

Package ‘Rlabkey’

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Title Data Exchange Between R and 'LabKey' Server

Author Peter Hussey

Maintainer Cory Nathe <cnathe@labkey.com>

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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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 `labkey.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:	2.2.4
Date:	2018-11-02
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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().

getFolderPath

Returns the folder path associated with a session

Description

Returns the current folder path for a LabKey session

Usage

```
getFolderPath(session)
```

Arguments

session the session key returned from getSession

Details

Returns a string containing the current folder path for the passed in LabKey session

Value

A character array containing the folder path, relative to the root.

Author(s)

Peter Hussey

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	<i>Get related data fields that are available to include in a query on a given query object</i>
------------	---

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.

Author(s)

Peter Hussey

References

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

See Also

[getSession](#), [getRows](#) [getSchema](#)

Examples

```
## 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

Retrieve data from LabKey Server

Description

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

Usage

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

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

```
## 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	<i>Returns an object representing a LabKey schema</i>
-----------	---

Description

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

Usage

```
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

<https://www.labkey.org/wiki/home/Documentation/page.view?name=querySchemaBrowser>

See Also

[getSession](#)

Examples

```
## 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
```

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

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

```
# library(Rlabkey)

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

## using the curlOptions for generating debug tracesof 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

```
## 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)

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)
result

```

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)

```

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

```
## 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
labkey.domain.create(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

```
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
 - 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

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

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.

Author(s)

Karl Lum

See Also

[labkey.domain.get](#), [labkey.domain.inferFields](#), [labkey.domain.create](#), [labkey.domain.save](#),
[labkey.domain.drop](#)

Examples

```
## 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 folderPath
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

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

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

labkey.domain.get	<i>Returns the metadata for an existing LabKey domain</i>
-------------------	---

Description

Get the data structure for a domain.

Usage

```
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

See Also

[labkey.domain.create](#), [labkey.domain.inferFields](#), [labkey.domain.createDesign](#), [labkey.domain.save](#), [labkey.domain.drop](#)

Examples

```
## 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

<code>baseUrl</code>	a string specifying the <code>baseUrl</code> for the labkey server
<code>folderPath</code>	a string specifying the <code>folderPath</code>
<code>df</code>	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 its 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

```
## 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

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

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
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

See Also

[labkey.domain.get](#), [labkey.domain.inferFields](#), [labkey.domain.createDesign](#), [labkey.domain.create](#), [labkey.domain.drop](#)

Examples

```
library(Rlabkey)
## change the type of one of the columns
domain <- labkey.domain.get(baseUrl="http://labkey/", folderPath="home",
  schemaName="lists", queryName="test list")

domain$fields[3,]$rangeURI = "xsd:string"
domain$fields[3,]$name = "changed to string"

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

labkey.executeSql	<i>Retrieve data from a LabKey Server using SQL commands</i>
-------------------	--

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.

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 <ul style="list-style-type: none"> • "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

```
## 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

```
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.

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 = "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.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)
```

Arguments

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

```
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

```
## 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)
```

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. `getDefaultViewDetails` has the same arguments and returns the same shape of result data frame as `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

```
## 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	<i>Retrieve a list of folders accessible to the current user</i>
-------------------	--

Description

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

Usage

```
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	If set to false, the effective permissions for this container resource will not be included. (defaults to TRUE).
includeSubfolders	whether the search for subfolders should recurse down the folder hierarchy
depth	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

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

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

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](#), [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

```
## 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"
)
lu1

## 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"
)
lu2

## 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",
```

```

        "NOT_EQUALS", "TypeRange")), maxRows=20
    )
    rows

```

labkey.getModuleProperty

Get effective module property value

Description

Get a specific effective module property value for folder

Usage

```
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

```

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 in a specified folder context and specified schema

Usage

```
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 queryable 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

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

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

```

schemaName="lists"
)
queriesDF

```

```
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

`isNullable` TRUE if the field can be left empty (null)

`isKeyField` 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

`isVersionField` 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.

`isUserEditable` reserved for future use.

`isReadOnly` reserved for future use

`isMvEnabled` reserved for future use

`lookupKeyField` 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.getLookupDetails](#)

Examples

```
## 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

```
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

<https://www.labkey.org/wiki/home/Documentation/page.view?name=savingViews>

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.getQueryDetails](#), [labkey.getDefaultViewDetails](#)

Examples

```
## 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	<i>Retrieve a list of available schemas from a labkey database</i>
-------------------	--

Description

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

Usage

```
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 queryable 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

```
## 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

```
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

```
## 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)
```

```

newrows <- data.frame(
  DisplayFld="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..

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"
```

```
, 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)))

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

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

```
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

```
# 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

```
labkey.rstudio.initReport(apiKey = "", baseUrl = "", folderPath,
  reportEntityId, skipViewer = FALSE, skipEdit = 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
reportEntityId	LabKey report's entityId
skipViewer	(TRUE FALSE) TRUE to skip setting up LabKey schema viewer in RStudio
skipEdit	(TRUE FALSE) TRUE to open file in editor

Examples

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

```
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")
```

`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

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

Examples

```
## 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

```
## 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

<code>folderPath</code>	a string specifying the folderPath
<code>reportEntityId</code>	LabKey report's entityId
<code>reportFilename</code>	The filename to save
<code>useWarning</code>	(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",  
  reportFilename="knitrReport.Rhtml", useWarning=TRUE)
```

`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

```
## 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)
```

```

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

## some dummy calculations to produce an example analysis result
testtable <- simplifiedf[,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<- labkey.saveBatch(
  baseUrl="http://localhost:8080/labkey",
  folderPath="/apisamples",
  "SimpleMeans",
  results,
  batchPropertyList=bpl,
  runPropertyList=rpl
)

```

labkey.selectRows	<i>Retrieve data from a labkey database</i>
-------------------	---

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 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
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 <ul style="list-style-type: none"> • "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

<https://www.labkey.org/wiki/home/Documentation/page.view?name=savingViews>

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.getQueryResults](#)

Examples

```
## select from a list named AllTypes
# library(Rlabkey)
```

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

## select from a view on that list
viewrows <- labkey.selectRows(baseUrl="http://localhost:8080/labkey",
  folderPath="/apisamples", schemaName="Lists", queryName="AllTypes",
  viewName="rowbyrow")

## select a subset of columns
colSelect=c("TextFld", "IntFld")
subsetcols <- labkey.selectRows(baseUrl="http://localhost:8080/labkey",
  folderPath="/apisamples", schemaName="lists", queryName="AllTypes",
  colSelect=colSelect)
```

labkey.setCurlOptions *Modify the current set of Curl options that are being used in the existing session*

Description

Rlabkey uses the package htr 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 host-name provided
ssl_verifypeer		specifies whether curl will verify the peer's certificate
followlocation		specify if 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 htr to connect to the LabKey Server. On Windows, the htr 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.

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

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 *Set the default parameters used for all http or https requests*

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

```
## 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

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

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

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

labkey.transform.getRunPropertyValue

Assay transform script helper function to get a run property value from a data.frame

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

```
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

```
# library(Rlabkey)

run.props = labkey.transform.readRunPropertiesFile("${runInfo}");
run.data.file = labkey.transform.getRunPropertyValue(run.props, "runDataFile");
```

```
labkey.transform.readRunPropertiesFile
```

Assay transform script helper function to read a run properties file

Description

A function that takes in the full path to the LabKey generated run properties file and returns a data.frame of the key value pairs for the lines within that file. This helper function would be used as part of an assay transform script written in R and associated with an assay design.

Usage

```
labkey.transform.readRunPropertiesFile(runInfoPath)
```

Arguments

runInfoPath the full file system path to the generated run properties file

Details

The most common scenario is that the assay transform script will get the run properties file path added into the running script as a replacement variable. To use that replacement variable for this helper function, you can pass in the runInfoPath parameter as "\$runInfo".

Examples

```
# library(Rlabkey)

labkey.transform.readRunPropertiesFile("${runInfo}")
```

labkey.updateRows	<i>Update existing rows of data in a labkey database</i>
-------------------	--

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	<i>List the available folder paths</i>
-----------	--

Description

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

Usage

```
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

```
##get a list if 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

```
lsProjects(baseUrl)
```

Arguments

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

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

```
## 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)
```



```
## Not run:  
  
lkorg <- getSession("http://www.labkey.org", "/home/Study/ListDemo")  
lsSchemas(lkorg)  
  
## End(Not run)
```

lsSchemas	<i>List the available schemas</i>
-----------	-----------------------------------

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

```
## get a list of schemas available in the current session context  
# library(Rlabkey)  
  
lks<- getSession(baseUrl="http://localhost:8080/labkey",  
                  folderPath="/apisamples")
```

```
#returns several schema names, e.g. "lists", "core", "MS1", etc.
lsSchemas(lks)
```

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", ""))
```

RlabkeyUsersGuide *Open the Rlabkey Users Guide*

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

Usage

```
saveResults(session, assayName, resultDataFrame,  
            batchPropertyList= list(name=paste("Batch ", as.character(date()))),  
            runPropertyList= list(name=paste("Assay Run ", as.character(date()))))
```

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

[getSession](#), [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(Rlabkey)
```

```
s<- getSession(baseUrl="http://localhost:8080/labkey",
  folderPath="/apisamples")
scobj <- getSchema(s, "lists")
simplifiedf <- getRows(s, scobj$AllTypes)

## some dummy calculations to produce an example analysis result
testtable <- simplifiedf[,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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