Package 'AnVIL'

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Title Bioconductor on the AnVIL compute environment

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Description The AnVIL is a cloud computing resource developed in part by the National Human Genome Research Institute. The AnVIL package provides programatic access to the Dockstore, Leonardo, Rawls, TDR, and Terra RESTful programming interfaces. For platform-specific user-level functionality, see either the AnVILGCP or AnVILAz package.

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Author Marcel Ramos [aut, cre] (ORCID:
<https://orcid.org/0000-0002-3242-0582>),
Martin Morgan [aut] (ORCID: <https://orcid.org/0000-0002-5874-8148>),
Kayla Interdonato [aut],
Yubo Cheng [aut],
Nitesh Turaga [aut],
BJ Stubbs [ctb],
Vincent Carey [ctb],
Sehyun Oh [ctb],
Sweta Gopaulakrishnan [ctb],
Valerie Obenchain [ctb]

Maintainer Marcel Ramos <marcel.ramos@sph.cuny.edu>

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`AnVIL-package` *AnVIL: Bioconductor on the AnVIL compute environment*

Description

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Author(s)

Maintainer: Marcel Ramos <marcel.ramos@sph.cuny.edu> (ORCID)

Authors:

- Martin Morgan (ORCID)
- Kayla Interdonato
- Yubo Cheng
- Nitesh Turaga

Other contributors:

- BJ Stubbs [contributor]
- Vincent Carey [contributor]
- Sehyun Oh [contributor]
- Sweta Gopaulakrishnan [contributor]
- Valerie Obenchain [contributor]

See Also

Useful links:

- https://github.com/Bioconductor/AnVIL
- Report bugs at https://github.com/Bioconductor/AnVIL/issues

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`.gadget_run` *Functions to implement AnVIL gadget interfaces*

Description

Functions documented on this page are primarily intended for package developers wishing to implement gadgets (graphical interfaces) to navigating AnVIL-generated tables.

`.gadget_run()` presents the user with a tibble-navigating gadget, returning the value of `DONE_FUN` if a row of the tibble is selected, or NULL.

Usage

```
.gadget_run(title, tibble, DONE_FUN)
```

Arguments

`title`	`character(1)` (required) title to appear at the base of the gadget, e.g., "AnVIL Workspaces".
`tibble`	a `tibble` or `data.frame` to be displayed in the gadget.
`DONE_FUN`	a function of two arguments, `tibble` and `row_selected`. The tibble is the `tibble` provided as an argument to `.gadget_run()`. `row_selected` is the row selected in the gadget by the user. The function is only invoked when the user selects a valid row.

Value

`.gadget_run()` returns the result of `DONE_FUN()` if a row has been selected by the user, or `NULL` if no row is selected (the user presses `Cancel`, or `Done` prior to selecting any row).

Examples

```
tibble <- avworkspaces(platform = AnVILGCP::gcp())
DONE_FUN <- function(tibble, row_selected) {
    selected <- slice(tibble, row_selected)
    with(selected, paste0(namespace, "/", name))
}
.gadget_run("AnVIL Example", tibble, DONE_FUN)
```

anvil_set_auth_json *Store and retrieve authentication credentials using a secure keyring*

Description

anvil_set_auth_json() stores the content of an auth.json file in the system keyring. This is the recommended way to store credentials safely.

Usage

```
anvil_set_auth_json(service, path)
```

Arguments

service	character(1) The name of the service (e.g., "terra", "dockstore") for which the credentials are being set.
path	character(1) The path to the auth.json file.

Value

anvil_set_auth_json() returns NULL invisibly.

Examples

```
jsonlite::write_json(
   list(token = "example_token"),
   "terratcgadata-test-key.json",
)
anvil_set_auth_json(
    "terra",
    "terratcgadata-test-key.json"
)
AnVIL:::.authenticate_get_access("terra")
unlink("terratcgadata-test-key.json")
```

avworkspace_gadget *Graphical user interfaces for common AnVIL operations*

Description

workspace() allows choice of workspace for subsequent use. It is the equivalent of displaying workspaces with avworkspaces(), and setting the selected workspace with avworkspace().

browse_workspace() uses browseURL() to open a browser window pointing to the Terra workspace.

table() allows choice of table in the current workspace (selected by avworkspace() or workspace()) to be returned as a tibble. It is equivalent to invoking avtables() to show available tables, and avtable() to retrieve the selected table.

workflow() allows choice of workflow for retrieval. It is the equivalent of avworkflows() for listing available workflows, and avworkflow_configuration_get() for retrieving the workflow.

Usage

```
avworkspace_gadget()

browse_workspace(use_avworkspace = TRUE)

avtable_gadget()

avworkflow_gadget()
```

Arguments

use_avworkspace	logical(1) when TRUE (default), use the selected workspace (via workspace() or avworkspace() if available. If FALSE or no workspace is currently selected, use workspace() to allow the user to select the workspace.

Value

workspace() returns the selected workspace as a character(1) using the format namespace/name, or character(0) if no workspace is selected.

browse_workspace() returns the status of a system() call to launch the browser, invisibly. The default app URL prefix (https://app.terra.bio) can be changed with the AnVIL.terra_app_url option.

table() returns a tibble representing the selected AnVIL table.

workflow() returns an avworkflow_configuration object representing the inputs and outputs of the selected workflow. This can be edited and updated as described in the "Running an AnVIL workflow within R" vigenette.

Examples

```
workspace()
browse_workspace(use_avworkspace = FALSE)
tbl <- table()
wkflw <- avworkflow_gadget()
```

Service *RESTful service constructor*

Description

RESTful service constructor

Usage

```
Service(
  service,
  host,
  config = httr::config(),
  authenticate = TRUE,
  api_url = character(),
```

```
  package = "AnVIL",
  schemes = "https",
  api_reference_url = api_url,
  api_reference_md5sum = character(),
  api_reference_version = character(),
  api_reference_headers = NULL,
  ...
)
```

Arguments

service	character(1) The Service class name, e.g., "terra".
host	character(1) host name that provides the API resource, e.g., "leonardo.dsde-prod.broadinstit
config	httr::config() curl options
authenticate	logical(1) use credentials from authentication service? See ?anvil_set_auth_json for the recommended way to securely store credentials.
api_url	optional character(1) url location of OpenAPI .json or .yaml service definition.
package	character(1) (default AnVIL) The package where 'api.json' yaml is located.
schemes	character(1) (default 'https') Specifies the transfer protocol supported by the API service.
api_reference_url	character(1) path to reference API. See Details.
api_reference_md5sum	character(1) the result of tools::md5sum() applied to the reference API.
api_reference_version	character(1) the version of the reference API. This is used to check that the version of the service matches the version of the reference API. It is usally set by the service generation function,. e.g., AnVIL::Rawls().
api_reference_headers	character() header(s) to be used (e.g., c(Authorization = paste("Bearer", token))) when retrieving the API reference for validation.
...	additional arguments passed to rapiclient::get_api()

Details

This function creates a RESTful interface to a service provided by a host, e.g., "leonardo.dsde-prod.broadinstitute.org". The function requires an OpenAPI .json or .yaml specification. The specification file is located in the source directory of a package, at <package>/inst/service/<service>/api.json, or at api_url.

```
Authentication credentials can be stored securely in the system
keyring using `anvil_set_auth_json()`.
```

When provided, the api_reference_md5sum is used to check that the file described at api_reference_url has the same checksum as an author-validated version.

The service is usually a singleton, created at the package level during .onLoad().

Value

An object of class Service.

Examples

```
.MyService <- setClass("MyService", contains = "Service")

MyService <- function() {
    .MyService(Service("my_service", host="my.api.org"))
}
```

Services *RESTful services useful for AnVIL developers*

Description

RESTful services useful for AnVIL developers

Usage

```
empty_object

operations(x, ..., .deprecated = FALSE)

## S4 method for signature 'Service'
operations(x, ..., auto_unbox = FALSE, .deprecated = FALSE)

schemas(x)

tags(x, .tags, .deprecated = FALSE)

## S4 method for signature 'Service'
x$name

Leonardo()

Terra()

Rawls()

Dockstore()

TDR()
```

Arguments

x	A Service instance, usually a singleton provided by the package and documented on this page, e.g., leonardo or terra.
...	additional arguments passed to methods or, for operations,Service-method, to the internal get_operation() function.
.deprecated	optional logical(1) include deprecated operations?
auto_unbox	logical(1) If FALSE (default) do not automatically 'unbox' R scalar values from JSON arrays to JSON scalers.
.tags	optional character() of tags to use to filter operations.
name	A symbol representing a defined operation, e.g., leonardo$listRuntimes().

Format

An object of class `list` of length 0.

Details

Note the services `Terra()`, `Rawls()`, and `Leonardo()` require the `GCPtools` package for authentication to the Google Cloud Platform. See `?GCPtools::gcloud_access_token()` for details.

When using `$` to select a service, some arguments appear in 'body' of the REST request. Specify these using the `.__body__=` argument, as illustrated for `createBillingProjectFull()`, below.

Value

`empty_object` returns a representation to be used as arguments in function calls expecting the empty json object `{}`.

`Leonardo()` creates the API of the Leonardo container deployment service at https://leonardo.dsde-prod.broadinstitute.org/api-docs.yaml. The default API url value can be changed with the `AnVIL.leonardo_api_url` option.

`Terra()` creates the API of the Terra cloud computational environment at https://api.firecloud.org/. The default API url value can be changed with the `AnVIL.firecloud_api_url` option.

`Rawls()` creates the API of the Rawls cloud computational environment at https://rawls.dsde-prod.broadinstitute.org. The default API url value can be changed with the `AnVIL.rawls_api_url` option.

`Dockstore()` represents the API of the Dockstore platform to share Docker-based tools in CWL or WDL or Nextflow at https://dockstore.org. The default API url value can be changed with the `AnVIL.dockstore_api_url` option.

`TDR()` creates the API of the Terra Data Repository to work with snapshot data in the Terra Data Repository at https://data.terra.bio. The default API url value can be changed with the `AnVIL.tdr_api_url` option.

Examples

```
empty_object


## Arguments to be used as the 'body' (`.__body__=`) of a REST query
Terra()$createBillingProjectFull       # 6 arguments...
## ... passed as `.__body__ = list(...)`
args(Terra()$createBillingProjectFull)

library(GCPtools)
if (gcloud_exists())
    Leonardo()

library(GCPtools)
if (gcloud_exists()) {
    tags(Terra())
    tags(Terra(), "Billing")
}

library(GCPtools)
if (gcloud_exists()) {
    tags(Rawls())
```

```
    tags(Rawls(), "billing")
}

Dockstore()

library(GCPtools)
if (gcloud_exists())
    TDR()
```

`utilities` *Utilities for managing library paths*

Description

`add_libpaths()`: Add local library paths to `.libPaths()`.

Usage

```
add_libpaths(paths)
```

Arguments

`paths`	`character()`: vector of directories to add to `.libPaths()`. Paths that do not exist will be created.

Value

`add_libpaths()`: updated `.libPaths()`, invisibly.

Examples

```
add_libpaths("/tmp/host-site-library")
```

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