Package ‘trackr’

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Copyright  Genentech, Inc.
Maintainer Gabriel Becker <gabembecker@gmail.com>
Description Automatically annotates R-based artifacts with relevant descriptive and provenance-related and provides a backend-agnostic storage and discoverability system for organizing, retrieving, and interrogating such artifacts.
License    Artistic-2.0
Depends    history (>= 0.2.1)
Imports    fastdigest, ggplot2, lattice, gridGraphics, methods.
CodeDepends (>= 0.6.2), RJJSONIO, rsolr, htmltools, miniUI, shiny, rmarkdown, roprov (>= 0.1.1), rlang
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            'PlotWrapper.R' 'ObjFeatureSet.R' 'Trackr-main-API.R'
            'abbrev.R' 'accessor-methods.R' 'autotrack.R' 'backend-impls.R'
            'coercerender.R' 'convenience_constructors.R'
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annotationText

Accessor method for the annotation text (slot "annotationtext") of the plot object.

Description

Get the text annotations for a plot object.

Usage

annotationText(object)

## S4 method for signature 'PlotFeatureSet'
annotationText(object)

## S4 method for signature 'ggplot'
annotationText(object)

## S4 method for signature 'trellis'
annotationText(object)

## S4 method for signature 'gTree'
annotationText(object)

## S4 method for signature 'PlotFeatureSet'
annotationText(object)

Arguments

object An object of class PlotFeatureSet, GGplotFeatureSet, TrellisFeatureSet, ggplot, or trellis.

Value

A character vector of text annotations appearing on the plot.

Examples

library(ggplot2)
mt = datasets::mtcars
plt = qplot(mt$mpg, mt$cyl)
fs = makeFeatureSet(plt)
annotationText(fs)
as.list  

Convert objects to lists

Description

Convert objects to lists.

Usage

```r
## S3 method for class 'FeatureSet'
as.list(x, ...)

## S3 method for class 'ScriptNodeInfo'
as.list(x, ...)
```

Arguments

- `x` The object to convert to a list.
- `...` Other named arguments (currently unused).

Value

A list.

codeInfo<-

Accessors for the code analysis information of FeatureSet objects

Description

Get or set the analysis information for the code associated with a FeatureSet object. This should not be called directly.

Usage

```r
codeInfo(object) <- value
codeInfo(object)

## S4 replacement method for signature 'FeatureSet'
codeInfo(object) <- value

## S4 method for signature 'FeatureSet'
codeInfo(object)
```
coordSystem

Arguments

object  An object of (super)class PlotFeatureSet. For accession, also plot objects of class ggplot or trellis.

value   A CodeDepends::ScriptInfo object.

Value

A modified object of (super)class PlotFeatureSet.

Examples

mt = datasets::mtcars
fs = makeFeatureSet(mt)
codeInfo(fs)

coordSystem  Accessor method for the coordinate system (slot "coordsys") of the plot object.

Description

Get the coordinate system for a plot or PlotFeatureSet.

Usage

coordSystem(object)

## S4 method for signature 'PlotFeatureSet'
coordSystem(object)

## S4 method for signature 'ggplot'
coordSystem(object)

## S4 method for signature 'trellis'
coordSystem(object)

## S4 method for signature 'gTree'
coordSystem(object)

## S4 method for signature 'PlotFeatureSet'
coordSystem(object)

Arguments

object  An object of class PlotFeatureSet, GGplotFeatureSet, TrellisFeatureSet, ggplot, or trellis.
Value

A character vector describing the coordinate system employed in the plot.

Examples

```r
library(ggplot2)
mt = datasets::mtcars
plt = qplot(mt$mpg, mt$cyl)
fs = makeFeatureSet(plt)
coordSystem(fs)
```

Description

Get or set the axis label information associated with a PlotFeatureSet object. This should not be called directly.

Usage

```r
dataLabels(object) <- value
dataLabels(object)
```

Arguments

- **object** An object of (super)class PlotFeatureSet. For accession, also plot objects of class ggplot or trellis.
**dataNames**

value  A named list of variable labels of the form list(x = "X axis label", y = "Y axis label", ...).

**Value**

A modified object of (super)class PlotFeatureSet.

**Examples**

```r
library(ggplot2)
mt = datasets::mtcars
plt = qplot(mt$mpg, mt$cyl)
fs = makeFeatureSet(plt)
dataLabels(fs)
```

---

**dataNames**  Accessor method for the variable names of the plot object. Not an exported method.

**Description**

Get the variable names from a PlotFeatureSet

**Usage**

dataNames(object)

**Arguments**

object  An object of (super)class PlotFeatureSet. For accession, also plot objects of class ggplot or trellis.

**Value**

A named list of variable names of the form list(x = "x.name", y = "y.name", groups = list(...)).
**dataTypes**

Accessor method for the variable types (slot "vartypes") of the plot object.

---

**Description**

Get the variable types from a plot feature set

**Usage**

```r
dataTypes(object)
```

## S4 method for signature 'PlotFeatureSet'
```r
dataTypes(object)
```

## S4 method for signature 'ggplot'
```r
dataTypes(object)
```

## S4 method for signature 'trellis'
```r
dataTypes(object)
```

## S4 method for signature 'gTree'
```r
dataTypes(object)
```

## S4 method for signature 'PlotFeatureSet'
```r
dataTypes(object)
```

**Arguments**

- `object` An object of class PlotFeatureSet, GGplotFeatureSet, TrellisFeatureSet, ggplot, or trellis.

**Value**

A named list of variable types of the form list(x = "numeric", y = "factor", ...).

**Examples**

```r
library(ggplot2)
mt = datasets::mtcars
plt = qplot(mt$mpg, mt$cyl)
fs = makeFeatureSet(plt)
dataTypes(fs)
```
**defaultTDB**  

*default TrackrDB*

---

**Description**

Get or set the default TrackrDB in use (i.e., the one that is used when 'record' is used with no `trackrdb` specified.

**Usage**

`defaultTDB(trackrdb)`

**Arguments**

- `trackrdb`  
  TrackrDB. The TrackrDB to which objects will be recorded by default. If missing, the current default is returned.

---

**describePackage**  

*Accessor method for ObjFeatureSet "analysispkg" slot.*

---

**Description**

The analysis package, if any, that was 'in use' (i.e., that contained the working directory that was active) when the result was recorded.

**Usage**

`describePackage(object)`

```r
## S4 method for signature 'FeatureSet'
describePackage(object)
```

**Arguments**

- `object`  
  An object of (super)class ObjFeatureSet.

**Value**

A list holding the name, title, and description of any packages with description files on the current path.

**Examples**

```r
mt = datasets::mtcars
fs = makeFeatureSet(mt)
describePackage(fs)
```
DocCollectionRef  

Reference to a DocCollection

Description

A reference class which carries around a DocCollection, suitable for use as a trackr backend.

Usage

ListBackend(lst = list())

Arguments

lst  List of documents to populate the list backend with.

FeatureSet-class  

FeatureSet (and Sub)-Classes

Description

Metadata inferred about R objects or dynamic documents is stored in FeatureSet objects specific. Specific types of featuresets have specific additional metadata they contain, beyond the standard metadata inferred about all results, and represented by the core FeatureSet class.

Slots

user character The user who submitted the result
regdate POSIXct The date/time the result was recorded
analysispkg list The R package associated with the result (because the working directory was within the package’s directory structure).
uniqueid character The uniqueid of the result
tags character Additional tags associated with the result
analysisfile character The .R file active when there result was recorded (RStudio IDE only)
rstudioproject character The RStudio project active when the result was recorded (RStudio IDE only)
generatedin character The uniquoid of the Rmd file the result was generated in, if applicable
code character The code used to generate the result (by default, as captured by history)
codeinfo ScriptInfo the ScriptInfo for the code
sessioninfo sinfoOrList The session info at the time the result was recorded
isplot logical Whether the result is a plot
fsetklass character The FeatureSet subclass for the result
trackrversion character The exact version of the trackr package used to record the result.

clineargs character The commandline arguments passed to R when starting the session the result was recorded from

resultURI character The URI associated with the result, see featureset constructor documentation.

extrametadata list Any extra metadata associated with the result.

titles Title and subtitle of the plot object; a named list of the form list(main = "My title", sub = "My subtitle").

klass character The R object class of the result

object ANY The object itself, or NULL if the object is not available.

vars character The variable names for a data.frame result

varclasses character the variable classes for a data.frame result

varsummaries list summaries for

object ANY The object itself, or NULL if the object is not available.

data A list of data.frames containing the variables and observations used in the plot.

varlabels Variable labels of the plot object; a named list of the form list(x = "X axis label", y = "Y axis label", groups = list(...)). Note that non-empty labels are character vectors and may contain more than one entry.

annotation.text Annotation text of the plot object.

vartypes Variable types of the plot object; a named list of the form list(x = "numeric", y = "factor", ...).

grouping Grouping information on the plot object; a named list.

cordsys A character vector describing the coordinate system employed in the plot.

nobs An integer representing the number of observations in the plotted data.

haslegend A boolean indicating whether or not a legend is displayed in the plot.

tags A character vector of user-defined tags.

code R code to reproduce the plot, as a CodeDepends::Script object. May be empty.

codeinfo Information about the R code to reproduce the plot, as a CodeDepends::ScriptInfo object. May be empty.

geom A named list of parameters for geometric objects in each layer of the ggplot.

stat A named list of parameters for statistical transforms in each layer of the ggplot.

position A named list of positioning information in each layer of the ggplot.

num.layers An integer representing the number of layers in the plot.
fullData

Accessor method for the data (slot "data") that is used in plotting.

Description

Get full data associated with a plot or model fit, if possible.

Usage

fullData(object, quiet = FALSE)

## S4 method for signature 'PlotFeatureSet'
fullData(object)

## S4 method for signature 'ggplot'
fullData(object, quiet = FALSE)

## S4 method for signature 'trellis'
fullData(object, quiet = FALSE)

## S4 method for signature 'gTree'
fullData(object)

## S4 method for signature 'PlotFeatureSet'
fullData(object)

Arguments

object An object of (super)class PlotFeatureSet. For accession, also plot objects of
        class ggplot or trellis.

quiet Should warnings about plotted data be suppressed?

Value

A list of data.frame containing the variables used in plotting.

Examples

library(ggplot2)
mt = datasets::mtcars
plt = qplot(mt$mpg, mt$cyl)
fs = makeFeatureSet(plt)
fullData(fs)
The `generateTags` is called when extracting metadata from an object. It is one mechanism by which custom metadata can be defined on a class-by-class basis without the more heavy-weight solution of defining an entirely new FeatureSet subclass.

**Usage**

`generateTags(object)`

**Arguments**

- `object` The object to generate tags for

**Details**

The upsides of this mechanism is that it is easier to use and lighter weight than defining new FeatureSet classes and methods to generate them. The downsides are that the metadata are tags, rather than proper key-value pairs, as far as trackr is concerned. (A backend could be engineered such that it interpreted tags of the form 'key:value' as key-value pairs, but this won't occur without extra work, and thus those implied fields will not be queriable via the trackr api specifically. The values will be included in the metadata generally though, so non-field-specific queries will work.

**Value**

A character vector of tags to associate with `object` during the recording process

**Examples**

```r
generateTags(mtcars) #character(0)
```

---

**geomObject**

**Description**

Get or set the geom associated with a GGplotFeatureSet object. This should not be called directly.
Usage

```r
geomObject(object) <- value
geomObject(object)
```

## S4 method for signature 'PlotFeatureSet'
geomObject(object)

## S4 method for signature 'ggplot'
geomObject(object)

## S4 method for signature 'trellis'
geomObject(object)

## S4 method for signature 'gTree'
geomObject(object)

## S4 replacement method for signature 'GGplotFeatureSet'
geomObject(object) <- value

## S4 method for signature 'GGplotFeatureSet'
geomObject(object)

Arguments

- `object` An object of class GGplotFeatureSet. For accession, also plot objects of class ggplot.
- `value` A named list of parameters for geometric objects in each layer of the plot.

Value

A modified object of class GGplotFeatureSet.

Examples

```r
library(ggplot2)
mt = datasets::mtcars
plt = qplot(mt$mpg, mt$cyl)
fs = makeFeatureSet(plt)
geomObject(fs)
```

Description

formal S4 classes for S3 classes defined in other packages.
graphSys

Accessor method for PlotFeatureSet "package" slot.

Description

Retrieve the graphics system from a PlotFeatureSet object

Usage

graphSys(object)

## S4 method for signature 'PlotFeatureSet'

graphSys(object)

Arguments

object An object of (super)class PlotFeatureSet.

Value

A character vector representing the originating R package of the plot object, i.e. base, ggplot, or lattice.

Examples

library(ggplot2)
mt = datasets::mtcars
plt = qplot(mt$mpg, mt$cyl)
fs = makeFeatureSet(plt)

graphSys(fs)

groupInfo

Accessor method for the panel and other grouping information (slot "grouping") of the plot object.

Description

Get the grouping info for a plot or PlotFeatureSet.
Usage

```r
groupInfo(object)
```  
## S4 method for signature 'PlotFeatureSet'
groupInfo(object)

## S4 method for signature 'ggplot'
groupInfo(object)

## S4 method for signature 'trellis'
groupInfo(object)

## S4 method for signature 'gTree'
groupInfo(object)

## S4 method for signature 'PlotFeatureSet'
groupInfo(object)

Arguments

- **object**: An object of class PlotFeatureSet, GGplotFeatureSet, TrellisFeatureSet, ggplot, or trellis.

Value

A named list of grouping information parameters.

Examples

```r
library(ggplot2)
mt = datasets::mtcars
plt = qplot(mt$mpg, mt$cyl)
fs = makeFeatureSet(plt)
groupInfo(fs)
```
Usage

hasLegend(object)

## S4 method for signature 'PlotFeatureSet'
hasLegend(object)

## S4 method for signature 'ggplot'
hasLegend(object)

## S4 method for signature 'trellis'
hasLegend(object)

## S4 method for signature 'gTree'
hasLegend(object)

## S4 method for signature 'PlotFeatureSet'
hasLegend(object)

Arguments

object  An object of class PlotFeatureSet, GGplotFeatureSet, TrellisFeatureSet, ggplot, or trellis.

Value

A boolean indicating whether or not a legend is displayed in the plot.

Examples

library(ggplot2)
mt = datasets::mtcars
plt = qplot(mt$mpg, mt$cyl)
fs = makeFeatureSet(plt)
hasLegend(fs)

---

JSONBackend  JSON backend for trackr

Description

A JSON-file based backend. This is the default backend in trackr.

Usage

JSONBackend(file = normalizePath("./trackr_db_data.json"),
            data = list())
Arguments

file character. The json "database" to use as a trackr backend
data A list of records to pre-populate the backend with.

Value

A JSONBackend object, for use in creating a TrackrDB object.

Slots

data list. An in-memory list representation of the data in the db
file character. The file containing the db (to read from and write to)
last_load POSIXct. The last time data was updated from disk.

Note

This is a reference class, which does NOT have standard copy-on-write semantics
This function should generally not be called directly by end-users. See instead jsonTDB

jsonTDB

Convenience constructors for specific trackr backends

Description

Convenience constructors for JSON and Solr-based trackr backends.

Usage

jsonTDB(file = "~/.trackr/objdb.json", opts = TrackrOptions(img_dir = img_dir, ...), img_dir = file.path(dirname(file), "images"), ...)
solrTDB(core, requestHandler = "search", opts = TrackrOptions(...), ...)
listTDB(data = list(), opts = TrackrOptions(...), ...)

Arguments

file character. The json file to use
opts TrackrOptions. The options for the DB
img_dir character. The directory plot images should be saved into. Passed to default construction of opts. Defaults to <directory of file>/images. Ignored if opts is specified explicitly.
... ANY. Used to construct opts. Ignored if opts is specified explicitly.
core character. The URI for the solr core to use
requestHandler character. Passed to SolrList constructor
data list. Data the ListBackend should be prepopulated with.
knit_and_record

Value
A TrackrDB object

Examples

```r
tdb = jsonTDB(tempfile())

tdb2 = listTDB()
```

Description
This function wraps knitr’s knit function in a way that captures and records some or all values generated by code within the report, as well as the report itself.

This means that many records will generally be added to the trackr db for a single call to this function.

Usage

```r
knit_and_record(input, ..., verbose = FALSE, tmptdb = TrackrDB(backend = ListBackend(), img_dir = img_dir(defaultTDB())), recvars = NULL, dryrun = FALSE)
```

Arguments

- `input`: The input argument exactly as knitr’s knit function accepts it
- `...`: Passed directly to knit
- `verbose`: passed to (multiple) record calls for report and its outputs
- `tmptdb`: A TrackrDB in which to temporarily record results which are printed within the dynamic document. Generally this should not need to be changed, as it is only used to collect the records so they can be associated with the result for the whole document (in the defaultTDB).
- `recvars`: character or NULL. The names of variables generated by the code within input which should be automatically recorded, or NULL.
- `dryrun`: logical. Should a dryrun be performed?

Details
When `recvars` is NULL, any objects which are visibly printed within the report are also recorded. Otherwise, only the values of the listed variables (after all code has been evaluated) are recorded, regardless of visibility.
**Note**

as with all knitr support in the histry and trackr packages, manually tracing certain functions within the knitr and evaluate packages will break this function.

---

**makeFeatureSet**

*Construct an ObjFeatureSet.*

**Description**

The generic function for transforming an R object into the appropriate subclass of FeatureSet. This includes most introspection-based metadata extraction from the object. Metadata extraction can be customized at the package/R session level for specific classes of objects by defining methods for this generic.

**Usage**

```r
makeFeatureSet(object, ...)
```

```r
## S4 method for signature 'ggplot'
makeFeatureSet(object, ...)
```

```r
## S4 method for signature 'trellis'
makeFeatureSet(object, ...)
```

```r
## S4 method for signature 'gTree'
makeFeatureSet(object, ...)
```

```r
## S4 method for signature 'recordedplot'
makeFeatureSet(object, ...)
```

```r
## S4 method for signature 'expression'
makeFeatureSet(object, ...)
```

```r
## S4 method for signature 'call'
makeFeatureSet(object, ...)
```

```r
## S4 method for signature 'FeatureSet'
makeFeatureSet(object, ...)
```

```r
## S4 method for signature 'ANY'
makeFeatureSet(object, ...)
```

```r
## S4 method for signature 'data.frame'
makeFeatureSet(object, ...)
```
**makeFeatureSet**

**Arguments**

object The plot to summarize via metadata in an ObjFeatureSet (or subclass)

... Other named arguments that become slots in the new PlotFeatureSet.

**Value**

PlotFeatureSet S4 object containing a ObjFeatureSet object and extracted plot features

**Methods (by class)**

- **ggplot**: Construct a ObjFeatureSet from an object of class ggplot.
- **trellis**: Construct a ObjFeatureSet from an object of class trellis.
- **gTree**: Construct a ObjFeatureSet from an object of class gTree.
- **recordedplot**: Construct a ObjFeatureSet from an object of class recordedplot.
- **expression**: Construct a ObjFeatureSet from an unevaluated expression.
- **call**: Construct a ObjFeatureSet from a call.
- **FeatureSet**: No-op if we already have a ObjFeatureSet
- **ANY**: Catch-all for attempted construction of a ObjFeatureSet from an object not of class ggplot or trellis.
- **data.frame**: Construct a DFFeatureSet from a data.frame

**Examples**

```r
library(ggplot2)
mt = datasets::mtcars
pg <- ggplot(mt, aes(wt, mpg)) + geom_point()
pfs <- makeFeatureSet(pg)

library(lattice)
titan <- datasets::Titanic
pl <- barchart(Class ~ Freq | Sex + Age, data = as.data.frame(titan),
               groups = Survived, stack = TRUE, layout = c(4, 1),
               auto.key = list(title = "Survived", columns = 2))
pfs <- makeFeatureSet(pl)

dffs <- makeFeatureSet(as.data.frame(titan))

## Not run:
plot(1:10, 1:10)
pb <- recordPlot()
pfs <- makeFeatureSet(pb)
## End(Not run)
```

---

*Note: The comments after `## Not run:` and `## End(Not run)` are placeholders for any additional documentation or code that may be intended to be included.*
manifestFromRecord

make_image_files Make image files for a featureset

Description
Make image files for a featureset

Usage
make_image_files(object, opts)

## S4 method for signature 'PlotFeatureSet'
make_image_files(object, opts)

## S4 method for signature 'RmdFeatureSet'
make_image_files(object, opts)

## S4 method for signature 'ObjFeatureSet'
make_image_files(object, opts)

## S4 method for signature 'FeatureSet'
make_image_files(object, opts)

## S4 method for signature 'ANY'
make_image_files(object, opts)

Arguments

object A FeatureSet object
opts Options

Value
A named list with two entries: preview.path, and image.path. These should be paths to (now) existing image files for thumbnail and main display, respectively

manifestFromRecord Generate a (switchr) Seed Manifest from a Record

Description
Extracts the session info information within the record and uses it to generate a switchr manifest which can be used to reinstall exact versions of the R packages associated with the result
Usage

manifestFromRecord(lst)

Arguments

lst
The record in the form of a list (eg an element of the list returned by findRecords

Value

A switchr SessionManifest object

ndoc,TrackrDB-method  Number of docs in a TrackrDB

Description

Query the backend for the number of docs it contains

Usage

## S4 method for signature 'TrackrDB'
ndoc(x, ...)

Arguments

x  TrackrDB.
...
not used.

nLayers<-
Accessors for the number of layers of GGplotFeatureSet objects

Description

Get or set the number of layers associated with a GGplotFeatureSet object. This should not be called directly.
Usage
nLayers(object) <- value
nLayers(object)

## S4 method for signature 'PlotFeatureSet'
nLayers(object)

## S4 method for signature 'ggplot'
nLayers(object)

## S4 method for signature 'trellis'
nLayers(object)

## S4 method for signature 'gTree'
nLayers(object)

## S4 replacement method for signature 'GGplotFeatureSet'
nLayers(object) <- value

## S4 method for signature 'GGplotFeatureSet'
nLayers(object)

Arguments

object An object of class GGplotFeatureSet. For accession, also plot objects of class ggplot.
value An integer representing the number of layers in the plot.

Value
A modified object of class GGplotFeatureSet.

Examples

library(ggplot2)
mt = datasets::mtcars
plt = qplot(mt$mpg, mt$cyl)
fs = makeFeatureSet(plt)
nLayers(fs)

nObs

Accessor method for the number of observations (slot "nobs") of the plot object.

Description
Number of observations plotted in a plot or associated PlotFeatureSet.
Usage

nObs(object)

## S4 method for signature 'PlotFeatureSet'
nObs(object)

## S4 method for signature 'trellis'
nObs(object)

## S4 method for signature 'gTree'
nObs(object)

## S4 method for signature 'PlotFeatureSet'
nObs(object)

## S4 method for signature 'ggplot'
nObs(object)

Arguments

object An object of class PlotFeatureSet, GGplotFeatureSet, TrellisFeatureSet, ggplot, or trellis.

Value

An integer representing the number of observations in the plotted data.

Examples

library(ggplot2)
mt = datasets::mtcars
plt = qplot(mt$mpg, mt$cyl)
fs = makeFeatureSet(plt)
nObs(fs)

objCode<-  

Accessors for the code of FeatureSet objects

Description

Get or set the code associated with a FeatureSet object. This should not be called directly.

Usage

objCode(object) <- value

objCode(object)
## S4 replacement method for signature 'FeatureSet'
objCode(object) <- value

## S4 method for signature 'FeatureSet'
objCode(object)

### Arguments

- **object**: An object of (super)class PlotFeatureSet. For accession, also plot objects of class ggplot or trellis.
- **value**: A CodeDepends::Script object.

### Value

A modified object of (super)class PlotFeatureSet.

### Examples

```r
library(ggplot2)
mt = datasets::mtcars
plt = qplot(mt$mpg, mt$cyl)
fs = makeFeatureSet(plt)
objCode(fs)
```

### Description

Constructors for different typed FeatureSet subclasses. These should only be used when customizing metadata extraction, i.e., in custom makeFeatureSet methods. Not intended to be called directly by end users. Because the arguments listed here unavoidably map to class slots, and because most of them should NOT be set directly even in customization code, they are semi-internal implementation details and are subject to change.

Arguments described as ‘Do not manually set’ have default values that should be used in virtually all cases. Overriding these in custom makeFeatureSet methods can lead to undefined behavior by the trackr system.

### Usage

```r
ObjFeatureSet(object, code = as.character(parseCode(object)),
              codeinfo = CodeDepends::getInputs(parseCode(code)),
              klass = getTopS3Class(object), uniqueid = gen_hash_id(object),
              tags = character(), user = unname(Sys.info()$"user"),
              regdate = Sys.time(), analysispkg = scrape_descr(),
              analysisfile = .analysisFileOrNA(),
```

---

**FeatureSet constructors**

---

- **ObjFeatureSet**
- **FeatureSet constructors**

### Description

Constructors for different typed FeatureSet subclasses. These should only be used when customizing metadata extraction, i.e., in custom makeFeatureSet methods. Not intended to be called directly by end users. Because the arguments listed here unavoidably map to class slots, and because most of them should NOT be set directly even in customization code, they are semi-internal implementation details and are subject to change.

Arguments described as 'Do not manually set' have default values that should be used in virtually all cases. Overriding these in custom makeFeatureSet methods can lead to undefined behavior by the trackr system.

### Usage

```r
ObjFeatureSet(object, code = as.character(parseCode(object)),
              codeinfo = CodeDepends::getInputs(parseCode(code)),
              klass = getTopS3Class(object), uniqueid = gen_hash_id(object),
              tags = character(), user = unname(Sys.info()$"user"),
              regdate = Sys.time(), analysispkg = scrape_descr(),
              analysisfile = .analysisFileOrNA(),
```
ObjFeatureSet

```r
rstudioproject = .rstudioProjOrNA(), fsetklass = "ObjFeatureSet",
isplot = FALSE, generatedin = character(),
clineargs = commandArgs(), resultURI = character(),
provtable = ProvStoreDF(), ...)
```

PlotFeatureSet(object, fsetklass = "PlotFeatureSet",
package = NA_character_, ...)

GGplotFeatureSet(object, fsetklass = "GGplotFeatureSet", ...)

TrellisFeatureSet(object, fsetklass = "TrellisFeatureSet", ...)

GraphicsFeatureSet(object, fsetklass = "GraphicsFeatureSet", ...)

DFFeatureSet(object, fsetklass = "DFFeatureSet", vars = names(object),
varclasses = .makeClassesTab(object),
varsummaries = structure(lapply(object, .makeSummaryTable), names =
names(object)), nobs = nrow(object), ...)

RmdFeatureSet(rmdfile, outputfile, uniqueid,
rmdfileid = gen_hash_id(readLines(rmdfile)), chunks,
numouts = length(trackr_backend(objtdb)),
umplots = sum(sapply(objrecords, function(x) x$isplot)),
titles = "", author = "", textkeywords = character(),
codekeywords = character(), outputids = sapply(objrecords,
function(x) x$uniqueid, USE.NAMES = FALSE), tags = character(),
user = unname(Sys.info()
"user"), regdate = Sys.time(),
analysispkg = scrape_descr(), analysisfile = .analysisFileOrNA(),
rstudioproject = .rstudioProjOrNA(), fsetklass = "RmdFeatureSet",
objrecords = findRecords(".", db = objtdb), objtdb,
figurefiles = NA_character_, resultURI = "", ...)```

Arguments

- **object**: object to extract metadata from
- **code**: The code which generated the object. Do not manually set
- **codeinfo**: Do not manually set
- **klass**: The class of the object. Do not manually set
- **uniqueid**: The uniqueID for the result. Do not manually set. EVER.
- **tags**: Tags to associate with the object
- **user**: The user who recorded the object. Do not manually set
- **regdate**: The registration date/time. Do not manually set
- **analysispkg**: The analysis R package in which the session was run. Do not manually set
- **analysisfile**: The .R file code was executed from to create the object. Do not manually set
- **rstudioproject**: The RStudio project in which the object was created. Do not manually set
ObjFeatureSet

fsetklass  The FeatureSet subclass being created. This should be overridden with custom FeatureSet subclasses.
isplot Is the object a plot. Do not manually set.
generatedin  The uniqueID of a parent result (e.g. an RMD report the object was generated within). Do not manually set.
clineargs The command-line arguments passed to the R session in which the object was recorded. Do not manually set.
resultURI An optional character value which defines a location within a hierarchical grouping for results tracked by trackr. E.g. '/groups/Becker/HousingData/analysis3'
provtable A ProvStoreDF object containing "value lineage" provenance information
... For ObjFeatureSet and RmdFeatureSet, unused. For Other constructors, passed to the parent constructor.
package The plotting package used to create a plot.
vars Do not manually set
varclasses Do not manually set
varsummaries Do not manually set
nobs Do not manually set
rmdfile The (input) RMD file
outputfile the path to the woven report
rmdfileid Id associated with the input .Rmd file. Do not manually set. EVER.
chunks The code and text chunks of the dynamic document
numouts Do not manually set
numplots Do not manually set
titles Do not manually set
author Do not manually set
textkeywords Keywords extracted from the text
codekeywords Keywords extracted from the code
outputids Do not manually set
objcords Do not manually set. EVER.
objtdb The (temporary) trackerdb where individual displayed outputs were recorded during the weaving process.
figurefiles image files of plot as figures for woven report. Do not manually set.

Value

An object of a class that inherits from FeatureSet
parseCode

Parse result creation code

Description

parse code into a CodeDepends::Script

Usage

parseCode(code)

## S4 method for signature 'expression'
parseCode(code)

## S4 method for signature 'call'
parseCode(code)

## S4 method for signature 'character'
parseCode(code)

## S4 method for signature 'ggplot'
parseCode(code)

## S4 method for signature 'trellis'
parseCode(code)

## S4 method for signature 'ANY'
parseCode(code)

Arguments

code An expression, call or character vector, or a PlotFeatureSet or plot object. If missing, this method will attempt to extract code out of the plot object.

Value

A CodeDepends::Script object.

plot,PlotFeatureSet,missing-method

Display the plot object owned by PlotFeatureSet objects and subclasses thereof.

Description

(re)draw the plot associated with a PlotFeatureSet record.
Usage

```r
## S4 method for signature 'PlotFeatureSet,missing'
plot(x, y, ...)
```

Arguments

- `x`: An object of (super)class `PlotFeatureSet`.
- `y`: Should be left empty. Included only because it is a mandatory signature element.
- `...`: Other named arguments (currently ignored).

Value

The plot object, plotted through its native print method.

---

**position<-**

Accessors for the position of `GGplotFeatureSet` objects

Description

Get or set the position associated with a `GGplotFeatureSet` object. This should not be called directly.

Usage

```r
position(object) <- value

position(object)
```

## S4 method for signature 'PlotFeatureSet'
position(object)

## S4 method for signature 'ggplot'
position(object)

## S4 method for signature 'trellis'
position(object)

## S4 method for signature 'gTree'
position(object)

## S4 replacement method for signature 'GGplotFeatureSet'
position(object) <- value

## S4 method for signature 'GGplotFeatureSet'
position(object)
print.gTree

Arguments

object An object of class GGplotFeatureSet. For accession, also plot objects of class ggplot.

value A named list of positioning information in each layer of the plot.

Value

A modified object of class GGplotFeatureSet.

Examples

library(ggplot2)
mt = datasets::mtcars
plt = qplot(mt$mpg, mt$cyl)
fs = makeFeatureSet(plt)
position(fs)

print.gTree

Print method for an object of class gTree.

Description

print a gTree object.

Usage

## S3 method for class 'gTree'
print(x, ...)

Arguments

x An object of class gTree.

... Other named arguments (currently unused).

record Primary high-level API functions for Trackr Databases

Description

These functions define the high-level, user-facing trackr API.
Usage

record(object, db = defaultTDB(), resultURI = "", code = histry::histry_tracker(), force = FALSE, verbose = FALSE, symorpos = NULL, dryrun = FALSE)

rmRecord(object, db = defaultTDB(), verbose = FALSE)

findRecords(pattern, db = defaultTDB(), fields = NULL, ret_type = c("doclist", "id", "backend"), verbose = FALSE)

recordFiles(object, ingestfun = NULL, db = defaultTDB(), resultURI = "", code = histry::histry_tracker(), force = FALSE, verbose = FALSE, symorpos = NULL, dryrun = FALSE)

Arguments

object ANY. An object to record. Or (for recordFiles) a vector of one or more files to record or the path of a single directory whose contents will be recorded. Or (for rmPlot) the unique ID of an object in the database to remove.

db TrackrDB. The database

resultURI A URI which can be used to define a grouping/hierarchy of results recorded via trackr. Currently unused by trackr itself except as additional metadata to search across. Defaults to an empty string.

code ANY. Code/evaluation history to be associated with object

force logical. Overwrite any existing entry matching object. (default: FALSE)

verbose logical. Should extra informative messages be displayed (default: FALSE)

symorpos The symbol or position corresponding to object in code. For normal usage this will not be required.

dryrun logical. Should a "dry run" be performed. If true, the insert_record and trackr_write steps of the record process are not run, and the result of prep_for_backend is immediately returned.

pattern character. A regular expression to match against the text in fields

fields character or NULL. The fields in which to match, or NULL to include all fields.

ret_type character. Format in which to return the response. Options are: "id" - id of matching documents (default), "list" - A list containing the matching documents represented as R lists, and "backend" - a backend specific representation of the set of matching documents

ingestfun function or NULL. A function which must accept only the paths argument which will take object and return an R object to be recorded and linked to the raw files indicated by object

Details

These functions allow end-users to interact with trackr databases. Each function does what its name suggests.
When more than one file is passed to recordFiles, either via a vector of paths or the path to a directory, the files will be zipped up into a single file which will be recorded.

### Examples

```r
prevtdb = defaultTDB()
defaultTDB(listTDB(opts = TrackrOptions(img_dir=tempdir())))
mt = datasets::mtcars
record(mt)

res = findRecords("mtcars")
stopifnot(length(res) ==1)
rmRecord(mt)

res = findRecords("mtcars")
stopifnot(length(res) == 0)

## Not run:
f = function(paths) readLines(paths)
fil = system.file("test_docs", "knitr_test.Rmd", package = "trackr")
recordFiles(fil, ingestfun = f)

res= findRecords("test_docs")

## End(Not run)
defaultTDB(prevtdb)
```

### Description

Get or set the registration time associated with a FeatureSet object. This should not be called directly.

### Usage

```r
regDateTime(object) <- value
regDateTime(object)
```

```r
## S4 replacement method for signature 'FeatureSet'
regDateTime(object) <- value

## S4 method for signature 'FeatureSet'
regDateTime(object)
```
saveBasicPlot

Arguments

object
An object of (super)class ObjFeatureSet.

value
A POSIXct timestamp representing the moment when the plot was registered.

Value

A modified object of (super)class ObjFeatureSet.

Examples

mt = datasets::mtcars
fs = makeFeatureSet(mt)
regDateTime(fs)

t = time()
regDateTime(fs)

RStudioExtras

RStudioExtras class

Description

A class to contain information about the current session when working inside the RStudio IDE.

saveBasicPlot

Save the plot object owned by an object of class/superclass PlotFeatureSet as an image.

Description

Save a plot to an image file as part of the record process. This generally shouldn’t need to be overwritten.

Usage

saveBasicPlot(object, filename, ...)

## S4 method for signature 'PlotFeatureSet'
saveBasicPlot(object, filename,
  type = c("png", "jpeg", "jpg", "tiff", "tif", "bmp"), width = 7,
  height = 7, dpi = 300)
Arguments

object: An object of (super)class PlotFeatureSet or plot object of class ggplot or trellis.
filename: The full filename, including path, where the plot should be saved.
...: Other named arguments passed on to the class-specific save method.
type: The type of image to save. Default is "png"; should be one of "jpeg", "jpg", "tiff", "tif", "png", or "bmp". In future versions, this should be automatically determined from the filename.
width: Width of output, in inches
height: Height of output, in inches
dpi: Resolution of output, in pixels per inch

Value

A boolean indicating success of the save operation.

Methods (by class)

• PlotFeatureSet: Save the plot object owned by an object of class/superclass PlotFeatureSet as an image.

statTransform<-  
Accessors for the stat(s) of GGplotFeatureSet objects

Description

Get or set the stat transform(s) associated with a GGplotFeatureSet object. This should not be called directly.

Usage

statTransform(object) <- value
statTransform(object)

## S4 method for signature 'PlotFeatureSet'
statTransform(object)

## S4 method for signature 'ggplot'
statTransform(object)

## S4 method for signature 'trellis'
statTransform(object)

## S4 method for signature 'gTree'
statTransform(object)
## S4 replacement method for signature 'GGplotFeatureSet'

```r
statTransform(object) <- value
```

## S4 method for signature 'GGplotFeatureSet'

```r
statTransform(object)
```

**Arguments**

<table>
<thead>
<tr>
<th>name</th>
<th>description</th>
</tr>
</thead>
<tbody>
<tr>
<td>object</td>
<td>An object of class GGplotFeatureSet. For accession, also plot objects of class ggplot.</td>
</tr>
<tr>
<td>value</td>
<td>A named list of parameters for statistical transforms in each layer of the plot.</td>
</tr>
</tbody>
</table>

**Value**

A modified object of class GGplotFeatureSet.

**Examples**

```r
library(ggplot2)
mt = datasets::mtcars
plt = qplot(mt$mpg, mt$cyl)
fs = makeFeatureSet(plt)
statTransform(fs)
```

---

**summary,PlotFeatureSet-method**

*Summarize an object of class/superclass PlotFeatureSet*

**Description**

Summary methods for PlotFeatureSet objects

**Usage**

```r
## S4 method for signature 'PlotFeatureSet'
summary(object)
```

**Arguments**

<table>
<thead>
<tr>
<th>name</th>
<th>description</th>
</tr>
</thead>
<tbody>
<tr>
<td>object</td>
<td>An object of (super)class PlotFeatureSet.</td>
</tr>
</tbody>
</table>
Accessors for the tags of FeatureSet objects

Description

Get or set the tags associated with a FeatureSet object. This should not be called directly.

Usage

```r
tags(object) <- value

editTags(object, value, option)

tags(object)

## S4 replacement method for signature 'FeatureSet'
tags(object) <- value

## S4 replacement method for signature 'ggplot'
tags(object) <- value

## S4 replacement method for signature 'trellis'
tags(object) <- value

## S4 replacement method for signature 'gTree'
tags(object) <- value

## S4 method for signature 'FeatureSet'
editTags(object, value, option = c("replace", "add", "remove"))

tags(object)

## S4 method for signature 'ggplot'
tags(object)

## S4 method for signature 'trellis'
tags(object)

## S4 method for signature 'gTree'
tags(object)

## S4 method for signature 'ANY'
tags(object)
```
Arguments

- **object**: An object of (super)class FeatureSet
- **value**: A character vector of tags.
- **option**: One of c("replace", "add", "remove"), with default "replace" (equivalent to "tags<-" with an additional uniqueness check), describing the action to be taken with the tag vector provided.

Value

A modified object of (super)class PlotFeatureSet.
A modified object of (super)class PlotFeatureSet.

Examples

```r
library(ggplot2)
mt = datasets::mtcars
plt = qplot(mt$mpg, mt$cyl)
fs = makeFeatureSet(plt)
tags(fs)
```

**titles<-**  
Accessors for the title(s) of FeatureSet objects

Description

Get or set the titles associated with a FeatureSet object. This should not be called directly.

Usage

```r
titles(object) <- value
titles(object)
```

```r
## S4 method for signature 'PlotFeatureSet'
titles(object)

## S4 method for signature 'ggplot'
titles(object)

## S4 method for signature 'trellis'
titles(object)

## S4 method for signature 'gTree'
titles(object)

## S4 replacement method for signature 'PlotFeatureSet'
```
titles(object) <- value

## S4 method for signature 'FeatureSet'
titles(object)

**Arguments**

- **object**
  - An object of (super)class `PlotFeatureSet`. For accession, also plot objects of class `ggplot` or `trellis`.

- **value**
  - A named list of titles of the form list(main = "My title", sub = "My subtitle").

**Value**

A modified object of (super)class `PlotFeatureSet`.

**Examples**

```r
library(ggplot2)
mt = datasets::mtcars
plt = qplot(mt$mpg, mt$cyl)
fs = makeFeatureSet(plt)
titles(fs)
```

---

**trackrAddin**

*RStudio addin/Shiny app for artifact discovery*

**Description**

This function initiates a shiny server which allows users to search a trackr database and view the results. It can be used as a stand-alone Shiny application or from within the RStudio IDE as an addin

**Usage**

```r
trackrAddin(tdb = defaultTDB())
```

**Arguments**

- **tdb**
  - The database to search. Defaults to the current default database
**TrackrDB-class**  
*Trackr database*

**Description**

A TrackrDB object is a combination of a backend and a TrackrOptions object controlling trackr’s behavior.

**Usage**

```
TrackrDB(opts = TrackrOptions(...), backend = JSONBackend(), ...)
```

**Arguments**

- `opts`  
  TrackrOptions object.
- `backend`  
  ANY. The backend to use.
- `...`  
  ignored.

---

**TrackrOptions-class**  
*Trackr configuration options*

**Description**

TrackrOptions objects dictate various behavior by trackr when interacting with or preparing to interact with backends. See individual parameters for behaviors controlled in this manner.

**Usage**

```
TrackrOptions(insert_delay = 0, img_dir = "./images",  
img_ext = "png", backend_opts = list(...), ...)
```

**Arguments**

- `insert_delay`  
  numeric. delay in seconds between insertions.
- `img_dir`  
  character. Directory to save image files in. This will be normalized via normalizePath
- `img_ext`  
  character. extension to give image files.
- `backend_opts`  
  list. list of options specific to the backend. Currently ignored by trackr machinery.
- `...`  
  additional arguments, which are collected into a list for the default backend_opts value.
trackropts

Description

An environment where the default trackrdb and history tracker are stored. Users should not modify the contents of this environment directly.

Usage

trackropts

Format

An object of class environment of length 3.

trackr_knit_env

Description

This environment should never be manipulated or interacted with directly by end users. It is exported only due the vagaries of how parts of trackr are implemented.

Usage

trackr_knit_env

Format

An object of class environment of length 0.
**trackr_lookup**

**Backend-interface API**

**Description**

This page describes the API which must be implemented by all Trackr backends. Any class with methods for these generics can be used in the backend slot of a TrackrDB object. These functions should not be called directly by an end-user.

**Usage**

```
trackr_lookup(object, target, opts, exist = FALSE)
insert_record(object, id, target, opts, verbose = FALSE)
prep_for_backend(object, target, opts, verbose = FALSE)
remove_record(object, target, opts, verbose = FALSE)
trackr_write(target, opts, verbose = FALSE)
trackr_search(pattern, target, opts, fields = NULL,
ret_type = c("doclist", "id", "backend"), verbose = TRUE)
```

**Arguments**

- `object`: ANY. The object to lookup, add, remove, etc.
- `target`: ANY. The backend of the TrackrDB instance.
- `opts`: TrackrOptions. The trackr-level options. Typically extracted from `target` in a TrackrDB method and passed down.
- `exist`: logical. Return TRUE/FALSE rather than the looked-up object. (default: FALSE)
- `id`: character. The id to assign to the recorded result within the target backend.
- `verbose`: logical. Should extra informative messages be displayed? (default: FALSE)
- `pattern`: character. A regular expression to match against the text in `fields`
- `fields`: character or NULL. The fields in which to match, or NULL to include all fields.
- `ret_type`: character. Format in which to return the response. Options are: "id" - id of matching documents (default), "doclist" - A list containing the matching documents represented as R lists, and "backend" - a backend specific representation of the set of matching documents (generally the same class as backend).

**Details**

Methods should be written to be dispatched on `target`, and, where appropriate on codeobject/codedoc
These methods should be endomorphic with respect to the target argument. That is, they should return an object of the same class as was passed to target, which reflect the requested change to the backend state.

insert_record may or may not involve writing to disk, which can alternatively occur during trackr_write. Writing, if any is desired, must occur within at one and only one of these methods. If insert_record performs the writing, trackr_write should be a no-op.

Value

for trackr_lookup: If exist is TRUE, a logical indicating whether object was found in db. Otherwise, the object stored in the database (or NULL if it was not found).

for insert_record and remove_record: The TrackrDB (db parameter) after the plot has been added or removed.

For prep_for_backend, object, representend in the form that the insert_record method for backend expects.

Note

remove_record should have the same writing behavior as insert_record
remove_record should have the same writing behavior as insert_record

---

trackr_options options extraction

Description

These functions extract the trackr options associated with a backend.

Usage

trackr_options(db)

img_dir(db)

img_ext(db)

Arguments

db Object to extract information from
uniqueID<-  

**Accessor methods for "uniqueid" of FeatureSet objects**

**Description**

Get or set the uniqueID field of a FeatureSet. This should not be called directly by end users.

**Usage**

uniqueID(object) <- value
uniqueID(object)

## S4 method for signature 'FeatureSet'
uniqueID(object)

## S4 replacement method for signature 'FeatureSet'
uniqueID(object) <- value

**Arguments**

- `object` An object of (super)class ObjFeatureSet.
- `value` A character vector serving as the unique ID of the plot object in the database.

**Value**

A modified object of (super)class ObjFeatureSet.

user<-  

**Accessors for the "user" of FeatureSet objects**

**Description**

Get or set the user associated with a FeatureSet object. This should not be called directly.

**Usage**

user(object) <- value
user(object)

## S4 replacement method for signature 'FeatureSet'
user(object) <- value

## S4 method for signature 'FeatureSet'
user(object)
Arguments

object An object of (super)class ObjFeatureSet.
value A character vector serving as the username associated with the plot object in the database.

Value

A modified object of (super)class ObjFeatureSet.

Examples

mt = datasets::mtcars
fs = makeFeatureSet(mt)
user(fs)
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