Package ‘Rlabkey’

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Title Data Exchange Between R and 'LabKey' Server
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Description The 'LabKey' client library for R makes it easy for R users to load live data from a 'LabKey' Server, <http://www.labkey.com/>, into the R environment for analysis, provided users have permissions to read the data. It also enables R users to insert, update, and delete records stored on a 'LabKey' Server, provided they have appropriate permissions to do so.
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Rlabkey-package

Exchange data between LabKey Server and R

Description

This package allows the transfer of data between a LabKey Server and an R session. Data can be retrieved from LabKey into a data frame in R by specifying the query schema information (labkey.selectRows and getRows) or by using sql commands (labkey.executeSql). From an R session, existing data can be updated (labkey.updateRows), new data can be inserted (labkey.insertRows and labkey.importRows) or data can be deleted from the LabKey database (labkey.deleteRows). Interactive R users can discover available data via schema objects (labkey.getSchema).

Details

Package: Rlabkey
Type: Package
Version: 2.2.5
Date: 2019-03-04
License: Apache License 2.0
LazyLoad: yes

The user must have appropriate authorization on the LabKey Server in order to access or modify data using these functions. All access to secure content on LabKey Server requires authentication via an api key (see labkey.setDefaults for more details) or a properly configured netrc file that includes the user’s login information.

The netrc file is a standard mechanism for conveying configuration and autologin information to the File Transfer Protocol client (ftp) and other programs such as CURL. On a Linux or Mac system this file should be named .netrc (dot netrc) and on Windows it should be named _netrc (underscore netrc). The file should be located in the user’s home directory and the permissions on the file should be unreadable for everybody except the owner.

To create the _netrc on a Windows machine, first create an environment variable called ’HOME’ set to your home directory (e.g., c:/Users/<User-Name> on recent versions of Windows) or any directory you want to use. In that directory, create a text file named _netrc (note that it’s underscore netrc, not dot netrc like it is on Linux/Mac).

The following three lines must be included in the .netrc or _netrc file either separated by white space (spaces, tabs, or newlines) or commas.

machine <remote-machine-name>
login <user-email>
password <user-password>

One example would be:

machine localhost
login peter@labkey.com
password mypassword
Another example would be:
machine atlas.scharp.org login vobencha@fhcrc.org password mypassword

Multiple such blocks can exist in one file.

Author(s)
Valerie Obenchain

References
http://www.omegahat.net/RCurl/,
http://www.labkey.org/project/home/begin.view

See Also
labkey.selectRows, labkey.executeSql, makeFilter, labkey.insertRows, labkey.importRows,
labkey.updateRows, labkey.deleteRows

The RLabkey Users Guide is available by typing RlabkeyUsersGuide().
getLookups

References
https://www.labkey.org/wiki/home/Documentation/page.view?name=projects

See Also
getSession lsFolders

Examples

# library(Rlabkey)

lks<- getSession("http://www.labkey.org", "/home")
getFolderPath(lks)  # returns "/home"

getLookups

Get related data fields that are available to include in a query on a given query object

Description
Retrieve a related query object referenced by a lookup column in the current query

Usage
getLookups(session, lookupField)

Arguments
session the session key returned from getSession
lookupField an object representing a lookup field on LabKey Server, a named member of a query object.

Details
Lookup fields in LabKey Server are the equivalent of declared foreign keys

Value
A query object representing the related data set. The fields of a lookup query object are usually added to the colSelect parameter in getRows. If a lookup query object is used as the query parameter in getRows, the call will return all of the base query columns and all of the lookup query columns. A lookup query object is very similar to base query objects that are named elements of a schema object. A lookup query object, however, does not have a parent schema object, it is only returned by getLookups. Also, the field names in a lookup query object are compound names relative to the base query object used in getLookups.
getRows

Retrieve data from LabKey Server

Description

Retrieve rows from a LabKey Server given a session and query object

Usage

getRows(session, query, maxRows=NULL, colNameOpt='fieldname', ...)

Author(s)

Peter Hussey

References

https://www.labkey.org/wiki/home/Documentation/page.view?name=propertyFields

See Also

getSession, getRows getSchema

Examples

```r
## get fields from lookup tables and add to query
# library(Rlabkey)

s <- getSession(baseUrl="http://localhost:8080/labkey",
                folderPath="/apisamples")

scobj <- getSchema(s, "lists")

# can add fields from related queries
lucols <- getLookups(s, scobj$AllTypes$Category)

# keep going to other tables
lucols2 <- getLookups(s, lucols[["Category/Group"]])

cols <- c(names(scobj$AllTypes)[2:6], names(lucols)[2:4])

getRows(s, scobj$AllTypes, colSelect=paste(cols, sep=",”))
```
**getRows**

**Arguments**

- **session** the session key returned from `getSession`
- **query** an object representing a query on LabKey Server, a child object of the object returned by `getSchema()`
- **maxRows** (optional) an integer specifying how many rows of data to return. If no value is specified, all rows are returned.
- **colNameOpt** (optional) controls the name source for the columns of the output dataframe, with valid values of 'caption', 'fieldname', and 'rname'
- ... Any of the remaining options to `link{labkey.selectRows}`

**Details**

This function works as a shortcut wrapper to `labkey.selectRows`. All of the arguments are the same as documented in `labkey.selectRows`. See `labkey.selectRows` for a discussion of the valid options and defaults for `colNameOpt`. Note in particular that with `getRows` the default is 'fieldname' instead of 'caption'.

**Value**

A data frame containing the query results corresponding to the default view of the specified query.

**Author(s)**

Peter Hussey

**See Also**

`getSession`, `getSchema`, `getLookups`, `saveResults` `labkey.selectRows`

**Examples**

```r
## simple example of getting data using schema objects
# library(Rlabkey)

s <- getSession(baseUrl="http://localhost:8080/labkey",
                   folderPath="/apisamples")

s # shows schemas

scobj <- getSchema(s, "lists")
scobj # shows available queries

scobj$AllTypes # this is the query object

getRows(s, scobj$AllTypes)
```


### getSchema

**Returns an object representing a LabKey schema**

**Description**

Creates and returns an object representing a LabKey schema, containing child objects representing LabKey queries.

**Usage**

```plaintext
getSchema(session, schemaIndex)
```

**Arguments**

- `session` the session key returned from `getSession`
- `schemaIndex` the name of the schema that contains the table on which you want to base a query, or the number of that schema as displayed by `print(session)`

**Details**

Creates and returns an object representing a LabKey schema, containing child objects representing LabKey queries. This compound object is created by calling `labkey.getQueries` on the requested schema and `labkey.getQueryDetails` on each returned query. The information returned in the schema objects is essentially the same as the schema and query objects shown in the Schema Browser on LabKey Server.

**Value**

an object representing the schema. The named elements of a schema are the queries within that schema.

**Author(s)**

Peter Hussey

**References**


**See Also**

- `getSession`
**getSession**

*Creates and returns a LabKey Server session*

### Description

The session object holds server address and folder context for a user working with LabKey Server. The session-based model supports more efficient interactive use of LabKey Server from R.

### Usage

```
getSession(baseUrl, folderPath="/home",
            curlOptions=NULL, lkOptions=NULL)
```

### Arguments

- **baseUrl**
  - a string specifying the address of the LabKey Server, including the context root

- **folderPath**
  - a string specifying the hierarchy of folders to the current folder (container) for the operation, starting with the project folder

- **curlOptions**
  - (optional) a list of curlOptions to be set on connections to the LabKey Server, see details

- **lkOptions**
  - (optional) a list of settings for default behavior on naming of objects, see details

### Examples

```r
## the basics of using session, schema, and query objects
# library(Rlabkey)

s <- getSession(baseUrl="http://localhost:8080/labkey",
              folderPath="/apisamples")

sch <- getSchema(s, "lists")

# can walk down the populated schema tree from schema node or query node
sch$AllTypes$Category
sch$AllTypes$Category$caption
sch$AllTypes$Category$type

# can add fields from related queries
lucols <- getLookups(s, sch$AllTypes$Category)

cols <- c(names(sch$AllTypes[2:6]), names(lucols)[2:4])

getRows(s, sch$AllTypes, colSelect=cols)
```
**getSession**

**Details**

Creates a session key that is passed to all the other session-based functions. Associated with the key are a baseUrl and a folderPath which determine the security context.

**curlOptions**

The curlOptions parameter gives a mechanism to pass control options down to the RCurl library used by Rlabkey. This can be very useful for debugging problems or setting proxy server properties. See example for debugging.

**lkOptions**

The lkOptions parameter gives a mechanism to change default behavior in the objects returned by Rlabkey. Currently the only available options are colNameOpt, which affects the names of columns in the data frames returned by getRows(), and maxRows, which sets a default value for this parameter when calling getRows().

**Value**

getSession returns a session object that represents a specific user within a specific project folder within the LabKey Server identified by the baseUrl. The combination of user, server and project/folder determines the security context of the client program. See the Rlabkey Users Guide for more discussion of how the user identity is established.

**Author(s)**

Peter Hussey

**See Also**

getRows, getSchema, getLookups, saveResults

The Rlabkey Users Guide is available by typing RlabkeyUsersGuide().

**Examples**

```r
# library(Rlabkey)

s <- getSession("http://www.labkey.org", "/home")

# shows schemas

## using the curlOptions for generating debug traces of network traffic

d <- debugGatherer()

copt <- curlOptions(debugfunction=d$update, verbose=TRUE, cookiefile='/cooks.txt')

sdbg <- getSession(baseUrl="http://localhost:8080/labkey", folderPath="/apisamples", curlOptions=copt)

getRows(sdbg, scobj$AllTypes)

strwrap(d$value(), 100)
```
labkey.acceptSelfSignedCerts

Convenience method to configure Rlabkey connections to accept self-signed certificates

Description

Rlabkey uses the package RCurl to connect to the LabKey Server. This is equivalent to executing the function: labkey.setCurlOptions(ssl.verifyhost=0, ssl.verifypeer=FALSE)

Usage

labkey.acceptSelfSignedCerts()

labkey.curlOptions

Returns the current set of Curl options that are being used in the existing session

Description

Rlabkey uses the package RCurl to connect to the LabKey Server.

Usage

labkey.curlOptions()

labkey.deleteRows

Delete rows of data from a LabKey database

Description

Specify rows of data to be deleted from the LabKey Server

Usage

labkey.deleteRows(baseUrl, folderPath, schemaName, queryName, toDelete)

Arguments

- **baseUrl**: a string specifying the baseUrl for LabKey server
- **folderPath**: a string specifying the folderPath
- **schemaName**: a string specifying the schemaName for the query
- **queryName**: a string specifying the queryName
- **toDelete**: a data frame containing a single column of data containing the data identifiers of the rows to be deleted
Details

A single row or multiple rows of data can be deleted. For the toDelete data frame, version 0.0.5 or later accepts either a single column of data containing the data identifiers (e.g., key or lsid) or the entire row of data to be deleted. The names of the data in the data frame must be the column names from the LabKey Server. The data frame must be created with the `stringsAsFactors` set to FALSE.

NOTE: Each variable in a dataset has both a column label and a column name. The column label is visible at the top of each column on the web page and is longer and more descriptive. The column name is shorter and is used “behind the scenes” for database manipulation. It is the column name that must be used in the Rlabkey functions when a column name is expected. To identify a particular column name in a dataset on a web site, use the “export to R script” option available as a drop down option under the “views” tab for each dataset.

Value

A list is returned with named categories of `command`, `rowsAffected`, `rows`, `queryName`, `containerPath` and `schemaName`. The `schemaName`, `queryName` and `containerPath` properties contain the same schema, query and folder path used in the request. The `rowsAffected` property indicates the number of rows affected by the API action. This will typically be the same number as passed in the request. The `rows` property contains a list of rows corresponding to the rows deleted.

Author(s)

Valerie Obenchain

See Also

`labkey.selectRows`, `labkey.executeSql`, `makeFilter`,  `labkey.insertRows`, `labkey.importRows`, `labkey.updateRows`

Examples

```r
## Insert, update and delete
## Note that users must have the necessary permissions in the LabKey Server
## to be able to modify data through the use of these functions
# library(Rlabkey)

tenewrow <- data.frame(
  DisplayFld="Inserted from R",
  TextFld="how its done",
  IntFld= 98,
  DoubleFld = 12.345,
  DateTimeFld = "03/01/2010",
  BooleanFld= FALSE,
  LongTextFld = "Four score and seven years ago",
  AttachmentFld = NA  #attachment fields not supported
  , RequiredText = "Veni, vidi, vici"
  , RequiredInt = 0
```
labkey.domain.create

Create a new LabKey domain

Description

Create a domain of the type specified by the domainKind and the domainDesign. A LabKey domain represents a table in a specific schema.

Usage

labkey.domain.create(baseUrl=NULL, folderPath, domainKind=NULL, domainDesign=NULL, options=NULL, module=NULL, domainGroup=NULL, domainTemplate=NULL, createDomain=TRUE, importData=TRUE)
labkey.domain.create

Arguments

baseUrl a string specifying the baseUrl for the labkey server
folderPath a string specifying the folderPath
domainKind (optional) a string specifying the type of domain to create
domainDesign (optional) a list containing the domain design to create
options (optional) a list containing options specific to the domain kind
module (optional) the name of the module that contains the domain template group
domainGroup (optional) the name of a domain template group
domainTemplate (optional) the name of a domain template within the domain group
createDomain (optional) when using a domain template, create the domain. Defaults to TRUE
importData (optional) when using a domain template, import initial data associated in the template. Defaults to TRUE

Details

When creating a domain using a domainKind parameter, the domainDesign parameter will be required. If a domain template is being used, then module, domainGroup, and domainTemplate are required.

Will create a domain of the specified domain type, valid types are

- "IntList": A list with an integer key field
- "VarList": A list with a string key field
- "StudyDatasetVisit": A dataset in a visit based study
- "StudyDatasetDate": A dataset in a date based study
- "IssueDefinition": An issue list domain
- "SampleSet": Sample set
- "DataClass": Data class

The domain design parameter describes the set of fields in the domain, see labkey.domain.createdesign for the helper function that can be used to construct this data structure. The options parameter should contain a list of attributes that are specific to the domain kind specified. The list of valid options for each domain kind are:

- IntList and VarList
  - keyName (required): The name of the field in the domain design which identifies the key field

- StudyDatasetVisit and StudyDatasetDate
  - datasetId: Specifies a dataset ID to use, the default is to auto generate an ID
  - categoryId: Specifies an existing category ID
  - categoryName: Specifies an existing category name
  - demographics: (TRUE | FALSE) Determines whether the dataset is created as demographic
keyPropertyName : The name of an additional key field to be used in conjunction with participantId and (visitId or date) to create unique records
useTimeKeyField : (TRUE | FALSE) Specifies to use the time portion of the date field as an additional key

• IssueDefinition
  – providerName : The type of issue list to create (IssueDefinition (default) or AssayRequestDefinition)
  – singularNoun : The singular name to use for items in the issue definition (defaults to issue)
  – pluralNoun : The plural name (defaults to issues)

• SampleSet
  – idCols : The columns to use when constructing the concatenated unique ID. Can be up to 3 numeric IDs which represent the zero-based position of the fields in the domain.
  – parentCol : The column to represent the parent identifier in the sample set. This is a numeric value representing the zero-based position of the field in the domain.
  – nameExpression : The name expression to use for creating unique IDs

• DataClass
  – sampleSet : The ID of the sample set if this data class is associated with a sample set.
  – nameExpression : The name expression to use for creating unique IDs

Value
A list containing elements describing the newly created domain.

Author(s)
Karl Lum

See Also
labkey.domain.get, labkey.domain.inferFields, labkey.domain.createDesign, labkey.domain.save, labkey.domain.drop

Examples

```r
# create a data frame and infer it's fields, then create a domain design from it
library(Rlabkey)

df <- data.frame(ptid=c(1:3), age = c(10,20,30), sex = c("f", "m", "f"))
fields <- labkey.domain.inferFields(baseUrl="http://labkey/", folderPath="home", df=df)
dd <- labkey.domain.createDesign(name="test list", fields=fields)

# create a new list with an integer key field
labkey.domain.create(baseUrl="http://labkey/", folderPath="home",
domainKind="IntList", domainDesign=dd, options=list(keyName = "ptid"))
```
## Create a domain using a domain template

```r
labkey.domain.createAndLoad(baseUrl="http://labkey/", folderPath="home",
   domainTemplate="Priority", module="simpletest", domainGroup="todolist")
```

---

### labkey.domain.createAndLoad

**Create a new LabKey domain and load data**

---

**Description**

Create a domain of the type specified by the `domainKind`. A LabKey domain represents a table in a specific schema. Once the domain is created the data from the data frame will be imported.

**Usage**

```r
labkey.domain.createAndLoad(baseUrl=NULL, folderPath,
   name, description="", df, domainKind, options=NULL, schemaName=NULL)
```

**Arguments**

- `baseUrl`: a string specifying the `baseUrl` for the labkey server
- `folderPath`: a string specifying the `folderPath`
- `name`: a string specifying the name of the domain to create
- `description`: (optional) a string specifying the domain description
- `df`: a data frame specifying fields to infer. The data frame must have column names as well as row data to infer the type of the field from.
- `domainKind`: a string specifying the type of domain to create
- `options`: (optional) a list containing options specific to the domain kind
- `schemaName`: (optional) a string specifying the schema name to import the data into

**Details**

Will create a domain of the specified domain type, valid types are

- "IntList": A list with an integer key field
- "VarList": A list with a string key field
- "StudyDatasetVisit": A dataset in a visit based study
- "StudyDatasetDate": A dataset in a date based study
- "IssueDefinition": An issue list domain
- "SampleSet": Sample set
- "DataClass": Data class

The `options` parameter should contain a list of attributes that are specific to the domain kind specified. The list of valid options for each domain kind are:
• **IntList and VarList**
  
  – **keyName (required)**: The name of the field in the domain design which identifies the key field

• **StudyDatasetVisit and StudyDatasetDate**
  
  – **datasetId**: Specifies a dataset ID to use, the default is to auto generate an ID
  – **categoryId**: Specifies an existing category ID
  – **categoryName**: Specifies an existing category name
  – **demographics**: (TRUE | FALSE) Determines whether the dataset is created as demographic
  – **keyPropertyName**: The name of an additional key field to be used in conjunction with participantId and (visitId or date) to create unique records
  – **useTimeKeyField**: (TRUE | FALSE) Specifies to use the time portion of the date field as an additional key

• **IssueDefinition**
  
  – **providerName**: The type of issue list to create (IssueDefinition (default) or AssayRequestDefinition)
  – **singularNoun**: The singular name to use for items in the issue definition (defaults to issue)
  – **pluralNoun**: The plural name (defaults to issues)

• **SampleSet**
  
  – **idCols**: The columns to use when constructing the concatenated unique ID. Can be up to 3 numeric IDs which represent the zero-based position of the fields in the domain.
  – **parentCol**: The column to represent the parent identifier in the sample set. This is a numeric value representing the zero-based position of the field in the domain.
  – **nameExpression**: The name expression to use for creating unique IDs

• **DataClass**
  
  – **sampleSet**: The ID of the sample set if this data class is associated with a sample set.
  – **nameExpression**: The name expression to use for creating unique IDs

**Value**

A list containing the newly uploaded data frame rows.

**Author(s)**

Karl Lum

**See Also**

labkey.domain.get, labkey.domain.inferFields, labkey.domain.createDesign, labkey.domain.save, labkey.domain.drop
Examples

library(Rlabkey)

## Prepare a data.frame
participants = c("0001","0001","0002","0002","0007","0008")
Visit = c("V1", "V2", "V2", "V1", "V2", "V1")
IntValue = c(256:261)
dataset = data.frame("ParticipantID" = participants, Visit,
   "IntegerValue" = IntValue, check.names = FALSE)

## Create the dataset and import
labkey.domain.createAndLoad(baseUrl="http://labkey", folderPath="home",
   name="demo dataset", df=dataset, domainKind="StudyDatasetVisit")

labkey.domain.createDesign

    Helper function to create a domain design data structure

Description

Create a domain design data structure which can then be used by labkey.domain.create or labkey.domain.save

Usage

labkey.domain.createDesign(name, description, fields)

Arguments

name a string specifying the name of the domain
description (optional) a string specifying domain description
fields a list containing the fields of the domain design, this should be in the same format as returned by labkey.inferFields.

Details

This is a function which can be used to create a domain design data structure. Domain designs are used both when creating a new domain or updating an existing domain.

Value

A list containing elements describing the domain design. Any of the APIs which take a domain design parameter can accept this data structure.
labkey.domain.drop

Author(s)
Karl Lum

See Also
labkey.domain.get, labkey.domain.inferFields, labkey.domain.create, labkey.domain.save, labkey.domain.drop

Examples

```r
# create a data frame and infer it's fields, then create a domain design from it
library(Rlabkey)

df <- data.frame(ptid=c(1:3), age = c(10,20,30), sex = c("f", "m", "f"))
fields <- labkey.domain.inferFields(baseUrl="http://labkey/", folderPath="home", df=df)
dd <- labkey.domain.createDesign(name="test list", fields=fields)
```

labkey.domain.drop        Delete a LabKey domain

Description
Delete an existing domain.

Usage
labkey.domain.drop(baseUrl=NULL, folderPath, schemaName, queryName)

Arguments
- **baseUrl**: a string specifying the baseUrl for the labkey server
- **folderPath**: a string specifying the folder Path
- **schemaName**: a string specifying the name of the schema of the domain
- **queryName**: a string specifying the query name

Details
This function will delete an existing domain along with any data that may have been uploaded to it.

Author(s)
Karl Lum
See Also

labkey.domain.get, labkey.domain.inferFields, labkey.domain.createDesign, labkey.domain.save, labkey.domain.create

Examples

```r
## delete an existing domain
library(Rlabkey)

labkey.domain.drop(baseUrl="http://labkey/", folderPath="home",
schemaName="lists", queryName="test list")
```

---

**labkey.domain.get**  
*Returns the metadata for an existing LabKey domain*

**Description**

Get the data structure for a domain.

**Usage**

```r
labkey.domain.get(baseUrl=NULL, folderPath, schemaName, queryName)
```

**Arguments**

- **baseUrl**: a string specifying the `baseUrl` for the labkey server
- **folderPath**: a string specifying the `folderPath`
- **schemaName**: a string specifying the name of the schema of the domain
- **queryName**: a string specifying the query name

**Details**

Returns the domain design of an existing domain. The returned domain design can be used for reporting purposes or it can be modified and used to create a new domain or update the domain source.

**Value**

A list containing elements describing the domain. The structure is the same as a domain design created by `labkey.createDomainDesign`

**Author(s)**

Karl Lum
labkey.domain.inferFields

See Also

labkey.domain.create, labkey.domain.inferFields, labkey.domain.createDesign, labkey.domain.save, labkey.domain.drop

Examples

```r
## retrieve an existing domain
library(Rlabkey)

labkey.domain.get(baseUrl="http://labkey/", folderPath="home",
                 schemaName="lists", queryName="test list")
```

labkey.domain.inferFields

Infer field metadata from a data frame

Description

Generate field information from the specified data frame. The resulting list can be used to create or edit a domain using the labkey.domain.create or labkey.domain.save APIs.

Usage

`labkey.domain.inferFields(baseUrl = NULL, folderPath, df)`

Arguments

- `baseUrl` a string specifying the `baseUrl` for the labkey server
- `folderPath` a string specifying the `folderPath`
- `df` a data frame specifying fields to infer. The data frame must have column names as well as row data to infer the type of the field from.

Details

Field information can be generated from a data frame by introspecting the data associated with it along with other properties about that column. The data frame is posted to the server endpoint where the data is analyzed and returned as a list of fields each with it’s associated list of properties and values. This list can be edited and/or used to create a domain on the server.

Value

The inferred metadata will be returned as a list with an element called: "fields" which contains the list of fields inferred from the data frame. Each field will contain the list of attributes and values for that field definition.
Author(s)
Karl Lum

See Also
labkey.domain.get, labkey.domain.create, labkey.domain.createDesign, labkey.domain.save, labkey.domain.drop

Examples

```r
# create a data frame and infer it's fields
library(Rlabkey)

df <- data.frame(ptid=c(1:3), age = c(10,20,30), sex = c("f", "m", "f"))
fields <- labkey.domain.inferFields(baseUrl="http://labkey/", folderPath="home", df=df)
```

---

**labkey.domain.save**  
Updates an existing *LabKey* domain

**Description**
Modify an existing domain with the specified domain design.

**Usage**

```r
labkey.domain.save(baseUrl=NULL, folderPath, schemaName, queryName, domainDesign)
```

**Arguments**

- **baseUrl**  
a string specifying the base URL for the labkey server
- **folderPath**  
a string specifying the folder path
- **schemaName**  
a string specifying the name of the schema of the domain
- **queryName**  
a string specifying the query name
- **domainDesign**  
a list data structure with the domain design to update to

**Value**
A list containing elements describing the domain after the update. The structure is the same as a domain design created by labkey.createDomainDesign

**Author(s)**
Karl Lum
labkey.executeSql

Retrieve data from a LabKey Server using SQL commands

Description

Use Sql commands to specify data to be imported into R. Prior to import, data can be manipulated through standard SQL commands supported in LabKey SQL.

Usage

labkey.executeSql(baseUrl, folderPath, schemaName, sql, 
maxRows = NULL, rowOffset = NULL, colSort=NULL, 
showHidden = FALSE, colNameOpt='caption', 
containerFilter=NULL, parameters=NULL)

Arguments

baseUrl a string specifying the baseUrl for the labkey server
folderPath a string specifying the folderPath
schemaName a string specifying the schemaName for the query
sql a string containing the sql commands to be executed
maxRows (optional) an integer specifying the maximum number of rows to return. If no value is specified, all rows are returned.
rowOffset (optional) an integer specifying which row of data should be the first row in the retrieval. If no value is specified, rows will begin at the start of the result set.
labkey.executeSql

colSort  (optional) a string including the name of the column to sort preceded by a “+” or “-” to indicate sort direction

showHidden  (optional) a logical value indicating whether or not to return data columns that would normally be hidden from user view. Defaults to FALSE if no value provided.

colNameOpt  (optional) controls the name source for the columns of the output dataframe, with valid values of ‘caption’, ‘fieldname’, and ‘rname’ See labkey.selectRows for more details.

containerFilter  (optional) Specifies the containers to include in the scope of selectRows request. A value of NULL is equivalent to “Current”. Valid values are
  • "Current": Include the current folder only
  • "CurrentAndSubfolders": Include the current folder and all subfolders
  • "CurrentPlusProject": Include the current folder and the project that contains it
  • "CurrentAndParents": Include the current folder and its parent folders
  • "CurrentPlusProjectAndShared": Include the current folder plus its project plus any shared folders
  • "AllFolders": Include all folders for which the user has read permission

parameters  (optional) List of name/value pairs for the parameters if the SQL references underlying queries that are parameterized. For example, parameters=c("X=1", "Y=2").

Details

A full dataset or any portion of a dataset can be imported into an R data frame using the labkey.executeSql function. Function arguments are components of the url that identify the location of the data and the SQL actions that should be taken on the data prior to import.

See labkey.selectRows for a discussion of the valid options and defaults for colNameOpt.

Value

The requested data are returned in a data frame with stringsAsFactors set to FALSE. Column names are set as determined by the colNameOpt parameter.

Author(s)

Valerie Obenchain

See Also

labkey.selectRows, makeFilter, labkey.insertRows, labkey.importRows, labkey.updateRows, labkey.deleteRows, getRows
Examples

```r
## Example of an explicit join and use of group by and aggregates
# library(Rlabkey)

sql <- "SELECT AllTypesCategories.Category AS Category,
       SUM(AllTypes.IntFld) AS SumOfIntFld,
       AVG(AllTypes.DoubleFld) AS AvgOfDoubleFld
FROM AllTypes LEFT JOIN AllTypesCategories
ON (AllTypes.Category = AllTypesCategories.TextKey)
WHERE AllTypes.Category IS NOT NULL
GROUP BY AllTypesCategories.Category"

sqlResults <- labkey.executeSql(
  baseUrl="http://localhost:8080/labkey",
  folderPath="/apisamples",
  schemaName="lists",
  sql = sql)

sqlResults
```

labkey.experiment.createData

Create an experiment data object

Description

Create an experiment data object.

Usage

```r
labkey.experiment.createData(config,  
dataClassId = NULL, dataClassName = NULL, dataFileUrl = NULL)
```

Arguments

- `config`: a list of base experiment object properties
- `dataClassId`: (optional) a integer specifying the data class row ID
- `dataClassName`: (optional) a string specifying the name of the data class
- `dataFileUrl`: (optional) a string specifying the local file url of the uploaded file

Details

Create an experiment data object which can be used as either input or output datas for an experiment run.
labkey.experiment.createMaterial

Value
Returns the object representation of the experiment data object.

Author(s)
Karl Lum

See Also
labkey.experiment.saveBatch, labkey.experiment.createMaterial, labkey.experiment.createRun

Examples

library(Rlabkey)

## create a non-assay backed run with data classes as data inputs and outputs

d1 <- labkey.experiment.createData(
  list(name = "dc-01", dataClassId = 400)
d2 <- labkey.experiment.createData(
  list(name = "dc-02", dataClassId = 402)
run <- labkey.experiment.createRun(
  list(name="new run", dataInputs = d1, dataOutputs = d2)
labkey.experiment.saveBatch(baseUrl="http://labkey/", folderPath="home",
  protocolName=labkey.experiment.SAMPLE_DERIVATION_PROTOCOL, runList=run)

labkey.experiment.createMaterial

Create an experiment material object

Description
Create an experiment material object.

Usage
labkey.experiment.createMaterial(config, sampleSetId = NULL, sampleSetName = NULL)

Arguments
config a list of base experiment object properties
sampleSetId (optional) a integer specifying the sample set row ID
sampleSetName (optional) a string specifying the name of the sample set
Details

Create an experiment material object which can be used as either input or output materials for an experiment run.

Value

Returns the object representation of the experiment material object.

Author(s)

Karl Lum

See Also

labkey.experiment.saveBatch, labkey.experiment.createData, labkey.experiment.createRun

Examples

library(Rlabkey)

## create a non-assay backed run with samples as material inputs and outputs

m1 <- labkey.experiment.createMaterial(  
  list(name = "8744063.2604.626"), sampleSetName = "Study Specimens")

m2 <- labkey.experiment.createMaterial(  
  list(name = "87444063.2604.625"), sampleSetName = "Study Specimens")

run <- labkey.experiment.createRun(  
  list(name="new run"), materialInputs = m1, materialOutputs = m2)

labkey.experiment.saveBatch(baseUrl="http://labkey/", folderPath="home",  
  protocolName=labkey.experiment.SAMPLE_DERIVATION_PROTOCOL, runList=run)

labkey.experiment.createRun

Create an experiment run object

Description

Create an experiment run object.

Usage

labkey.experiment.createRun(config,  
  dataInputs = NULL, dataOutputs = NULL, dataRows = NULL,  
  materialInputs = NULL, materialOutputs = NULL)
labkey.experiment.createRun

Arguments

- **config**: a list of base experiment object properties
- **dataInputs**: (optional) a list of experiment data objects to be used as data inputs to the run
- **dataOutputs**: (optional) a list of experiment data objects to be used as data outputs to the run
- **dataRows**: (optional) a data frame containing data rows to be uploaded to the assay backed run
- **materialInputs**: (optional) a list of experiment material objects to be used as material inputs to the run
- **materialOutputs**: (optional) a list of experiment material objects to be used as material outputs to the run

Details

Create an experiment run object which can be used in the saveBatch function.

Value

Returns the object representation of the experiment run object.

Author(s)

Karl Lum

See Also

- `labkey.experiment.saveBatch`
- `labkey.experiment.createData`
- `labkey.experiment.createMaterial`

Examples

```r
library(Rlabkey)

## create a non-assay backed run with samples as material inputs and outputs

m1 <- labkey.experiment.createMaterial(  
  list(name = "87444063.2604.626"), sampleSetName = "Study Specimens")

m2 <- labkey.experiment.createMaterial(  
  list(name = "87444063.2604.625"), sampleSetName = "Study Specimens")

run <- labkey.experiment.createRun(  
  list(name="new run"), materialInputs = m1, materialOutputs = m2)

labkey.experiment.saveBatch(baseUrl="http://labkey/", folderPath="home",  
  protocolName=labkey.experiment.SAMPLE_DERIVATION_PROTOCOL, runList=run)
```
labkey.experiment.SAMPLE_DERIVATION_PROTOCOL

Constant for the Simple Derivation Protocol

Description

Simple Derivation Protocol constant.

Details

This value can be used in the labkey.experiment.saveBatch function when creating runs that aren’t backed by an assay protocol.

Author(s)

Karl Lum

See Also

labkey.experiment.saveBatch

labkey.experiment.saveBatch

Saves a modified experiment batch

Description

Saves a modified experiment batch.

Usage

labkey.experiment.saveBatch(baseUrl=NULL, folderPath, assayConfig = NULL, protocolName = NULL, runList)

Arguments

baseUrl (optional) a string specifying the baseUrl for the labkey server
folderPath a string specifying the folderPath
assayConfig (optional) a list specifying assay configuration information
protocolName (optional) a string specifying the protocol name of the protocol to use
runList a list of experiment run objects
Details

Saves a modified batch. Runs within the batch may refer to existing data and material objects, either inputs or outputs, by ID or LSID. Runs may also define new data and materials objects by not specifying an ID or LSID in their properties.

Runs can be created for either assay or non-assay backed protocols. For an assay backed protocol, either the assayId or the assayName and providerName name must be specified in the assayConfig parameter. If a non-assay backed protocol is to be used, specify the protocolName string value, note that currently only the simple : labkey.experiment.SAMPLE_DERIVATION_PROTOCOL is supported.

Refer to the labkey.experiment.createData, labkey.experiment.createMaterial, and labkey.experiment.createRun helper functions to assemble the data structure that saveBatch expects.

Value

Returns the object representation of the experiment batch.

Author(s)

Karl Lum

See Also

labkey.experiment.createData, labkey.experiment.createMaterial, labkey.experiment.createRun

Examples

library(Rlabkey)

## uploads data to an existing assay

df <- data.frame(participantId=c(1:3), visitId = c(10,20,30), sex = c("f", "m", "f"))
run <- labkey.experiment.createRun(list(name="new assay run"), dataRows = df)
labkey.experiment.saveBatch(baseUrl="http://labkey/", folderPath="home",
assayConfig=list(assayName="GPAT", providerName="General"), runList=run)

## create a non-assay backed run with samples as material inputs and outputs

m1 <- labkey.experiment.createMaterial(
  list(name = "87444063.2604.626"), sampleSetName = "Study Specimens")
m2 <- labkey.experiment.createMaterial(
  list(name = "87444063.2604.625"), sampleSetName = "Study Specimens")
run <- labkey.experiment.createRun(
  list(name="new run"), materialInputs = m1, materialOutputs = m2)
labkey.experiment.saveBatch(baseUrl="http://labkey/", folderPath="home",
  protocolName=labkey.experiment.SAMPLE_DERIVATION_PROTOCOL, runList=run)
labkey.getBaseUrl

Get the default baseUrl parameter used for all http or https requests

Description

Use this function to get "baseUrl" package environment variables to be used for all http or https requests.

Usage

labkey.getBaseUrl(baseUrl=NULL)

Arguments

baseUrl server location including context path, if any. e.g. https://www.labkey.org/

Details

The function takes an optional baseUrl parameter. When non empty parameter is passed in and if baseUrl has not been previously set, the function will remember the baseUrl value in package environment variables and return the formatted baseUrl. Skip baseUrl parameter to get previously set baseUrl.

Examples

```r
## Example of getting previously set baseUrl
library(Rlabkey)
labkey.setDefaults(apiKey="session|abcdef0123456789abcdef0123456789",
  baseUrl="http://labkey/")
labkey.getBaseUrl()
```

labkey.getDefaultViewDetails

Retrieve the fields of a LabKey query view

Description

Fetch a list of output fields and their attributes that are available from the default view of a given query.

Usage

labkey.getDefaultViewDetails(baseUrl, folderPath,
  schemaName, queryName)
**labkey.getDefaultViewDetails**

**Arguments**

- **baseurl** a string specifying the baseurl for the labkey server
- **folderPath** a string specifying the folderPath
- **schemaName** a string specifying the schemaName for the query
- **queryName** a string specifying the queryName

**Details**

Queries have a default “views” associated with them. A query view can describe a subset or superset of the fields defined by the query. A query view is defined by using the “Customize View” button option on a LabKey data grid page. `labkey.getDefaultViewDetails` has the same arguments and returns the same shape of result data frame as `labkey.getQueryDetails`. The default view is the what you will get back on calling `labkey.selectRows` or `getRows`.

**Value**

The output field attributes of the default view are returned as a data frame. See `labkey.getQueryDetails` for a description.

**Author(s)**

Peter Hussey, peter@labkey.com

**See Also**

Retrieve data: `labkey.selectRows`, `makeFilter`, `labkey.executeSql`
Modify data: `labkey.updateRows`, `labkey.insertRows`, `labkey.importRows`, `labkey.deleteRows`
List available data: `labkey.getSchemas`, `labkey.getQueries`, `labkey.getQueryViews`, `labkey.getQueryDetails`, `labkey.getLookupDetails`

**Examples**

```r
# Details of fields of a default query view
# library(Rlabkey)

queryDF <- labkey.getDefaultViewDetails(
  baseUrl="http://localhost:8080/labkey",
  folderPath="/apisamples",
  schemaName="lists",
  queryName="AllTypes")

queryDF
```
**labkey.getFolders**

*Retrieve a list of folders accessible to the current user*

**Description**

Fetch a list of all folders accessible to the current user, starting from a given folder.

**Usage**

```python
labkey.getFolders(baseUrl, folderPath,
                   includeEffectivePermissions=TRUE,
                   includeSubfolders=FALSE, depth=50)
```

**Arguments**

- `baseUrl` a string specifying the address of the LabKey Server, including the context root
- `folderPath` the starting point for the search.
- `includeEffectivePermissions` whether the search for subfolders should recurse down the folder hierarchy
- `includeSubfolders` maximum number of subfolder levels to show if includeSubfolders=TRUE

**Details**

Folders are a hierarchy of containers for data and files. They are the place where permissions are set in LabKey Server. The top level in a folder hierarchy is the project. Below the project is an arbitrary hierarchy of folders that can be used to partition data for reasons of security, visibility, and organization.

Folders cut across schemas. Some schemas, like the lists schema are not visible in a folder that has no list objects defined in it. Other schemas are visible in all folders.

**Value**

The available folders are returned as a three-column data frame containing

- `name` the name of the folder
- `folderPath` the full path of the folder from the project root
- `effectivePermissions` the current user’s effective permissions for the given folder

**Author(s)**

Peter Hussey, peter@labkey.com
labkey.getLookupDetails

See Also

Retrieve data: labkey.selectRows, makeFilter, labkey.executeSql
Modify data: labkey.updateRows, labkey.insertRows, labkey.importRows, labkey.deleteRows
List available data: labkey.getQueries, labkey.getQueryViews, labkey.getQueryDetails, labkey.getDefaultViewDetails, labkey.getLookupDetails,

Examples

## List of folders
# library(Rlabkey)

folders <- labkey.getFolders("http://www.labkey.org", "/home")
folders

labkey.getLookupDetails

*Retrieve detailed information on a LabKey query*

Description

Fetch a list of output columns and their attributes from the query referenced by a lookup field

Usage

labkey.getLookupDetails(baseUrl, folderPath, 
                      schemaName, queryName, lookupKey)

Arguments

baseUrl a string specifying the address of the LabKey Server, including the context root
folderPath a string specifying the hierarchy of folders to the current folder (container) for the operation, starting with the project folder
schemaName a string specifying the schema name in which the query object is defined
queryName a string specifying the name the query
lookupKey a string specifying the qualified name of a lookup field (foreign key) relative to the query specified by queryName

Details

When getQueryDetails returns non-NA values for the lookupQueryName, the getLookupDetails function can be called to enumerate the fields from the query referenced by the lookup. These lookup fields can be added to the colSelect list of selectRows.
**Value**

The available schemas are returned as a data frame, with the same columns as detailed in `labkey.getQueryDetails`

**Author(s)**

Peter Hussey, peter@labkey.com

**See Also**

Retrieve data: `labkey.selectRows`, `labkey.makeFilter`, `labkey.executeSql`

Modify data: `labkey.updateRows`, `labkey.insertRows`, `labkey.importRows`, `labkey.deleteRows`

List available data: `labkey.getSchemas`, `labkey.getQueries`, `labkey.getQueryViews`, `labkey.getQueryDetails`, `labkey.getDefaultViewDetails`

**Examples**

```r
## Details of fields of a query referenced by a lookup field
# library(Rlabkey)

lu1 <- labkey.getLookupDetails(
  baseUrl= "http://localhost:8080/labkey",
  folderPath="/apisamples",
  schemaName="lists",
  queryName="AllTypes",
  lookupKey="Category"
)

## When a lookup field points to a query object that itself has a lookup
## field, use a compound fieldkey consisting of the lookup fields from
## the base query object to the target lookupDetails, separated by
## forward slashes

lu2 <- labkey.getLookupDetails(
  baseUrl= "http://localhost:8080/labkey",
  folderPath="/apisamples",
  schemaName="lists",
  queryName="AllTypes",
  lookupKey="Category/Group"
)

## Now select a result set containing a field from the base query, a
## field from the 1st level of lookup, and one from the 2nd
rows <- labkey.selectRows(
  baseUrl= "http://localhost:8080/labkey",
  folderPath="/apisamples",
  schemaName="lists",
  queryName= "AllTypes",
  colSelect = c("DisplayFld", "Category/Category", "Category/Group/GroupName"),
  colFilter = makeFilter(c("Category/Group/GroupName"),
```

labkey.getModuleProperty

*Get effective module property value*

**Description**

Get a specific effective module property value for folder

**Usage**

```r
labkey.getModuleProperty(baseUrl=NULL, folderPath, moduleName, propName)
```

**Arguments**

- **baseUrl**: server location including context path, if any. e.g. https://www.labkey.org/
- **folderPath**: a string specifying the folderPath
- **moduleName**: name of the module
- **propName**: The module property name

**Examples**

```r
library(Rlabkey)
labkey.getModuleProperty(baseUrl="http://labkey/", folderPath="flowProject",
                        moduleName="flow", propName="ExportToScriptFormat")
```

labkey.getQueries

*Retrieve a list of available queries for a specified LabKey schema*

**Description**

Fetch a list of queries available to the current user within a specified folder context and specified schema

**Usage**

```r
labkey.getQueries(baseUrl, folderPath, schemaName)
```
Arguments

- `baseUrl` a string specifying the address of the LabKey Server, including the context root
- `folderPath` a string specifying the hierarchy of folders to the current folder (container) for the operation, starting with the project folder
- `schemaName` a string specifying the schema name in which the query object is defined

Details

“Query” is the LabKey term for a data container that acts like a relational table within LabKey Server. Queries include lists, assay data results, user-defined queries, built-in SQL tables in individual modules, and tables or table-like objects in external schemas. For a specific queriable object, the data that is visible depends on the current user’s permissions in a given folder. Function arguments identify the location of the server and the folder path.

Value

The available queries are returned as a three-column data frame containing one row for each field for each query in the specified schema. The three columns are:
- `queryName` the name of the query object, repeated once for every field defined as output of the query.
- `fieldName` the name of a query output field
- `caption` the caption of the named field as shown in the column header of a data grid, also known as a label

Author(s)

Peter Hussey, peter@labkey.com

References

http://www.omegahat.net/RCurl/,
https://www.labkey.org/project/home/begin.view

See Also

Retrieve data: `labkey.selectRows`, `makeFilter`, `labkey.executeSql`  
Modify data: `labkey.updateRows`, `labkey.insertRows`, `labkey.importRows`, `labkey.deleteRows`  
List available data: `labkey.getSchemas`, `labkey.getQueryViews`, `labkey.getQueryDetails`, `labkey.getDefaultViewDetails`, `labkey.getLookupDetails`

Examples

```r
## List of queries in a schema
# library(Rlabkey)

queriesDF <- labkey.getQueries(
  baseUrl="http://www.labkey.org",
  folderPath="/home",
```
labkey.getQueryDetails

Retrieve detailed information on a LabKey query

**Description**

Fetch a list of output columns and their attributes that are available from a given query

**Usage**

labkey.getQueryDetails(baseUrl, folderPath, schemaName, queryName)

**Arguments**

- **baseUrl**: a string specifying the address of the LabKey Server, including the context root
- **folderPath**: a string specifying the hierarchy of folders to the current folder (container) for the operation, starting with the project folder
- **schemaName**: a string specifying the schema name in which the query object is defined
- **queryName**: a string specifying the name of the query

**Details**

Queries have a default output list of fields defined by the "default view" of the query. To retrieve that set of fields with their detailed properties such as type and nullability, use `labkey.getQueryDetails` function. Function arguments are the components of the url that identify the location of the server, the folder path, the schema, and the name of the query.

The results from `getQueryDetails` describe the “field names” that are used to build the `colSelect`, `colFilter` and `colSort` parameters to `selectRows`. Each column in the data frame returned from `selectRows` corresponds to a field in the `colSelect` list.

There are two types of fieldNames that will be reported by the server in the output of this function. For fields that are directly defined in the query corresponding the `queryName` parameter for this function, the `fieldName` is simply the name assigned by the query. Because `selectRows` returns the results specified by the default view, however, there may be cases where this default view incorporates data from other queries that have a defined 1-M relationship with the table designated by the `queryName`. Such fields in related tables are referred to as "lookup" fields. Lookup fields have multi-part names using a forward slash as the delimiter. For example, in a samples data set, if the ParticipantId identifies the source of the sample, ParticipantId/CohortId/CohortName could be a reference to a `CohortName` field in a Cohorts data set.

These lookup fieldNames can appear in the default view and show up in the `selectRows` result. If a field from a lookup table is not in the default view, it can still be added to the output column list.
of labkey.selectRows. Use the labkey.getLookups to discover what additional fields are available via lookups, and then put their multipart fieldName values into the colSelect list. Lookup fields have the semantics of a LEFT JOIN in SQL, such that every record from the target queryName appears in the output whether or not there is a matching lookup field value.

Value

The available schemas are returned as a data frame,

queryName the name of the query, repeated n times, where n is the number of output fields from the query
fieldName the fully qualified name of the field, relative to the specified queryName.
caption a more readable label for the data field, appears as a column header in grids
fieldKey the name part that identifies this field within its containing table, independent of its use as a lookup target.
type a string specifying the field type, e.g. Text, Number, Date, Integer
isNull True if the field can be left empty (null)
isKey TRUE if the field is part of the primary key
isAutoIncrement TRUE if the system will automatically assign a sequential integer in this on inserting a record
isVersion TRUE if the field issued to detect changes since last read
isHidden TRUE if the field is not displayed by default
isSelectable reserved for future use.
isReadOnly reserved for future use
isEnabled reserved for future use
lookupField for a field defined as a lookup the primary key column of the query referenced by the lookup field; NA for non-lookup fields
lookupSchemaName the schema of the query referenced by the lookup field; NA for non-lookup fields
lookupDisplayField the field from the query referenced by the lookup field that is shown by default in place of the lookup field; NA for non-lookup fields
lookupQueryName the query referenced by the lookup field; NA for non-lookup fields. A non-NA value indicates that you can use this field in a call to getLookups
lookupIsPublic reserved for future use

Author(s)

Peter Hussey, peter@labkey.com

See Also

Retrieve data: labkey.selectRows, makeFilter, labkey.executeSql
Modify data: labkey.updateRows, labkey.insertRows, labkey.importRows, labkey.deleteRows
List available data: labkey.getSchemas, labkey.getQueries, labkey.getQueryViews, labkey.getDefaultViewDetails, labkey.getLookupsDetails
labkey.getQueryViews

Examples

```r
## Details of fields of a query
# library(Rlabkey)

queryDF <- labkey.getQueryDetails(
  baseUrl = "http://localhost:8080/labkey",
  folderPath = "/apisamples",
  schemaName = "lists",
  queryName = "AllTypes")
```

labkey.getQueryViews  Retrieve a list of available named views defined on a query in a schema

Description

Fetch a list of named query views available to the current user in a specified folder context, schema and query

Usage

```r
labkey.getQueryViews(baseUrl, folderPath, schemaName, queryName)
```

Arguments

- **baseUrl**: a string specifying the address of the LabKey Server, including the context root
- **folderPath**: a string specifying the hierarchy of folders to the current folder (container) for the operation, starting with the project folder
- **schemaName**: a string specifying the schema name in which the query object is defined
- **queryName**: a string specifying the name the query

Details

Queries have a default “view” associated with them, and can also have any number of named views. A named query view is created by using the “Customize View” button option on a LabKey data grid page. Use `getDefaultViewDetails` to get information about the default (unnamed) view.

Value

The available views for a query are returned as a three-column data frame, with one row per view output field.

- **viewName**: The name of the view, or NA for the default view.
- **fieldName**: The name of a field within the view, as defined in the query object to which the field belongs.
key The name of the field relative to the base query. Use this value in the colSelect parameter of labkey.selectRows().

Author(s)

Peter Hussey, peter@labkey.com

References


See Also

Retrieve data: labkey.selectRows, labkey.makeFilter, labkey.executeSql
Modify data: labkey.updateRows, labkey.insertRows, labkey.importRows, labkey.deleteRows
List available data: labkey.getSchemas, labkey.getQueries, labkey.getQueryDetails, labkey.getDefaultViewDetails

Examples

```r
## List of views defined for a query in a schema
# library(Rlabkey)

viewsDF <- labkey.getQueryViews(
  baseUrl="http://localhost:8080/labkey",
  folderPath="/apisamples",
  schemaName="lists",
  queryName="AllTypes"
)
```

---

**labkey.getSchemas**  
*Retrieve a list of available schemas from a labkey database*

**Description**

Fetch a list of schemas available to the current user in a specified folder context

**Usage**

```r
labkey.getSchemas(baseUrl, folderPath)
```

**Arguments**

- **baseUrl**
  - a string specifying the address of the LabKey Server, including the context root
- **folderPath**
  - a string specifying the hierarchy of folders to the current folder (container) for the operation, starting with the project folder
Details

Schemas act as the name space for query objects in LabKey Server. Schemas are generally associated with a LabKey Server "module" that provides some specific functionality. Within a queriable object, the specific data that is visible depends on the current user’s permissions in a given folder. Function arguments are the components of the url that identify the location of the server and the folder path.

Value

The available schemas are returned as a single-column data frame.

Author(s)

Peter Hussey, peter@labkey.com

References

http://www.omegahat.net/RCurl/,
https://www.labkey.org/project/home/begin.view

See Also

Retrieve data: labkey.selectRows, makeFilter, labkey.executeSql
Modify data: labkey.updateRows, labkey.insertRows, labkey.importRows, labkey.deleteRows
List available data: labkey.getQueries, labkey.getQueryViews, labkey.getQueryDetails, labkey.getDefaultViewDetails, labkey.getLookupDetails,

Examples

```r
# List of schemas
# library(Rlabkey)

schemasDF <- labkey.getSchemas(  
  baseUrl="http://localhost:8080/labkey",  
  folderPath="/apisamples"
)
```

---

labkey.importRows  
*Import rows of data into a LabKey Server*

Description

Bulk import rows of data into the database.
Usage

```r
labkey.importRows(baseUrl, folderPath, 
    schemaName, queryName, toImport, na)
```

Arguments

- **baseUrl**: a string specifying the baseUrl for the labkey server
- **folderPath**: a string specifying the folderPath
- **schemaName**: a string specifying the schemaName for the query
- **queryName**: a string specifying the queryName
- **toImport**: a data frame containing rows of data to be imported
- **na** (optional) the value to convert NA's to, defaults to NULL

Details

Multiple rows of data can be imported in bulk. The `toImport` data frame must contain values for each column in the dataset and must be created with the `stringsAsFactors` option set to FALSE. The names of the data in the data frame must be the column names from the LabKey Server. To import a value of NULL, use an empty string (""") in the data frame (regardless of the database column type). Also, when importing data into a study dataset, the sequence number must be specified.

Note: requires LabKey server version 13.3 or greater.

Value

A list is returned with named categories of `command`, `rowsAffected`, `queryName`, `containerPath` and `schemaName`. The `schemaName`, `queryName` and `containerPath` properties contain the same schema, query and folder path used in the request. The `rowsAffected` property indicates the number of rows affected by the API action. This will typically be the same number as passed in the request.

Author(s)

Cory Nathe

See Also

`labkey.selectRows`, `labkey.executeSql`, `makeFilter`, `labkey.insertRows`, `labkey.updateRows`, `labkey.deleteRows`

Examples

```r
## Note that users must have the necessary permissions in the database
## to be able to modify data through the use of these functions
# library(Rlabkey)
```
labkey.insertRows <- data.frame(
  DisplayName="Imported from R",
  RequiredText="abc",
  RequiredInt=1,
  stringsAsFactors=FALSE)
newrows = newrows[rep(1:nrow(newrows),each=5),]

importedInfo <- labkey.importRows("http://localhost:8080/labkey",
  folderPath="/apisamples", schemaName="lists", queryName="AllTypes",
  toImport=newrows)
importedInfo$rowsAffected

labkey.insertRows

Insert new rows of data into a LabKey Server

Description
Insert new rows of data into the database.

Usage
labkey.insertRows(baseUrl, folderPath,
  schemaName, queryName, toInsert, na)

Arguments
baseUrl a string specifying the baseUrl for the labkey server
folderPath a string specifying the folderPath
schemaName a string specifying the schemaName for the query
queryName a string specifying the queryName
toInsert a data frame containing rows of data to be inserted
na (optional) the value to convert NA’s to, defaults to NULL

Details
A single row or multiple rows of data can be inserted. The toInsert data frame must contain values for each column in the dataset and must be created with the stringsAsFactors option set to FALSE. The names of the data in the data frame must be the column names from the LabKey Server. To insert a value of NULL, use an empty string (""") in the data frame (regardless of the database column type). Also, when inserting data into a study dataset, the sequence number must be specified.
labkey.insertRows

Value

A list is returned with named categories of command, rowsAffected, rows, queryName, containerPath and schemaName. The schemaName, queryName and containerPath properties contain the same schema, query and folder path used in the request. The rowsAffected property indicates the number of rows affected by the API action. This will typically be the same number as passed in the request. The rows property contains a list of row objects corresponding to the rows inserted.

Author(s)

Valerie Obenchain

See Also

labkey.selectRows, labkey.executeSql, makeFilter, labkey.importRows, labkey.updateRows, labkey.deleteRows

Examples

```
## Insert, update and delete
## Note that users must have the necessary permissions in the database
## to be able to modify data through the use of these functions
# library(Rlabkey)

newrow <- data.frame(
  DisplayFld="Inserted from R"
  , TextFld="how its done"
  , IntFld= 98
  , DoubleFld = 12.345
  , DateTimeFld = "03/01/2010"
  , BooleanFld= FALSE
  , LongTextFld = "Four score and seven years ago"
  , AttachmentFld = NA  #attachment fields not supported
  , RequiredText = "Veni, vidi, vici"
  , RequiredInt = 0
  , Category = "LOOKUP2"
  , stringsAsFactors=FALSE)

insertedRow <- labkey.insertRows("http://localhost:8080/labkey",
  folderPath="/apisamples", schemaName="lists", queryName="AllTypes",
  toInsert=newrow)

newRowId <- insertedRow$rows[[1]]$Rowid

selectedRow<-labkey.selectRows("http://localhost:8080/labkey",
  folderPath="/apisamples", schemaName="lists", queryName="AllTypes",
  colFilter=makeFilter(c("RowId", "EQUALS", newRowId)))

updaterow=data.frame(
  RowId=newRowId
  , DisplayFld="Updated from R"
  , TextFld="how to update"
)
`labkey.makeRemotePath`  

**Build a file path to data on a remote machine**

### Description

Replaces a local root with a remote root given a full path.

### Usage

```r
labkey.makeRemotePath(localRoot, remoteRoot, fullPath)
```

### Arguments

- `localRoot`: local root part of the `fullPath`
- `remoteRoot`: remote root that will replace the local root of the `fullPath`
- `fullPath`: the full path to make remote

### Details

A helper function to translate a file path on a LabKey web server to a path accessible by a remote machine. For example, if an R script is run on an R server that is a different machine than the LabKey server and that script references data files on the LabKey server, a remote path needs to be created to correctly reference these files. The local and remote roots of the data pipeline are included by LabKey in the prolog of an R View report script. Note that the data pipeline root references are only included if an administrator has enabled the Rserve Reports experimental feature on the LabKey server. If the `remoteRoot` is empty or the `fullPath` does not contain the `localRoot` then the `fullPath` is returned without its root being changed.

### Value

A character array containing the full path.
Author(s)

Dax Hawkins

Examples

```r
# library(Rlabkey)

labkey.pipeline.root <- "c:/data/fcs"
labkey.remote.pipeline.root <- "/volumes/fcs"
fcsFile <- "c:/data/fcs/runA/aaa.fcs"

# returns "/volumes/fcs/runA/aaa.fcs"
labkey.makeRemotePath(
  localRoot=labkey.pipeline.root,
  remoteRoot=labkey.remote.pipeline.root,
  fullPath=fcsFile);
```

labkey.rstudio.initReport

Initialize a RStudio session for LabKey R report source editing

Description

LabKey-RStudio integration helper. Not intended for use outside RStudio.

Usage

```r
labkey.rstudio.initReport(apiKey = "", baseUrl = "", folderPath, reportEntityId, skipViewer = FALSE, skipEdit = FALSE)
```

Arguments

<table>
<thead>
<tr>
<th>Argument</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>apiKey</td>
<td>session key from your server</td>
</tr>
<tr>
<td>baseUrl</td>
<td>server location including context path, if any. e.g. <a href="https://www.labkey.org/">https://www.labkey.org/</a></td>
</tr>
<tr>
<td>folderPath</td>
<td>a string specifying the folderPath</td>
</tr>
<tr>
<td>reportEntityId</td>
<td>LabKey report's entityId</td>
</tr>
<tr>
<td>skipViewer</td>
<td>(TRUE</td>
</tr>
<tr>
<td>skipEdit</td>
<td>(TRUE</td>
</tr>
</tbody>
</table>
labkey.rstudio.initRStudio

Initialize a RStudio session for LabKey integration

Description
LabKey-RStudio integration helper. Not intended for use outside RStudio.

Usage
labkey.rstudio.initRStudio(apiKey = "", baseUrl = "", folderPath, skipViewer = FALSE)

Arguments
apiKey session key from your server
baseUrl server location including context path, if any. e.g. https://www.labkey.org/
folderPath a string specifying the folderPath
skipViewer (TRUE | FALSE) TRUE to skip setting up LabKey schema viewer in RStudio

Examples

## RStudio console only
library(Rlabkey)
labkey.rstudio.initRStudio(apiKey = "session|abcdef0123456789abcdef0123456789",
baseUrl = "http://labkey/", folderPath = "home",
reportEntityId = "0123456a-789b-1000-abcd-01234567abce")

labkey.rstudio.initRStudio

## RStudio console only
library(Rlabkey)
labkey.rstudio.initRStudio(apiKey = "session|abcdef0123456789abcdef0123456789",
baseUrl = "http://labkey/", folderPath = "home")
labkey.rstudio.initSession

*Initialize a RStudio session for LabKey integration using a time one request id*

Description

LabKey-RStudio integration helper. Not intended for use outside RStudio.

Usage

labkey.rstudio.initSession(requestId, baseUrl)

Arguments

- `requestId`: A one time request id generated by LabKey server for initializing RStudio
- `baseUrl`: server location including context path, if any. e.g. https://www.labkey.org/

Examples

```r
## RStudio console only
library(Rlabkey)
labkey.rstudio.initSession(requestId="a60228c8-9448-1036-a7c5-ab541dc15ee9",
    baseUrl="http://labkey/"
)
```

labkey.rstudio.isInitialized

*Check valid rlabkey session*

Description

LabKey-RStudio integration helper. Not intended for use outside RStudio.

Usage

labkey.rstudio.isInitialized()

Examples

```r
## RStudio console only
library(Rlabkey)
labkey.rstudio.isInitialized()
```
labkey.rstudio.saveReport

Update RStudio report source back to LabKey

Description
LabKey-RStudio integration helper. Not intended for use outside RStudio.

Usage
labkey.rstudio.saveReport(folderPath, reportEntityId, reportFilename, useWarning = FALSE)

Arguments
folderPath a string specifying the folderPath
reportEntityId LabKey report's entityId
reportFilename The filename to save
useWarning (TRUE | FALSE) TRUE to prompt user choices to save

Examples

## RStudio console only
library(Rlabkey)
labkey.rstudio.saveReport(folderPath = "home",
                           reportEntityId = "0123456a-789b-1000-abcd-01234567abcde",

labkey.saveBatch

Save an assay batch object to a labkey database

Description
Save an assay batch object to a labkey database

Usage
labkey.saveBatch(baseUrl, folderPath, assayName, resultDataframe, batchPropertyList=NULL, runPropertyList=NULL)
Arguments

- **baseUrl**: a string specifying the baseUrl for the labkey server
- **folderPath**: a string specifying the folderPath
- **assayName**: a string specifying the name of the assay instance
- **resultDataFrame**: a data frame containing rows of data to be inserted
- **batchPropertyList**: a list of batch Properties
- **runPropertyList**: a list of run Properties

Details

This function has been deprecated and will be removed in a future release, please use `labkey.experiment.saveBatch` instead as it supports the newer options for saving batch objects.

To save an R data.frame an assay results sets, you must create a named assay using the "General" assay provider. Detailed instructions are available in the Rlabkey Users Guide, accessible by entering `RlabkeyUsersGuide()` at the R command prompt. Note that saveBatch currently supports only a single run with one result set per batch.

Value

Returns the object representation of the Assay batch.

Author(s)

Peter Hussey

References

https://www.labkey.org/wiki/home/Documentation/page.view?name=createDatasetViaAssay

See Also

- `labkey.selectRows`, `labkey.executeSql`, `makeFilter`, `labkey.updateRows`, `labkey.deleteRows`, `labkey.experiment.saveBatch`

Examples

```r
# Very simple example of an analysis flow: query some data, calculate
# some stats, then save the calculations as an assay result set in
# LabKey Server
# Note this example expects to find an assay named "SimpleMeans" in
# the apisamples project
# library(RLabkey)
```
labkey.selectRows

Retrieve data from a labkey database

Description

Import full datasets or selected rows into R. The data can be sorted and filtered prior to import.

Usage

labkey.selectRows(baseUrl = NULL, folderPath, schemaName, queryName,
                   viewName = NULL, colSelect = NULL, maxRows = NULL,
                   rowOffset = NULL, colSort = NULL, colFilter = NULL,
                   showHidden = FALSE, colNameOpt="caption",
                   containerFilter = NULL, parameters = NULL,
                   includeDisplayValues = FALSE, method = "POST")

Arguments

baseUrl a string specifying the baseUr1 for the labkey server
folderPath a string specifying the folderPath
labkey.selectRows

schemaName  a string specifying the schemaName for the query

queryName  a string specifying the queryName

viewName  (optional) a string specifying the viewName associated with the query. If not specified, the default view determines the rowset returned.

colSelect  (optional) a vector of strings specifying which columns of a dataset or view to import. The wildcard character ("*".) may also be used here to get all columns including those not in the default view.

maxRows  (optional) an integer specifying how many rows of data to return. If no value is specified, all rows are returned.

rowOffset  (optional) an integer specifying which row of data should be the first row in the retrieval. If no value is specified, the retrieval starts with the first row.

colSort  (optional) a string including the name of the column to sort preceded by a “+” or “-” to indicate sort direction

colFilter  (optional) a vector or array object created by the makeFilter function which contains the column name, operator and value of the filter(s) to be applied to the retrieved data.

showHidden  (optional) a logical value indicating whether or not to return data columns that would normally be hidden from user view. Defaults to FALSE if no value provided.

colNameOpt  (optional) controls the name source for the columns of the output dataframe, with valid values of 'caption', 'fieldname', and 'rname'

containerFilter  (optional) Specifies the containers to include in the scope of selectRows request. A value of NULL is equivalent to "Current". Valid values are

  - "Current": Include the current folder only
  - "CurrentAndSubfolders": Include the current folder and all subfolders
  - "CurrentPlusProject": Include the current folder and the project that contains it
  - "CurrentAndParents": Include the current folder and its parent folders
  - "CurrentPlusProjectAndShared": Include the current folder plus its project plus any shared folders
  - "AllFolders": Include all folders for which the user has read permission

parameters  (optional) List of name/value pairs for the parameters if the SQL references underlying queries that are parameterized. For example, parameters=c("X=1", "Y=2").

includeDisplayValues  (optional) a logical value indicating if display values should be included in the response object for lookup fields.

method  (optional) HTTP method to use for the request, defaults to POST.

Details

A full dataset or any portion of a dataset can be downloaded into an R data frame using the labkey.selectRows function. Function arguments are the components of the url that identify
the location of the data and what actions should be taken on the data prior to import (ie, sorting, selecting particular columns or maximum number of rows, etc).

Stored queries in LabKey Server have an associated default view and may have one or more named views. Views determine the column set of the return data frame. View columns can be a subset or superset of the columns of the underlying query– a subset if columns from the query are left out of the view, and a superset if lookup columns in the underlying query are used to include columns from related queries. Views can also include filter and sort properties that will make their result set different from the underlying query. If no view is specified, the columns and rows returned are determined by the default view, which may not be the same as the result rows of the underlying query. Please see the topic on Saving Views in the LabKey online documentation.

In the returned data frame, there are three different ways to have the columns named: colNameOpt='caption' uses the caption value, and is the default option for backward compatibility. It may be the best option for displaying to another user, but may make scripting more difficult. colNameOpt='fieldname' uses the field name value, so that the data frame colnames are the same names that are used as arguments to labkey function calls. It is the default for the new getRows session-based function. colNameOpt='rname' transforms the field name value into valid R names by substituting an underscore for both spaces and forward slash (/) characters, and the lower casing the entire name. It is the way a data frame is passed to a script running at the LabKey server in the R View feature of the data grid. If you are writing scripts for running in an R view on the server, or if you prefer to work with legal r names in the returned grid, this option may be useful.

For backward compatibility, column names returned by labkey.executeSql and labkey.selectRows are field captions by default. The getRows function has the same colNameOpt parameter but defaults to field names instead of captions.

Value

The requested data are returned in a data frame with stringsAsFactors set to FALSE. Column names are set as determined by the colNameOpt parameter.

Author(s)

Valerie Obenchain

References


See Also

Retrieve data: makeFilter, labkey.executeSql
Modify data: labkey.updateRows, labkey.insertRows, labkey.importRows, labkey.deleteRows
List available data: labkey.getSchemas, labkey.getQueries, labkey.getQueryViews, labkey.getQueryDetails, labkey.selectViews

Examples

```r
## select from a list named AllTypes
# library(Rlabkey)```
labkey.setCurlOptions

Modify the current set of Curl options that are being used in the existing session

Description

Rlabkey uses the package httr to connect to the LabKey Server.

Arguments

options args a variable list of arguments to set the RCurl options

ssl_verifyhost check the existence of a common name and also verify that it matches the hostname provided

ssl_verifypeer specifies whether curl will verify the peer’s certificate

followlocation specify is curl should follow any location header that is sent in the HTTP request

sslversion the SSL version to use

Details

This topic explains how to configure Rlabkey to work with a LabKey Server running SSL.

Rlabkey uses the package httr to connect to the LabKey Server. On Windows, the httr package is not configured for SSL by default. In order to connect to a HTTPS enabled LabKey Server, you will need to perform the following steps:

1. Create or download a "ca-bundle" file.
We recommend using ca-bundle file that is published by Mozilla. See http://curl.haxx.se/docs/caextract.html. You have two options:

Download the ca-bundle.crt file from the link named “HTTPS from github:” on http://curl.haxx.se/docs/caextract.html
Create your own ca-bundle.crt file using the instructions provided on http://curl.haxx.se/docs/caextract.html

2. Copy the ca-bundle.crt file to a location on your hard-drive.
   If you will be the only person using the Rlabkey package on your computer, we recommend that you
   create a directory named ‘labkey’ in your home directory
   copy the ca-bundle.crt into the ‘labkey’ directory
   
   If you are installing this file on a server where multiple users will use may use the Rlabkey package, we recommend that you create a directory named ‘c:labkey’
   
   copy the ca-bundle.crt into the ‘c:labkey’ directory

3. Create a new Environment variable named ‘RLABKEY_CAINFO_FILE’

On Windows 7, Windows Server 2008 and earlier

Select Computer from the Start menu.
Choose System Properties from the context menu.
Click Advanced system settings > Advanced tab.
Click on Environment Variables.
Under System Variables click on the new button.
For Variable Name: enter RLABKEY_CAINFO_FILE
For Variable Value: enter the path of the ca-bundle.crt you created above.
Hit the Ok buttons to close all the windows.
On Windows 8, Windows 2012 and above
Drag the Mouse pointer to the Right bottom corner of the screen.
Click on the Search icon and type: Control Panel.
Click on -> Control Panel -> System and Security.
Click on System -> Advanced system settings > Advanced tab.
In the System Properties Window, click on Environment Variables.
Under System Variables click on the new button.
For Variable Name: enter RLABKEY_CAINFO_FILE
For Variable Value: enter the path of the ca-bundle.crt you created above.
Hit the Ok buttons to close all the windows.
Now you can start R and begin working.

labkey.setDebugMode  Helper function to enable/disable debug mode.
labkey.setDefaults

Description
When debug mode is enabled, the GET/POST calls with output information about the request being made and will output a raw string version of the response object.

Usage
labkey.setDebugMode(debug = FALSE)

Arguments
d debug a boolean specifying if debug mode is enabled or disabled

Author(s)
Cory Nathe

Examples

library(Rlabkey)
labkey.setDebugMode(TRUE)
labkey.executeSql(
    baseurl="http://localhost:8080/labkey",
    folderPath="/home",
    schemaName="core",
    sql = "select * from containers")

labkey.setDefaults

Description
Use this function to set the "apiKey" and "baseUrl" package environment variables to be used for all http or https requests. You can also use labkey.setDefaults() without any parameters to reset/clear the settings.

Usage
labkey.setDefaults(apiKey="", baseUrl="")

Arguments
apiKey session key from your server
baseUrl server location including context path, if any. e.g. https://www.labkey.org/
Details

Note: Support for API keys was added in LabKey Server release 16.2; they are not supported in 16.1 or earlier.

An API key can be used to authorize Rlabkey functions that access protected content on LabKey Server. Using an API key avoids copying and storing credentials on the client machine. Also, all Rlabkey access is tied to the current browser session, which means the code runs in the same context as the browser (e.g., same user, same authorizations, same declared terms of use and PHI level, same impersonation state, etc.).

A site administrator must first enable the use of API keys on that LabKey Server. Once enabled, any logged in user can generate an API key by clicking their display name (upper right) and selecting "API Keys". The API Key page creates and displays keys that can be copied and pasted into a `labkey.setDefaults()` statement to tie an Rlabkey session to the authorization and session information already set in the browser.

Examples

```r
## Example of setting and clearing an API key.
library(Rlabkey)

labkey.setDefaults(apiKey="session|abcdef0123456789abcdef0123456789")

## Functions invoked at this point share authorization
## and session information with the browser session

labkey.setDefaults()
## or labkey.setDefaults(apiKey=NULL)

## Functions no longer share authorization and session
## information with the browser session
```

---

labkey.setModuleProperty

*Set module property value*

Description

Set module property value for a specific folder or as site wide (with folderPath '/')

Usage

```r
labkey.setModuleProperty(baseUrl=NULL, folderPath, moduleName, propName, propValue)
```
labkey.transform.getRunPropertyValue

**Arguments**

- **baseUrl**: server location including context path, if any. e.g. https://www.labkey.org/
- **folderPath**: a string specifying the folderPath
- **moduleName**: name of the module
- **propName**: The module property name
- **propValue**: The module property value to save

**Examples**

```r
library(Rlabkey)
labkey.setModuleProperty(baseUrl="http://labkey/", folderPath="flowProject",
    moduleName="flow", propName="ExportToScriptFormat", propValue="zip")
```

**Description**

A function that takes in data.frame of the run properties info for a given assay transform script execution and returns the value for a given property name.

**Usage**

```r
labkey.transform.getRunPropertyValue(runProps, propName)
```

**Arguments**

- **runProps**: the data.frame of the run property key/value pairs
- **propName**: the name of the property to get the value of within the runProps data.frame

**Details**

This helper function will most likely be used within an assay transform script after the labkey.transform.readRunPropertiesFile function has been called to load the full set of run properties.
Examples

```r
# library(Rlabkey)
run.props = labkey.transform.readRunPropertiesFile("${runInfo}");
run.data.file = labkey.transform.getRunPropertyValue(run.props, "runDataFile");
```
Update existing rows of data in a labkey database

Description

Send data from an R session to update existing rows of data in the database.

Usage

labkey.updateRows(baseUrl, folderPath, 
                   schemaName, queryName, toUpdate)

Arguments

- baseUrl: a string specifying the baseUrl for the labkey server
- folderPath: a string specifying the folderPath
- schemaName: a string specifying the schemaName for the query
- queryName: a string specifying the queryName
- toUpdate: a data frame containing the row(s) of data to be updated

Details

A single row or multiple rows of data can be updated. The toUpdate data frame should contain the rows of data to be updated and must be created with the stringsAsFactors option set to FALSE. The names of the data in the data frame must be the column names from the labkey database. To update a row/column to a value of NULL, use an empty string (""") in the data frame (regardless of the database column type).

Value

A list is returned with named categories of command, rowsAffected, rows, queryName, containerPath and schemaName. The schemaName, queryName and containerPath properties contain the same schema, query and folder path used in the request. The rowsAffected property indicates the number of rows affected by the API action. This will typically be the same number as passed in the request. The rows property contains a list of row objects corresponding to the rows updated.

Author(s)

Valerie Obenchain

See Also

labkey.selectRows, labkey.executeSql, makeFilter, labkey.insertRows, labkey.importRows, labkey.deleteRows
Examples

```
## Insert, update and delete
## Note that users must have the necessary permissions in the database
## to be able to modify data through the use of these functions
# library(Rlabkey)

newrow <- data.frame(
  DisplayFld="Inserted from R",
  TextFld="how its done",
  IntFld= 98,
  DoubleFld = 12.345,
  DateTimeFld = "03/01/2010",
  BooleanFld= FALSE,
  LongTextFld = "Four score and seven years ago",
  AttachmentFld = NA,  # attachment fields not supported
  RequiredText = "Veni, vidi, vici",
  RequiredInt = 0,
  Category = "LOOKUP2",
  stringsAsFactors=FALSE)

insertedRow <- labkey.insertRows("http://localhost:8080/labkey",
  folderPath="/apisamples", schemaName="lists", queryName="AllTypes",
  toInsert=newrow)
newRowId <- insertedRow$rows[[1]]$RowId

selectedRow<labkey.selectRows("http://localhost:8080/labkey",
  folderPath="/apisamples", schemaName="lists", queryName="AllTypes",
  colFilter=makeFilter(c("RowId", "EQUALS", newRowId))
selectedRow

updaterow=data.frame(  
  RowId=newRowId,
  DisplayFld="Updated from R",
  TextFld="how to update",
  IntFld= 777,
  stringsAsFactors=FALSE)

updatedRow <- labkey.updateRows("http://localhost:8080/labkey",
  folderPath="/apisamples", schemaName="lists", queryName="AllTypes",
  toUpdate=updaterow)
selectedRow<labkey.selectRows("http://localhost:8080/labkey",
  folderPath="/apisamples", schemaName="lists", queryName="AllTypes",
  colFilter=makeFilter(c("RowId", "EQUALS", newRowId))
selectedRow

deleterow <- data.frame(RowId=newRowId, stringsAsFactors=FALSE)
result <- labkey.deleteRows(baseUrl="http://localhost:8080/labkey",
  folderPath="/apisamples", schemaName="lists", queryName="AllTypes",
  toDelete=deleterow)
str(result)
```
**lsFolders**  
*List the available folder paths*

**Description**
Lists the available folder paths relative to the current folder path for a LabKey session.

**Usage**
```r
lsFolders(session)
```

**Arguments**
- `session`: the session key returned from `getSession`

**Details**
Lists the available folder paths relative to the current folder path for a LabKey session.

**Value**
A character array containing the available folder paths, relative to the project root. These values can be set on a session using `curFolder<-`

**Author(s)**
Peter Hussey

**References**
https://www.labkey.org/wiki/home/Documentation/page.view?name=projects

**See Also**
- `getSession`
- `lsProjects`
- `lsSchemas`

**Examples**
```r
# get a list of projects and folders
# library(Rlabkey)

lks <- getSession("http://www.labkey.org", "/home")

# returns values "/home", "/home/_menus", ...
lsFolders(lks)
```
**lsProjects**  
*List the projects available at a given LabKey Server address*

**Description**

Lists the projects available. Takes a string URL instead of a session, as it is intended for use before creating a session.

**Usage**

```r
lsProjects(baseUrl)
```

**Arguments**

- `baseUrl` a string specifying the `baseUrl` for the LabKey Server, of the form `http://<server dns name>/<contextroot>`

**Details**

List the projects available at a given LabKey Server address.

**Value**

A character array containing the available projects, relative to the root. These values can be set on a session using `curFolder<-`

**Author(s)**

Peter Hussey

**References**

https://www.labkey.org/project/home/begin.view

**See Also**

`getSession, lsFolders, lsSchemas`

**Examples**

```r
## get list of projects on server, connect a session in one project,  
## then list the folders in that project  
# library(Rlabkey)

lsProjects("http://www.labkey.org")

lkorg <- getSession("http://www.labkey.org", "/home")
lsFolders(lkorg)
```
## Description

Lists the available schemas given the current folder path for a LabKey session.

## Usage

```
lsSchemas(session)
```

## Arguments

- `session` - the session key returned from `getSession`

## Details

Lists the available schemas given the current folder path for a LabKey session.

## Value

A character array containing the available schema names.

## Author(s)

Peter Hussey

## See Also

- `getSession`
- `lsFolders`
- `lsProjects`

## Examples

```r
## get a list of schemas available in the current session context
# library(Rlabkey)

lkorg <- getSession("http://www.labkey.org", "/home/Study/ListDemo")
lsSchemas(lkorg)
```

```r
## End(Not run)
```
makeFilter

Builds filters to be used in labkey.selectRows and getRows

Description
This function takes inputs of column name, filter value and filter operator and returns an array of filters to be used in labkey.selectRows and getRows.

Usage
makeFilter(...)

Arguments
... Arguments in c("colname","operator","value") form, used to create a filter.

Details
These filters are applied to the data prior to import into R. The user can specify as many filters as desired. The format for specifying a filter is a vector of characters including the column name, operator and value.

colname a string specifying the name of the column to be filtered
operator a string specifying what operator should be used in the filter (see options below)
value an integer or string specifying the value the columns should be filtered on

Operator values:
EQUAL
DATE_EQUAL
NOT_EQUAL
DATE_NOT_EQUAL
NOT_EQUAL_OR_MISSING
GREATER_THAN
DATE_GREATER_THAN
LESS_THAN
DATE_LESS_THAN
GREATER_THAN_OR_EQUAL
DATE_GREATER_THAN_OR_EQUAL
LESS_THAN_OR_EQUAL
DATE_LESS_THAN_OR_EQUAL
STARTS_WITH
DOES_NOT_START_WITH
CONTAINS
DOES NOT CONTAIN
CONTAINS ONE OF
CONTAINS NONE OF
IN
NOT IN
BETWEEN
NOT BETWEEN
MEMBER OF
MISSING
NOT MISSING
MV INDICATOR
NO MV INDICATOR
Q

When using the MISSING, NOT MISSING, MV INDICATOR, or NO MV INDICATOR operators, an empty string should be supplied as the value. See example below.

Value

The function returns either a single string or an array of strings to be use in the colFilter argument of the labkey.selectRows function.

Author(s)

Valerie Obenchain

References

http://www.omegahat.net/RCurl/,
https://www.labkey.org/project/home/begin.view

See Also

labkey.selectRows

Examples

# library(Rlabkey)

## Two filters, ANDed together
makeFilter(c("TextFld","CONTAINS","h"),
   c("BooleanFld","EQUAL","TRUE"))

## Using "in" operator:
makeFilter(c("RowId","IN","2;3;6"))

## Using "missing" operator:
makeFilter(c("IntFld","MISSING",""))
**Description**

Brings up the Rlabkey Users Guide.

**Usage**

RlabkeyUsersGuide(view=TRUE)

**Arguments**

view Leave as default TRUE

**Details**

Brings up the Rlabkey Users Guide.

**Value**

Path to the Users Guide pdf.

**Author(s)**

Peter Hussey

**Examples**

```
# library(Rlabkey)
RlabkeyUsersGuide()
```

---

**saveResults**

*Returns an object representing a LabKey schema*

**Description**

Creates and returns an object representing a LabKey schema, containing child objects representing LabKey queries
saveResults

Usage

saveResults(session, assayName, resultDataFrame, batchPropertyList, runPropertyList)

Arguments

session the session key returned from getSession
assayName a string specifying the name of the assay instance
resultDataFrame a data frame containing rows of data to be inserted
batchPropertyList a list of batch Properties
runPropertyList a list of run Properties

Details

saveResults is a wrapper function to labkey.saveBatch with two changes: First, it uses a session object in place of the separate baseUrl and folderPath arguments. Second, it provides defaults for generating Batch and Run names based on a current timestamp.

To see the save result on LabKey server, click on the "SimpleMeans" assay in the Assay List web part.

Value

an object representing the assay.

Author(s)

Peter Hussey

References

https://www.labkey.org/project/home/begin.view

See Also

ggetSession, getSchema, getLookups, getRows

Examples

## Very simple example of an analysis flow: query some data,
## calculate some stats, then save the calculations as an assay
## result set in LabKey Server
# library(MLabkey)
```r
s <- getSession(baseUrl="http://localhost:8080/labkey",
folderPath="/apisamples")
sobj <- getSchema(s, "lists")
simpledf <- getRows(s, sobj$AllTypes)

### some dummy calculations to produce and example analysis result
testtable <- simpledf[,3:4]
colnames(testtable) <- c("IntFld", "DoubleFld")
row <- c(list("Measure"="colMeans"), colMeans(testtable, na.rm=TRUE))
results <- data.frame(row, row.names=NULL, stringsAsFactors=FALSE)
row <- c(list("Measure"="colSums"), colSums(testtable, na.rm=TRUE))
results <- rbind(results, as.vector(row))

bprops <- list(LabNotes="this is a simple demo")
bpl<- list(name=paste("Batch ", as.character(date())), properties=bprops)
rpl<- list(name=paste("Assay Run ", as.character(date())))

assayInfo<- saveResults(s, "SimpleMeans", results,
batchPropertyList=bpl, runPropertyList=rpl)
```
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