action endpoint

Methods**Public methods:**

- `DataStoragePlumber$new()`
- `DataStoragePlumber$clone()`

Method `new()`: Initialize the data storage class

Usage:

```
DataStoragePlumber$new(
  hostname = "127.0.0.1",
  port = 80,
  protocol = "http",
  path = NULL,
  secret = NULL,
  authorization = NULL
)
```

Arguments:

`hostname` string with hostname of plumber instance,

`port` numeric value with port number of plumber instance.

`protocol` string with protocol of the connection of the plumber instance.

`path` string with sub-path of plumber deployment.

`secret` string with secret to sign communication with plumber (can be NULL for disabling communication signing).

`authorization` string to use in HTTP headers for authorization (for example: to authenticate to a plumber deployment behind a connect server).

Method `clone()`: The objects of this class are cloneable with this method.

Usage:

```
DataStoragePlumber$clone(deep = FALSE)
```

Arguments:

`deep` Whether to make a deep clone.

Examples

```
## Not run:
# Make sure the PLUMBER_SECRET environment variable is valid before
# running these examples (NULL or a valid secret)
```



```
data_storage <- DataStoragePlumber$new(  
  hostname = "connect.appsiilon.com",  
  path = "shiny_telemetry_plumber",  
  port = 443,  
  protocol = "https",  
  authorization = Sys.getenv("CONNECT_AUTHORIZATION_KEY"),  
  secret = Sys.getenv("PLUMBER_SECRET")  
)  
  
data_storage <- DataStoragePlumber$new(  
  hostname = "127.0.0.1",  
  path = NULL,  
  port = 8087,  
  protocol = "http",  
  secret = Sys.getenv("PLUMBER_SECRET")  
)  
  
data_storage$insert("example", "test_event", "session1")  
data_storage$insert("example", "input", "s1", list(id = "id"))  
data_storage$insert("example", "input", "s1", list(id = "id2", value = 32))  
  
data_storage$insert(  
  "example", "test_event_3_days_ago", "session1",  
  time = lubridate::as_datetime(lubridate::today() - 3)  
)  
  
data_storage$read_event_data()  
data_storage$read_event_data(Sys.Date() - 1, Sys.Date() + 1)  
  
## End(Not run)
```

DataStoragePostgreSQL *Data storage class with PostgreSQL provider*

Description

Implementation of the DataStorage R6 class to PostgreSQL backend using a unified API for read/write operations

Super classes

[shiny.telemetry::DataStorage](#) -> [shiny.telemetry::DataStorageSQLFamily](#) -> DataStoragePostgreSQL

Methods

Public methods:

- [DataStoragePostgreSQL\\$new\(\)](#)
- [DataStoragePostgreSQL\\$clone\(\)](#)

Method `new()`: Initialize the data storage class

Usage:

```
DataStoragePostgreSQL$new(
  username = NULL,
  password = NULL,
  hostname = "127.0.0.1",
  port = 5432,
  dbname = "shiny_telemetry"
)
```

Arguments:

username string with a PostgreSQL username.
 password string with the password for the username.
 hostname string with hostname of PostgreSQL instance.
 port numeric value with the port number of PostgreSQL instance.
 dbname string with the name of the database in the PostgreSQL instance.

Method clone(): The objects of this class are cloneable with this method.

Usage:

```
DataStoragePostgreSQL$clone(deep = FALSE)
```

Arguments:

deep Whether to make a deep clone.

Examples

```
## Not run:
data_storage <- DataStoragePostgreSQL$new(user = "postgres", password = "mysecretpassword")

data_storage$insert("example", "test_event", "session1")
data_storage$insert("example", "input", "s1", list(id = "id1"))
data_storage$insert("example", "input", "s1", list(id = "id2", value = 32))

data_storage$insert(
  "example", "test_event_3_days_ago", "session1",
  time = lubridate::as_datetime(lubridate::today() - 3)
)

data_storage$read_event_data()
data_storage$read_event_data(Sys.Date() - 1, Sys.Date() + 1)
data_storage$close()

## End(Not run)
```

DataStorageSQLFamily *Data storage abstract class for SQL providers*

Description

Abstract subclass of the DataStorage R6 class for the SQL family of providers

Super class

[shiny.telemetry::DataStorage](#) -> DataStorageSQLFamily

Methods**Public methods:**

- [DataStorageSQLFamily\\$clone\(\)](#)

Method `clone()`: The objects of this class are cloneable with this method.

Usage:

`DataStorageSQLFamily$clone(deep = FALSE)`

Arguments:

`deep` Whether to make a deep clone.

DataStorageSQLite *Data storage class with SQLite provider*

Description

Implementation of the DataStorage R6 class to SQLite backend using a unified API for read/write operations

Super classes

[shiny.telemetry::DataStorage](#) -> [shiny.telemetry::DataStorageSQLFamily](#) -> DataStorageSQLite

Methods**Public methods:**

- [DataStorageSQLite\\$new\(\)](#)
- [DataStorageSQLite\\$clone\(\)](#)

Method `new()`: Initialize the data storage class

Usage:

`DataStorageSQLite$new(db_path = "user_stats.sqlite")`

Arguments:

`db_path` string with path to sqlfile

Method `clone()`: The objects of this class are cloneable with this method.

Usage:

`DataStorageSQLite$clone(deep = FALSE)`

Arguments:

`deep` Whether to make a deep clone.

Examples

```

db_path <- tempfile(fileext = ".sqlite")
data_storage <- DataStorageSQLite$new(db_path = db_path)

data_storage$insert("example", "test_event", "session1")
data_storage$insert("example", "input", "s1", list(id = "id1"))
data_storage$insert("example", "input", "s1", list(id = "id2", value = 32))

data_storage$insert(
  "example", "test_event_3_days_ago", "session1",
  time = lubridate::as_datetime(lubridate::today() - 3)
)

data_storage$read_event_data()
data_storage$read_event_data(Sys.Date() - 1, Sys.Date() + 1)

file.remove(db_path)

```

date_from_null	<i>Common date_from to recognize as NULL</i>
----------------	--

Description

Common date_from to recognize as NULL

Usage

```
date_from_null
```

Format

An object of class character of length 1.

date_to_null	<i>Common date_to to recognize as NULL</i>
--------------	--

Description

Common date_to to recognize as NULL

Usage

```
date_to_null
```

Format

An object of class character of length 1.

Telemetry

Telemetry class to manage analytics gathering at a global level

Description

An instance of this class will define metadata and data storage provider for gathering telemetry analytics of a Shiny dashboard.

The ‘name’ and ‘version’ parameters will describe the dashboard name and version to track using analytics, allowing to store the analytics data from multiple dashboards in the same data storage provider. As well as discriminate different versions of the dashboard.

The default data storage provider uses a local SQLite database, but this can be customizable when instantiating the class, by using another one of the supported providers (see [DataStorage]).

Active bindings

`data_storage` instance of a class that inherits from [DataStorage]. See the documentation on that class for more information.

`app_name` string with name of dashboard

Methods

Public methods:

- `Telemetry$new()`
- `Telemetry$start_session()`
- `Telemetry$log_navigation()`
- `Telemetry$log_navigation_manual()`
- `Telemetry$log_login()`
- `Telemetry$log_logout()`
- `Telemetry$log_click()`
- `Telemetry$log_browser_version()`
- `Telemetry$log_button()`
- `Telemetry$log_all_inputs()`
- `Telemetry$log_input()`
- `Telemetry$log_input_manual()`
- `Telemetry$log_custom_event()`
- `Telemetry$clone()`

Method `new()`: Constructor that initializes Telemetry instance with parameters.

Usage:

```
Telemetry$new(  
  app_name = "(dashboard)",  
  data_storage = DataStorageSQLite$new(db_path = file.path("telemetry.sqlite"))  
)
```

Arguments:

`app_name` (optional) string that identifies the name of the dashboard. By default it will store data with `'(dashboard)'`.

`data_storage` (optional) `DataStorage` instance where telemetry data is being stored. It can take any of data storage providers by this package, By default it will store in a SQLite local database in the current working directory with filename `'telemetry.sqlite'`

`version` (optional) string that identifies the version of the dashboard. By default it will use `'v0.0.0'`.

Method `start_session()`: Setup basic telemetry*Usage:*

```
Telemetry$start_session(
  track_inputs = TRUE,
  track_values = FALSE,
  login = TRUE,
  logout = TRUE,
  browser_version = TRUE,
  navigation_input_id = NULL,
  session = shiny::getDefaultReactiveDomain()
)
```

Arguments:

`track_inputs` flag that indicates if the basic telemetry should track the inputs that change value. `'TRUE'` by default

`track_values` flag that indicates if the basic telemetry should track the values of the inputs that are changing. `'FALSE'` by default. This parameter is ignored if `'track_inputs'` is `'FALSE'`

`login` flag that indicates if the basic telemetry should track when a session starts. `'TRUE'` by default.

`logout` flag that indicates if the basic telemetry should track when the session ends. `'TRUE'` by default.

`browser_version` flag that indicates that the browser version should be tracked. `'TRUE'` by default.

`navigation_input_id` string or vector of strings that represent input ids and which value should be tracked as navigation events. i.e. a change in the value represent a navigation to a page or tab. By default, no navigation is tracked.

`session` `ShinySession` object or `NULL` to identify the current Shiny session.

Returns: Nothing. This method is called for side effects.

Method `log_navigation()`: Log an input change as a navigation event*Usage:*

```
Telemetry$log_navigation(input_id, session = shiny::getDefaultReactiveDomain())
```

Arguments:

`input_id` string that identifies the generic input in the Shiny application so that the function can track and log changes to it.

`session` `ShinySession` object or `NULL` to identify the current Shiny session.

Returns: Nothing. This method is called for side effects.

Method `log_navigation_manual()`: Log a navigation event manually by indicating the id (as input id)

Usage:

```
Telemetry$log_navigation_manual(  
  navigation_id,  
  value,  
  session = shiny::getDefaultReactiveDomain()  
)
```

Arguments:

`navigation_id` string that identifies navigation event.

`value` string that indicates a value for the navigation

`session` `ShinySession` object or `NULL` to identify the current Shiny session.

Returns: Nothing. This method is called for side effects.

Method `log_login()`: Log when session starts

Usage:

```
Telemetry$log_login(  
  username = NULL,  
  session = shiny::getDefaultReactiveDomain()  
)
```

Arguments:

`username` string with username from current session

`session` `ShinySession` object or `NULL` to identify the current Shiny session.

Returns: Nothing. This method is called for side effects.

Method `log_logout()`: Log when session ends

Usage:

```
Telemetry$log_logout(  
  username = NULL,  
  session = shiny::getDefaultReactiveDomain()  
)
```

Arguments:

`username` string with username from current session

`session` `ShinySession` object or `NULL` to identify the current Shiny session.

Returns: Nothing. This method is called for side effects.

Method `log_click()`: Log an action click

Usage:

```
Telemetry$log_click(id, session = shiny::getDefaultReactiveDomain())
```

Arguments:

`id` string that identifies a manual click to the dashboard.

`session` `ShinySession` object or `NULL` to identify the current Shiny session.

Returns: Nothing. This method is called for side effects.

Method `log_browser_version()`: Log the browser version

Usage:

```
Telemetry$log_browser_version(session = shiny::getDefaultReactiveDomain())
```

Arguments:

`session` ShinySession object or NULL to identify the current Shiny session.

Returns: Nothing. This method is called for side effects.

Method `log_button()`: Track a button and track changes to this input (without storing the values)

Usage:

```
Telemetry$log_button(
  input_id,
  track_value = FALSE,
  session = shiny::getDefaultReactiveDomain()
)
```

Arguments:

`input_id` string that identifies the button in the Shiny application so that the function can track and log changes to it.

`track_value` flag that indicates if the basic telemetry should track the value of the input that are changing. 'FALSE' by default.

`session` ShinySession object or NULL to identify the current Shiny session.

Returns: Nothing. This method is called for side effects.

Method `log_all_inputs()`: A short description...

Usage:

```
Telemetry$log_all_inputs(
  track_values = FALSE,
  excluded_inputs = c("browser_version"),
  session = shiny::getDefaultReactiveDomain()
)
```

Arguments:

`track_values` flag that indicates if the basic telemetry should track the values of the inputs that are changing. 'FALSE' by default. This parameter is ignored if 'track_inputs' is 'FALSE'.

`excluded_inputs` vector of input_ids that should not be tracked. By default it doesn't track browser version, which is added by this package.

`session` ShinySession object or NULL to identify the current Shiny session.

Returns: Nothing. This method is called for side effects.

Method `log_input()`: A short description...

Usage:

```
Telemetry$log_input(
  input_id,
  track_value = FALSE,
  matching_values = NULL,
```



```

    input_type = "text",
    session = shiny::getDefaultReactiveDomain()
  )

```

Arguments:

`input_id` string that identifies the generic input in the Shiny application so that the function can track and log changes to it.

`track_value` flag that indicates if the basic telemetry should track the value of the input that are changing. 'FALSE' by default.

`matching_values` An object specified possible values to register.

`input_type` 'text' to registered bare input value, 'json' to parse value from JSON format.

`session` ShinySession object or NULL to identify the current Shiny session.

Returns: Nothing. This method is called for side effects.

Method `log_input_manual()`: Log a manual input value.

This can be called in telemetry and is also used as a layer between `log_input` family of functions and actual log event. It creates the correct payload to log the event internally.

Usage:

```

Telemetry$log_input_manual(
  input_id,
  value = NULL,
  session = shiny::getDefaultReactiveDomain()
)

```

Arguments:

`input_id` string that identifies the generic input in the Shiny application so that the function can track and log changes to it.

`value` (optional) scalar value or list with the value to register.

`session` ShinySession object or NULL to identify the current Shiny session.

Returns: Nothing. This method is called for side effects.

Method `log_custom_event()`: Log a manual event

Usage:

```

Telemetry$log_custom_event(
  event_type,
  details = NULL,
  session = shiny::getDefaultReactiveDomain()
)

```

Arguments:

`event_type` string that identifies the event type

`details` (optional) scalar value or list with the value to register.

`session` ShinySession object or NULL to identify the current Shiny session.

Returns: Nothing. This method is called for side effects.

Method `clone()`: The objects of this class are cloneable with this method.

Usage:

```

Telemetry$clone(deep = FALSE)

```

Arguments:

`deep` Whether to make a deep clone.

See Also

[shiny.telemetry::DataStorage] which this function wraps.

Examples

```
log_file_path <- tempfile(fileext = ".txt")
telemetry <- Telemetry$new(
  data_storage = DataStorageLogFile$new(log_file_path = log_file_path)
)

#
# Create dummy session (only for example purposes)
session <- shiny::MockShinySession$new()
class(session) <- c(class(session), "ShinySession")

telemetry$start_session(session = session)

telemetry$log_click("a_button", session = session)

telemetry$log_custom_event("a_button", list(value = 2023), session = session)
telemetry$log_custom_event("a_button", list(custom_field = 23), session = session)

# Manual call logging with custom username
telemetry$log_login("ben", session = session)

telemetry$data_storage$read_event_data("2020-01-01", "2025-01-01")

file.remove(log_file_path)

#
# Using SQLite

db_path <- tempfile(fileext = ".sqlite")
telemetry <- Telemetry$new(
  data_storage = DataStorageSQLite$new(db_path = db_path)
)

telemetry$log_custom_event("a_button", list(value = 2023), session = session)
telemetry$log_custom_event("a_button", list(custom_field = 23), session = session)

telemetry$data_storage$read_event_data("2020-01-01", "2025-01-01")

file.remove(db_path)
```

use_telemetry

Function that adds telemetry HTML elements to UI

Description

Function that adds telemetry HTML elements to UI

Usage

```
use_telemetry(id = "")
```

Arguments

id (optional) string with id representing the namespace

Value

A ‘shiny.tag’ object to be included in the UI of a Shiny app.

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