Package ‘REDCapExporter’

December 22, 2019

**Title** Automated Construction of R Data Packages from REDCap Projects

**Version** 0.1.0

**Description** Export all data, including metadata, from a REDCap (Research Electronic Data Capture) Project via the REDCap API [https://projectredcap.org/wp-content/resources/REDCapTechnicalOverview.pdf]. The exported (meta)data will be processed and formatted into a stand alone R data package which can be installed and shared between researchers. Several default reports are generated as vignettes in the resulting package.

**License** GPL-2

**Encoding** UTF-8

**URL** https://github.com/dewittpe/REDCapExporter

**Language** en-us

**LazyData** true

**Depends** R (>= 3.5.0)

**Imports** lubridate, RCurl

**Suggests** data.table, devtools, fs, knitr, magrittr, qwraps2 (>= 0.4.1), markdown, rjson, secret

**VignetteBuilder** knitr

**RoxygenNote** 7.0.2

**NeedsCompilation** no

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**Repository** CRAN

**Date/Publication** 2019-12-22 16:50:02 UTC

**R topics documented:**

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as

Description

Coerce REDCapExporter objects to data.frame.

Usage

## S3 method for class 'rcer_raw_metadata'
as.data.frame(x, ...)

## S3 method for class 'rcer_raw_record'
as.data.frame(x, ...)

## S3 method for class 'rcer_raw_project'
as.data.frame(x, ...)

## S3 method for class 'rcer_raw_user'
as.data.frame(x, ...)

Arguments

- **x**: any R object.
- **...**: additional arguments to be passed to or from methods.

Details

These functions are S3 methods for `as.data.frame` for the raw exports from the REDCap API.

Examples

data("avs_raw_record")

avs_record <- as.data.frame(avs_raw_record)

str(avs_record)
Build R Data Package

Description

Build a R Data Package from the core contents of a REDCap Project.

Usage

build_r_data_package(x, ...)

## S3 method for class 'rcer_rccore'
build_r_data_package(x, path = NULL, author_roles = NULL, verbose = TRUE, ...)

## Default S3 method:
build_r_data_package(
  x,
  uri = NULL,
  token = NULL,
  format = NULL,
  path = NULL,
  author_roles = NULL,
  verbose = TRUE,
  ...
)

Arguments

x a rcer_rccore object
...
arguments passed to other methods
path Path where the exported project source will be created/overwritten.
author_roles a list naming specific roles for each user id found in the user table from an exported project. By default all users with be contributors (‘ctb’). You will need to define a author/creator.
verbose provide messages to tell the user what is happening
uri The URI for the REDCap API. If NULL (default) the value Sys.getenv("REDCap_API_URI") is used.
token The API token for the project you want to export from. If NULL (default) the value Sys.getenv("REDCap_API_TOKEN") is used.
format The format to return. If NULL (default) the value Sys.getenv("REDCap_API_format") is used.
Details

To export the data from a REDCap project you will need to have an API Token. Remember, the token is the equivalent of a username and password. As such you should not list the token in plain text. Several alternative methods for passing the token to this method will be provided in examples and vignettes. We strongly encourage the use of the package secret https://cran.r-project.org/package=secret to build vaults to store tokens locally.

The initial export will consist of four pieces of data, the user data, metadata, project info, and records.

Examples

## Please read the vignette for examples:
## vignette(topic = "export", package = "REDCapExporter")

```
library(REDCapExporter)
# avs_raw_core <- export_core()
data(avs_raw_core)
tmppth <- tempdir()
build_r_data_package(avs_raw_core, tmppth, author_roles = list(dewittp = c("cre", "aut")))
fs::dir_tree(tmppth)
```

<table>
<thead>
<tr>
<th>col_type</th>
<th>Column Types</th>
</tr>
</thead>
</table>

Description

Define a type for each column of the records for a REDCap project based on the metadata for the project.

Usage

```
col_type(x, factors = TRUE, ...)
```

Arguments

- **x**
  - a `rcer_metadata` or `rcer_raw_metadata` object
- **factors**
  - If `TRUE` (default) then variables inputed via drop-down lists and radio buttons are set up to be factors. If `FALSE`, then the column type will be character.
- **...**
  - not currently used

Value

- a `rcer_col_type` object
Description

These data sets are the results of calling `export_content`. An API token is required to reproduce these calls. No such token will be provided publicly, so these data sets are provided so end users can run examples for other tools provided in the REDCapExporter package.

Usage

```r
avs_raw_project_info

avs_raw_metadata

avs_raw_user

avs_raw_record

avs_raw_core
```

Format

An object of class `rcer_raw_project` (inherits from character) of length 1.

Details

`avs_raw_project_info` provides meta data about the project itself.

`avs_raw_metadata` is the data dictionary for the REDCap Project. This information can be used with `format_record` to build a data frame that is ready for analysis.

`avs_raw_user` REDCap Project user table.

`avs_raw_record` REDCap Project records, i.e., ‘the data.’

Examples

```r
## Not run:
avs_raw_project_info <- export_content(content = "project", format = "csv")
avs_raw_metadata <- export_content(content = "metadata", format = "csv")
avs_raw_user <- export_content(content = "user", format = "csv")
avs_raw_record <- export_content(content = "record", format = "csv")
avs_raw_core <- export_core(format = "csv")
```
## End(Not run)

data(avs_raw_project_info)
data(avs_raw_user)
data(avs_raw_metadata)
data(avs_raw_record)
data(avs_raw_core)

str(avs_raw_project_info)
str(avs_raw_user)
str(avs_raw_metadata)
str(avs_raw_record)
str(avs_raw_core)

avs <- format_record(avs_raw_record, avs_raw_metadata)
str(avs)

---

### Export Content

<table>
<thead>
<tr>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Export specific data elements from REDCap</td>
</tr>
</tbody>
</table>

#### Usage

```r
eexport_content(content, uri = NULL, token = NULL, format = NULL, ...)
```

#### Arguments

- `content` The element to export, see Details.
- `uri` The URI for the REDCap API. If NULL (default) the value `Sys.getenv("REDCap_API_URI")` is used.
- `token` The API token for the project you want to export from. If NULL (default) the value `Sys.getenv("REDCap_API_TOKEN")` is used.
- `format` The format to return. If NULL (default) the value `Sys.getenv("REDCap_API_format")` is used.
- `...` additional arguments passed to `postForm`.

#### Details

The `content` and `format` arguments are used to control the specific items to be exported, and in what format. **Review the API documentation**

The `uri`, `token`, and `format` arguments are set to NULL by default and will look to the `Sys.getenv("REDCap_API_URI")`, `Sys.getenv("REDCap_API_TOKEN")`, and `Sys.getenv("REDCap_API_format")`, respectively, to define the values if not explicitly done so by the end user.
export_core

Value

The raw return from the REDCap API with the class \texttt{rcer\_raw\_<content>}.  

Examples

# A reproducible example would require a REDCap project, accessable via an
# API token. An example of the return from these calls are provided as data
# with this package.

# avs_raw_metadata <- export\_content(content = "metadata")
data(avs_raw_metadata)
str(avs_raw_metadata)

---

export_core \hspace{1cm} Export Core

Description

Export Core Contents of a REDCap Project.

Usage

\begin{verbatim}
export_core(uri = NULL, token = NULL, format = NULL, verbose = TRUE, ...)
\end{verbatim}

Arguments

\begin{description}
\itemsep-0.5em
\item \texttt{uri} The URI for the REDCap API. If NULL (default) the value \texttt{Sys.getenv("REDCap\_API\_URI")} is used.
\item \texttt{token} The API token for the project you want to export from. If NULL (default) the value \texttt{Sys.getenv("REDCap\_API\_TOKEN")} is used.
\item \texttt{format} The format to return. If NULL (default) the value \texttt{Sys.getenv("REDCap\_API\_format")} is used.
\item \texttt{verbose} provide messages to tell the user what is happening
\item \texttt{...} not currently used
\end{description}

Value

A \texttt{rcer\_rccore} object: a list with the project info, metadata, user table, and records, all in a "raw" format direct from the API.
Examples

# A reproducible example would require a REDCap project, accessible via an
# API token. An example of the return from these calls are provided as data
# with this package.

# avs_raw_core <- export_core()
data(avs_raw_core)
str(avs_raw_core)

format_record

Use REDCap project metadata to build a well formatted data.frame for the record.

Usage

format_record(record, metadata = NULL, col_type = NULL, ...)

Arguments

record a rcer_raw_record object.
metadata a rcer_metadata or rcer_raw_metadata object. Will be ignored if col_type
is defined.
col_type a rcer_col_type object.
... other arguments passed to col_type

Value

A data.frame

Examples

data("avs_raw_metadata")
data("avs_raw_record")

avs <- format_record(avs_raw_record, avs_raw_metadata)
str(avs)
**Description**

Read raw REDCap API return. Built to parse csv or json.

**Usage**

```r
read_text(x)
```

**Arguments**

- `x` the raw return from the API call to REDCap

**Details**

This is a non-exported function and not expected to be called by the end user. Used by the `as.data.frame` methods.

**Value**

- a `data.frame`

---

**Description**

Automated Construction of R Data Packages from REDCap Projects

**Details**

Use the REDCap (Research Electronic Data Capture) API to access (meta)data from a project and format for immediate use or as part of the source code for a R Data package.

Please read the vignette for examples and use cases.

```r
vignette(topic = "export", package = "REDCapExporter")
```
write_description_file

Write Description File

Description

Create the DESCRIPTION file for the R Data package based on an Exported REDCap Project

Usage

write_description_file(access_time, user, roles, project_info, path)

write_authors(user, roles = NULL)

Arguments

access_time The Sys.time() when the API calls were made
user User(s), as noted in the REDCap project meta data. This parameter is singular as it refers to the “user” content one can access from the REDCap API.
roles roles the user hold with respect to the R data package. These roles have no relationship to REDCap roles.
project_info project metadata
path path to the root for the generated R data package.

Details

These is a non-exported function and is not expected to be called by the end user.
write_description_file creates the DESCRIPTION file for the exported R data package and write_authors creates the “Authors@R” field of the DESCRIPTION based on the “user” data extracted from the REDCap project.
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