

Package ‘lgrExtra’

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AppenderDbi	<i>Log to databases via DBI</i>
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Description

Log to a database table with any **DBI** compatible backend. Please be aware that AppenderDbi does *not* support case sensitive / quoted column names, and you advised to only use all-lowercase names for custom fields (see . . . argument of [LogEvent](#)). When appending to a database table all LogEvent values for which a column exists in the target table will be appended, all others are ignored.

NOTE: AppenderDbi works reliable for most databases, but is still considered **experimental**, especially because the configuration is excessively complicated. Expect **breaking changes** to AppenderDbi in the future.

Value

The `$new()` method returns an [R6::R6](#) that inherits from [lgr::Appender](#) and can be uses as an appender by a [lgr::Logger](#).

Buffered Logging

By default, AppenderDbi writes each LogEvent directly to the target database which can be relatively slow. To improve performance it is possible to tell AppenderDbi to buffer db writes by setting `buffer_size` to something greater than 0. This buffer is written to the database whenever it is full (`buffer_size`), whenever a LogEvent with a level of `fatal` or `error` is encountered (`flush_threshold`), or when the Appender is garbage collected (`flush_on_exit`), i.e. when you close the R session or shortly after you remove the Appender object via `rm()`.

Creating a New Appender

An AppenderDbi is linked to a database table via its `table` argument. If the table does not exist it is created either when the Appender is first instantiated or (more likely) when the first LogEvent would be written to that table. Rather than to rely on this feature, it is recommended that you create the target table first using an SQL `CREATE TABLE` statement as this is safer and more flexible. See also [LayoutDbi](#).

Choosing the correct DBI Layout

Layouts for relational database tables are tricky as they have very strict column types and further restrictions. On top of that implementation details vary between database backends.

To make setting up AppenderDbi as painless as possible, the helper function `select_dbi_layout()` tries to automatically determine sensible [LayoutDbi](#) settings based on `conn` and - if it exists in the

database already - table. If table does not exist in the database and you start logging, a new table will be created with the col_types from layout.

Super classes

[lgr::Filterable](#) -> [lgr::Appender](#) -> [lgr::AppenderMemory](#) -> AppenderDbi

Active bindings

conn a [DBI connection](#)

close_on_exit TRUE or FALSE. Close the Database connection when the Logger is removed?

col_types a named character vector providing information about the column types in the database. How the column types are reported depends on the database driver. For example, SQLite returns human readable data types (character, double, ...) while IBM DB2 returns numeric codes representing the data type.

table a character scalar or a [DBI::Id](#) specifying the target database table

table_name character scalar. Like \$table, but always returns a character scalar

table_id [DBI::Id](#). Like \$table, but always returns a [DBI::Id](#)

Methods

Public methods:

- [AppenderDbi\\$new\(\)](#)
- [AppenderDbi\\$set_close_on_exit\(\)](#)
- [AppenderDbi\\$set_conn\(\)](#)
- [AppenderDbi\\$show\(\)](#)
- [AppenderDbi\\$flush\(\)](#)

Method new():

Usage:

```
AppenderDbi$new(
  conn,
  table,
  threshold = NA_integer_,
  layout = select_dbi_layout(conn, table),
  close_on_exit = TRUE,
  buffer_size = 0,
  flush_threshold = "error",
  flush_on_exit = TRUE,
  flush_on_rotate = TRUE,
  should_flush = NULL,
  filters = NULL
)
```

Arguments:

conn, table see section *Fields*

threshold, flush_threshold, layout, buffer_size see [AppenderBuffer](#)

Method `set_close_on_exit()`:

Usage:

`AppenderDbi$set_close_on_exit(x)`

Method `set_conn()`:

Usage:

`AppenderDbi$set_conn(conn)`

Method `show()`:

Usage:

`AppenderDbi$show(threshold = NA_integer_, n = 20)`

Method `flush()`:

Usage:

`AppenderDbi$flush()`

See Also

Other Appenders: [AppenderDt](#), [AppenderElasticSearch](#), [AppenderGmail](#), [AppenderPushbullet](#), [AppenderSendmail](#), [AppenderSyslog](#)

Examples

```
if (requireNamespace("RSQLite")){
  app <- AppenderDbi$new(
    conn = DBI::dbConnect(RSQLite::SQLite(), dbname = ":memory:"),
    table = "log"
  )

  lg <- lgr::get_logger("test/dbi")$
    add_appender(app, "db")$
    set_propagate(FALSE)
  lg$info("test")
  print(lg$appenders[[1]]$data)

  invisible(lg$config(NULL)) # cleanup
}
```

AppenderDigest

Abstract class for digests (multi-log message notifications)

Description

Digests is an abstract class for report-like output that contain several log messages and a title; e.g. an E-mail containing the last 10 log messages before an error was encountered or a push notification.

Abstract classes, only exported for package developers.

Value

Abstract classes cannot be instantiated with `$new()` and therefore do not return anything. They are solely for developers that want to write their own extension to **lgr**.

Super classes

[lgr::Filterable](#) -> [lgr::Appender](#) -> [lgr::AppenderMemory](#) -> [AppenderDigest](#)

Active bindings

`subject_layout` A [Layout](#) used to format the last [LogEvent](#) in this Appenders buffer when it is flushed. The result will be used as the subject of the digest (for example, the E-mail subject).

Methods**Public methods:**

- [AppenderDigest\\$new\(\)](#)
- [AppenderDigest\\$set_subject_layout\(\)](#)

Method `new()`:

Usage:

`AppenderDigest$new(...)`

Method `set_subject_layout()`:

Usage:

`AppenderDigest$set_subject_layout(layout)`

See Also

[LayoutFormat](#), [LayoutGlue](#)

Other abstract classes: [AppenderMail](#)

Other Digest Appenders: [AppenderMail](#), [AppenderPushbullet](#), [AppenderSendmail](#)

AppenderDt

Log to an in-memory data.table

Description

An Appender that outputs to an in-memory `data.table`. It fulfill a similar purpose as the more flexible [AppenderBuffer](#) and is mainly included for historical reasons/backwards compatibility with older version of **lgr**.

NOTE: `AppenderDt` has been superseded by [lgr::AppenderBuffer](#) and is kept mainly for archival purposes.

Value

The `$new()` method returns an `R6::R6` that inherits from `lgr::Appender` and can be used as an appender by a `lgr::Logger`.

Custom Fields

AppenderDt supports [custom fields](#), but they have to be pre-allocated in the prototype argument. Custom fields that are not part of the prototype are inserted in the `list-column . fields` if it exists.

Creating a Data Table Appender

In addition to the usual fields, `AppenderDt$new()` requires that you supply a `buffer_size` and a prototype. These determine the structure of the `data.table` used to store the log this appender creates and cannot be modified anymore after the instantiation of the appender.

The `lgr::Layout` for this Appender is used only to format console output of its `$show()` method.

Comparison AppenderBuffer and AppenderDt

Both `AppenderBuffer` and `AppenderDt` do in memory buffering of events. `AppenderBuffer` retains a copies of the events it processes and has the ability to pass the buffered events on to other Appenders. `AppenderDt` converts the events to rows in a `data.table` and is a bit harder to configure. Used inside loops (several hundred iterations), `AppenderDt` has much less overhead than `AppenderBuffer`. For single logging calls and small loops, `AppenderBuffer` is more performant. This is related to how memory pre-allocation is handled by the appenders.

Super classes

`lgr::Filterable` -> `lgr::Appender` -> `AppenderDt`

Methods**Public methods:**

- `AppenderDt$new()`
- `AppenderDt$append()`
- `AppenderDt$show()`
- `AppenderDt$set_layout()`

Method new(): Creating a new AppenderDt

Usage:

```
AppenderDt$new(
  threshold = NA_integer_,
  layout = LayoutFormat$new(fmt = "%L [%t] %m %f", timestamp_fmt = "%H:%M:%OS3",
    colors = getOption("lgr.colors", list())),
  prototype = data.table::data.table(.id = NA_integer_, level = NA_integer_, timestamp =
    Sys.time(), logger = NA_character_, caller = NA_character_, msg = NA_character_,
    .fields = list(list())),
  buffer_size = 1e+05,
  filters = NULL
```

)

Arguments:

`prototype` A prototype `data.table`. The prototype must be a `data.table` with the same columns and column types as the data you want to log. The actual content of the columns is irrelevant. There are a few reserved column names that have special meaning: `*.id`: integer (mandatory). Must always be the first column and is used internally by the Appender `*.fields`: list (optional). If present all custom values of the event (that are not already part of the prototype) are stored in this list column.

`buffer_size` integer scalar. Number of rows of the in-memory `data.table`

Method `append()`:

Usage:

```
AppenderDt$append(event)
```

Method `show()`:

Usage:

```
AppenderDt$show(threshold = NA_integer_, n = 20L)
```

Method `set_layout()`:

Usage:

```
AppenderDt$set_layout(layout)
```

See Also

[data.table::data.table](#)

Other Appenders: [AppenderDbi](#), [AppenderElasticSearch](#), [AppenderGmail](#), [AppenderPushbullet](#), [AppenderSendmail](#), [AppenderSyslog](#)

Examples

```
lg <- lgr::get_logger("test")
lg$config(list(
  appenders = list(memory = AppenderDt$new()),
  threshold = NA,
  propagate = FALSE # to prevent routing to root logger for this example
))
lg$debug("test")
lg$error("test")

# Displaying the log
lg$appenders$memory$data
lg$appenders$memory$show()
lgr::show_log(target = lg$appenders$memory)

# If you pass a Logger to show_log(), it looks for the first AppenderDt
# that it can find.
lgr::show_log(target = lg)

# Custom fields are stored in the list column .fields by default
```

```
lg$info("the iris data frame", caps = LETTERS[1:5])
lg$appenders$memory$data
lg$appenders$memory$data$fields[[3]]$caps
lg$config(NULL)
```

AppenderElasticSearch *Log to ElasticSearch*

Description

Log to ElasticSearch via HTTP

Details

NOTE: Experimental; not yet fully documented and details are subject to change

Value

The `$new()` method returns an `R6::R6` that inherits from `lgr::Appender` and can be used as an appender by a `lgr::Logger`.

Super classes

`lgr::Filterable` -> `lgr::Appender` -> `lgr::AppenderMemory` -> `AppenderElasticSearch`

Active bindings

`conn` a `ElasticSearch` connection

`close_on_exit` TRUE or FALSE. Close the ElasticSearch connection when the Logger is removed?

`index` a character scalar or a `DBI::Id` specifying the target ElasticSearch index

Methods

Public methods:

- `AppenderElasticSearch$new()`
- `AppenderElasticSearch$set_close_on_exit()`
- `AppenderElasticSearch$set_conn()`
- `AppenderElasticSearch$get_data()`
- `AppenderElasticSearch$show()`
- `AppenderElasticSearch$flush()`

Method `new()`:

Usage:

```

AppenderElasticSearch$new(
  conn,
  index,
  threshold = NA_integer_,
  layout = LayoutElasticSearch$new(),
  close_on_exit = TRUE,
  buffer_size = 0,
  flush_threshold = "error",
  flush_on_exit = TRUE,
  flush_on_rotate = TRUE,
  should_flush = NULL,
  filters = NULL
)

```

Arguments:

conn, index see section *Fields*

threshold, flush_threshold, layout, buffer_size see [AppenderBuffer](#) A data data.frame.
content of index

Method set_close_on_exit():*Usage:*

```
AppenderElasticSearch$set_close_on_exit(x)
```

Method set_conn():*Usage:*

```
AppenderElasticSearch$set_conn(conn)
```

Method get_data():*Usage:*

```

AppenderElasticSearch$get_data(
  n = 20L,
  threshold = NA,
  result_type = "data.frame"
)

```

Arguments:

n integer scalar. Retrieve only the last n log entries that match threshold

threshold character or integer scalar. The minimum log level that should be displayed

result_type character scalar. Any of:

- data.frame
- data.table (shortcut: dt)
- list (unprocessed list with ElasticSearch metadata)
- json (raw ElasticSearch JSON)

Returns: see result_type

Method show():*Usage:*

```
AppenderElasticSearch$show(threshold = NA_integer_, n = 20)
```

Method flush():

Usage:

```
AppenderElasticSearch$flush()
```

See Also

Other Appenders: [AppenderDbi](#), [AppenderDt](#), [AppenderGmail](#), [AppenderPushbullet](#), [AppenderSendmail](#), [AppenderSyslog](#)

AppenderGmail

Send emails via the Gmail REST API

Description

Send mails via `gmailr::gm_send_message()`. This Appender keeps an in-memory buffer like [AppenderBuffer](#). If the buffer is flushed, usually because an event of specified magnitude is encountered, all buffered events are concatenated to a single message. The default behavior is to push the last 30 log events in case a fatal event is encountered.

NOTE: This Appender requires that you set up google API authorization, please refer to the [documentation of gmailr](#) for details.

Value

The `$new()` method returns an `R6::R6` that inherits from `lgr::Appender` and can be used as an appender by a `lgr::Logger`.

Super classes

```
lgr::Filterable -> lgr::Appender -> lgr::AppenderMemory -> lgrExtra::AppenderDigest
-> lgrExtra::AppenderMail -> AppenderGmail
```

Methods

Public methods:

- [AppenderGmail\\$new\(\)](#)
- [AppenderGmail\\$flush\(\)](#)

Method new(): see [AppenderMail](#) for details

Usage:

```
AppenderGmail$new(
  to,
  threshold = NA_integer_,
  flush_threshold = "fatal",
  layout = LayoutFormat$new(fmt = "%L [%t] %m %f", timestamp_fmt = "%H:%M:%S"),
```

```

    subject_layout = LayoutFormat$new(fmt = "[LGR] %L: %m"),
    buffer_size = 30,
    from = get_user(),
    cc = NULL,
    bcc = NULL,
    html = FALSE,
    filters = NULL
)

```

Method flush():

Usage:

```
AppenderGmail$flush()
```

See Also

[LayoutFormat](#), [LayoutGlue](#)

Other Appenders: [AppenderDbi](#), [AppenderDt](#), [AppenderElasticSearch](#), [AppenderPushbullet](#), [AppenderSendmail](#), [AppenderSyslog](#)

AppenderMail

Abstract class for email Appenders

Description

Abstract classes, only exported for package developers.

Value

Abstract classes cannot be instantiated with `$new()` and therefore do not return anything. They are solely for developers that want to write their own extension to **lgr**.

Super classes

```
lgr::Filterable -> lgr::Appender -> lgr::AppenderMemory -> lgrExtra::AppenderDigest
-> AppenderMail
```

Active bindings

to character vector. The email addresses of the recipient

from character vector. The email address of the sender

cc character vector. The email addresses of the cc-recipients (carbon copy)

bcc character vector. The email addresses of bcc-recipients (blind carbon copy)

html logical scalar. Send a html email message? This does currently only format the log contents as monospace verbatim text.

Methods**Public methods:**

- [AppenderMail\\$new\(\)](#)
- [AppenderMail\\$set_to\(\)](#)
- [AppenderMail\\$set_from\(\)](#)
- [AppenderMail\\$set_cc\(\)](#)
- [AppenderMail\\$set_bcc\(\)](#)
- [AppenderMail\\$set_html\(\)](#)
- [AppenderMail\\$format\(\)](#)

Method new():

Usage:

`AppenderMail$new(...)`

Method set_to():

Usage:

`AppenderMail$set_to(x)`

Method set_from():

Usage:

`AppenderMail$set_from(x)`

Method set_cc():

Usage:

`AppenderMail$set_cc(x)`

Method set_bcc():

Usage:

`AppenderMail$set_bcc(x)`

Method set_html():

Usage:

`AppenderMail$set_html(x)`

Method format():

Usage:

`AppenderMail$format(color = FALSE, ...)`

See Also

Other abstract classes: [AppenderDigest](#)

Other Digest Appenders: [AppenderDigest](#), [AppenderPushbullet](#), [AppenderSendmail](#)

AppenderPushbullet *Send push-notifications via RPushbullet*

Description

Send push notifications via **Pushbullet**. This Appender keeps an in-memory buffer like **Appender-Buffer**. If the buffer is flushed, usually because an event of specified magnitude is encountered, all buffered events are concatenated to a single message that is sent to **RPushbullet::pbPost()**. The default behavior is to push the last 7 log events in case a fatal event is encountered.

Value

The `$new()` method returns an **R6::R6** that inherits from **lgr::Appender** and can be used as an appender by a **lgr::Logger**.

Super classes

lgr::Filterable -> **lgr::Appender** -> **lgr::AppenderMemory** -> **lgrExtra::AppenderDigest**
-> **AppenderPushbullet**

Active bindings

`apikey` see **RPushbullet::pbPost()**
`recipients` see **RPushbullet::pbPost()**
`email` see **RPushbullet::pbPost()**
`channel` see **RPushbullet::pbPost()**
`devices` see **RPushbullet::pbPost()**

Methods

Public methods:

- **AppenderPushbullet\$new()**
- **AppenderPushbullet\$flush()**
- **AppenderPushbullet\$set_apikey()**
- **AppenderPushbullet\$set_recipients()**
- **AppenderPushbullet\$set_email()**
- **AppenderPushbullet\$set_channel()**
- **AppenderPushbullet\$set_devices()**

Method `new()`:

Usage:

```

AppenderPushbullet$new(
  threshold = NA_integer_,
  flush_threshold = "fatal",
  layout = LayoutFormat$new(fmt = "%K %t> %m %f", timestamp_fmt = "%H:%M:%S"),
  subject_layout = LayoutFormat$new(fmt = "[LGR] %L: %m"),
  buffer_size = 6,
  recipients = NULL,
  email = NULL,
  channel = NULL,
  devices = NULL,
  apikey = getOption("rpushbullet.key"),
  filters = NULL
)

```

Arguments:

threshold, flush_threshold, layout, buffer_size see [AppenderBuffer](#)
subject_layout A [lgr::LayoutFormat](#) object.
recipients, email, channel, devices, apikey see [RPushbullet::pbPost](#)

Method flush():*Usage:*

AppenderPushbullet\$flush()

Method set_apikey():*Usage:*

AppenderPushbullet\$set_apikey(x)

Method set_recipients():*Usage:*

AppenderPushbullet\$set_recipients(x)

Method set_email():*Usage:*

AppenderPushbullet\$set_email(x)

Method set_channel():*Usage:*

AppenderPushbullet\$set_channel(x)

Method set_devices():*Usage:*

AppenderPushbullet\$set_devices(x)

See Also[LayoutFormat](#), [LayoutGlue](#)Other Appenders: [AppenderDbi](#), [AppenderDt](#), [AppenderElasticSearch](#), [AppenderGmail](#), [AppenderSendmail](#), [AppenderSyslog](#)Other Digest Appenders: [AppenderDigest](#), [AppenderMail](#), [AppenderSendmail](#)

Examples

```

if (requireNamespace("RPushbullet") && !is.null(getOption("rpushbullet.key")) ){
  app <- AppenderPushbullet$new()

  lg <- lgr::get_logger("test/dbi")$
  add_appender(app, "pb")$
  set_propagate(FALSE)

  lg$fatal("info")
  lg$fatal("test")

  invisible(lg$config(NULL))
}

```

AppenderSendmail	<i>Send emails via sendmailR</i>
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Description

Send mails via `sendmailR::sendmail()`, which requires that you have access to an SMTP server that does not require authentication. This Appender keeps an in-memory buffer like [Appender-Buffer](#). If the buffer is flushed, usually because an event of specified magnitude is encountered, all buffered events are concatenated to a single message. The default behavior is to push the last 30 log events in case a fatal event is encountered.

Value

The `$new()` method returns an `R6::R6` that inherits from `lgr::Appender` and can be used as an appender by a `lgr::Logger`.

Super classes

`lgr::Filterable` -> `lgr::Appender` -> `lgr::AppenderMemory` -> `lgrExtra::AppenderDigest`
-> `lgrExtra::AppenderMail` -> `AppenderSendmail`

Active bindings

control see `sendmailR::sendmail()`
headers see `sendmailR::sendmail()`

Methods**Public methods:**

- `AppenderSendmail$new()`
- `AppenderSendmail$flush()`
- `AppenderSendmail$set_control()`
- `AppenderSendmail$set_headers()`

Method `new()`: see [AppenderMail](#) for details

Usage:

```
AppenderSendmail$new(
  to,
  control,
  threshold = NA_integer_,
  flush_threshold = "fatal",
  layout = LayoutFormat$new(fmt = " %L [%t] %m %f", timestamp_fmt = "%H:%M:%S"),
  subject_layout = LayoutFormat$new(fmt = "[LGR] %L: %m"),
  buffer_size = 29,
  from = get_user(),
  cc = NULL,
  bcc = NULL,
  html = FALSE,
  headers = NULL,
  filters = NULL
)
```

Method `flush()`:

Usage:

```
AppenderSendmail$flush()
```

Method `set_control()`:

Usage:

```
AppenderSendmail$set_control(x)
```

Method `set_headers()`:

Usage:

```
AppenderSendmail$set_headers(x)
```

Note

The default `Layout`'s `fmt` indents each log entry with 3 blanks. This is a workaround so that Microsoft Outlook does not mess up the line breaks.

See Also

[LayoutFormat](#), [LayoutGlue](#)

Other Appenders: [AppenderDbi](#), [AppenderDt](#), [AppenderElasticSearch](#), [AppenderGmail](#), [AppenderPushbullet](#), [AppenderSyslog](#)

Other Digest Appenders: [AppenderDigest](#), [AppenderMail](#), [AppenderPushbullet](#)

Examples

```
## Not run:
lgr::AppenderSendmail$new(
  to = "user@ecorp.com",
  control = list(smtpServer = "mail.ecorp.com"),
```

```

    from = "lgr_user@yourmail.com"
  )

  ## End(Not run)

  if (requireNamespace("sendmailR")){
  # requires that you have access to an SMTP server

  lg <- lgr::get_logger("lgrExtra/test/mail")$
    set_propagate(FALSE)$
    add_appender(AppenderSendmail$new(
      from = "ceo@ecorp.com",
      to = "some.guy@ecorp.com",
      control = list(smtpServer = "mail.somesmptserver.com")
    ))
  # cleanup
  invisible(lg$config(NULL))
  }

```

 AppenderSyslog

Log to the POSIX system log

Description

An Appender that writes to the syslog on supported POSIX platforms. Requires the **rsyslog** package.

Value

The `$new()` method returns an **R6::R6** that inherits from **lgr::Appender** and can be used as an appender by a **lgr::Logger**.

Super classes

lgr::Filterable -> **lgr::Appender** -> AppenderSyslog

Public fields

`syslog_levels`. Either a named character vector or a function mapping **lgr log_levels** to **rsyslog log levels**. See `$set_syslog_levels()`.

Active bindings

`identifier` character scalar. A string identifying the process; if `NULL` defaults to the logger name

`syslog_levels`. Either a named character vector or a function mapping **lgr log_levels** to **rsyslog log levels**. See `$set_syslog_levels()`.

Methods**Public methods:**

- [AppenderSyslog\\$new\(\)](#)
- [AppenderSyslog\\$append\(\)](#)
- [AppenderSyslog\\$set_syslog_levels\(\)](#)
- [AppenderSyslog\\$set_identifier\(\)](#)

Method `new()`:*Usage:*

```
AppenderSyslog$new(
  identifier = NULL,
  threshold = NA_integer_,
  layout = LayoutFormat$new("%m"),
  filters = NULL,
  syslog_levels = c(CRITICAL = "fatal", ERR = "error", WARNING = "warn", INFO = "info",
    DEBUG = "debug", DEBUG = "trace")
)
```

Method `append()`:*Usage:*

```
AppenderSyslog$append(event)
```

Method `set_syslog_levels()`: Define conversion between lgr and syslog log levels*Usage:*

```
AppenderSyslog$set_syslog_levels(x)
```

Arguments:

- `x` a named character vector mapping whose names are log levels as understood by [rsyslog::syslog\(\)](#) and whose values are [lgr log levels](#) (either character or numeric)
- a function that takes a vector of lgr log levels as input and returns a character vector of log levels for [rsyslog::syslog\(\)](#).

Method `set_identifier()`: Set a string to identify the process.*Usage:*

```
AppenderSyslog$set_identifier(x)
```

See Also

[LayoutFormat](#), [LayoutJson](#)

Other Appenders: [AppenderDbi](#), [AppenderDt](#), [AppenderElasticSearch](#), [AppenderGmail](#), [AppenderPushbullet](#), [AppenderSendmail](#)

Examples

```
if (requireNamespace("rsyslog", quietly = TRUE) && Sys.info()[["sysname"]] == "Linux") {
  lg <- lgr::get_logger("rsyslog/test")
  lg$add_appender(AppenderSyslog$new(), "syslog")
  lg$info("A test message")
  print(system("journalctl -t 'rsyslog/test'"))

  invisible(lg$config(NULL)) # cleanup
}
```

LayoutDbi

Format log events for output to databases

Description

LayoutDbi can contain `col_types` that [AppenderDbi](#) can use to create new database tables; however, it is safer and more flexible to set up the log table up manually with an SQL `CREATE TABLE` statement instead.

Details

The LayoutDbi parameters `fmt`, `timestamp_fmt`, `colors` and `pad_levels` are only applied for for console output via the `$show()` method and do not influence database inserts in any way. The inserts are pre-processed by the methods `$format_data()`, `$format_colnames` and `$format_tablenames`.

It does not format LogEvents directly, but their `data.table` representations (see [as.data.table.LogEvent](#)), as well as column- and table names.

Value

The `$new()` method returns an [R6::R6](#) that inherits from [lgr::Layout](#) and can used as a Layout by an [lgr::Appender](#).

Database Specific Layouts

Different databases have different data types and features. Currently the following LayoutDbi subclasses exist that deal with specific databases, but this list is expected to grow as `lgrExtra` matures:

- `LayoutSqlite`: For SQLite databases
- `LayoutPostgres`: for Postgres databases
- `LayoutMySQL`: for MySQL databases
- `LayoutDb2`: for DB2 databases

The utility function `select_dbi_layout()` tries returns the appropriate Layout for a DBI connection, but this does not work for `odbc` and `JDBC` connections where you have to specify the layout manually.

For creating custom DB-specific layouts it should usually be enough to create an [R6::R6](#) class that inherits from `LayoutDbi` and choosing different defaults for `$format_table_name`, `$format_colnames` and `$format_data`.

Super classes

`lgr::Layout` -> `lgr::LayoutFormat` -> `LayoutDbi`

Public fields

`format_table_name` a function to format the table name before inserting to the database. The function will be applied to the `$table_name` before inserting into the database. For example some, databases prefer all lowercase names, some uppercase. SQL updates should be case-agnostic, but sadly in practice not all DBI backends behave consistently in this regard.

`format_colnames` a function to format the column names before inserting to the database. The function will be applied to the column names of the data frame to be inserted into the database.

`format_data` a function to format the data before inserting into the database. The function will be applied to the whole data frame.

`names` of the columns that contain data that has been serialized to JSON strings

Active bindings

`col_types` a named character vector of column types supported by the target database. If not NULL this is used by `AppenderDbi` or similar Appenders to create a new database table on instantiation of the Appender. If the target database table already exists, `col_types` is not used.

`names` of the columns that contain data that has been serialized to JSON strings

`col_names` column names of the target table (the same as `names(10$col_types)`)

Methods**Public methods:**

- `LayoutDbi$new()`
- `LayoutDbi$set_col_types()`
- `LayoutDbi$set_serialized_cols()`
- `LayoutDbi$sql_create_table()`
- `LayoutDbi$string()`
- `LayoutDbi$clone()`

Method new():

Usage:

```
LayoutDbi$new(
  col_types = c(level = "integer", timestamp = "timestamp", logger = "varchar(256)",
    caller = "varchar(256)", msg = "varchar(2048)"),
  serialized_cols = NULL,
  fmt = "%L [%t] %m %f",
  timestamp_fmt = "%Y-%m-%d %H:%M:%S",
  colors = getOption("lgr.colors", list()),
  pad_levels = "right",
  format_table_name = identity,
  format_colnames = identity,
```

```
    format_data = data.table::as.data.table
  )
```

Method set_col_types():*Usage:*

LayoutDbi\$set_col_types(x)

Method set_serialized_cols():*Usage:*

LayoutDbi\$set_serialized_cols(x)

Method sql_create_table():*Usage:*

LayoutDbi\$sql_create_table(table)

Method toString():*Usage:*

LayoutDbi\$toString()

Method clone(): The objects of this class are cloneable with this method.*Usage:*

LayoutDbi\$clone(deep = FALSE)

Arguments:

deep Whether to make a deep clone.

See Also[select_dbi_layout\(\)](#), [DBI::DBI](#),Other Layout: [LayoutElasticSearch](#)

LayoutElasticSearch *Format log events for output to ElasticSearch*

Description

Similar to [lgr::LayoutJson](#), but with some modifications to prepare data for ElasticSearch.

Value

The `$new()` method returns an [R6::R6](#) that inherits from [lgr::Layout](#) and can be used as a Layout by an [lgr::Appender](#).

Super class

[lgr::Layout](#) -> LayoutElasticSearch

Active bindings

toJSON_args a list of values passed on to [jsonlite::toJSON\(\)](#)

transform_event a function with a single argument event that takes a [lgr::LogEvent](#) and returns a list.

Methods**Public methods:**

- [LayoutElasticSearch\\$new\(\)](#)
- [LayoutElasticSearch\\$format_event\(\)](#)
- [LayoutElasticSearch\\$set_toJSON_args\(\)](#)
- [LayoutElasticSearch\\$set_transform_event\(\)](#)
- [LayoutElasticSearch\\$clone\(\)](#)

Method new():

Usage:

```
LayoutElasticSearch$new(  
  toJSON_args = list(auto_unbox = TRUE),  
  transform_event = function(event) get("values", event)  
)
```

Method format_event():

Usage:

```
LayoutElasticSearch$format_event(event)
```

Method set_toJSON_args():

Usage:

```
LayoutElasticSearch$set_toJSON_args(x)
```

Method set_transform_event():

Usage:

```
LayoutElasticSearch$set_transform_event(x)
```

Method clone(): The objects of this class are cloneable with this method.

Usage:

```
LayoutElasticSearch$clone(deep = FALSE)
```

Arguments:

deep Whether to make a deep clone.

See Also

Other Layout: [LayoutDbi](#)

select_dbi_layout	<i>Automatically select appropriate layout for logging to a database</i>
-------------------	--

Description

Selects an appropriate Layout for a database table based on a DBI connection and - if it already exists in the database - the table itself.

Usage

```
select_dbi_layout(conn, table, ...)
```

Arguments

conn	a DBI connection
table	a character scalar. The name of the table to log to.
...	passed on to the appropriate LayoutDbi subclass constructor.

Serializer	<i>Serializers</i>
------------	--------------------

Description

Serializers are used by [AppenderDbi](#) to store multiple values in a single text column in a Database table. Usually you just want to use the default `SerializerJson`. Please note that `AppenderDbi` as well as `Serializers` are still **experimental**.

Value

a `Serializer` [R6::R6](#) object for `AppenderDbi`.

Methods**Public methods:**

- `Serializer$clone()`

Method `clone()`: The objects of this class are cloneable with this method.

Usage:

```
Serializer$clone(deep = FALSE)
```

Arguments:

deep Whether to make a deep clone.

Super class

[lgrExtra::Serializer](#) -> `SerializerJson`

Methods**Public methods:**

- [SerializerJson\\$new\(\)](#)
- [SerializerJson\\$serialize\(\)](#)
- [SerializerJson\\$clone\(\)](#)

Method new():*Usage:*

```
SerializerJson$new(
  cols = "*",
  cols_exclude = c("level", "timestamp", "logger", "caller", "msg"),
  col_filter = is.atomic,
  max_nchar = 2048L,
  auto_unbox = TRUE
)
```

Method serialize():*Usage:*

```
SerializerJson$serialize(event)
```

Method clone(): The objects of this class are cloneable with this method.*Usage:*

```
SerializerJson$clone(deep = FALSE)
```

Arguments:

deep Whether to make a deep clone.

Examples

```
# The default Serializer for 'custom fields' columns
SerializerJson$new()
```

```
unpack_json_cols      Unserialize data frame columns that contain JSON
```

Description

Unserialize data frame columns that contain JSON

Usage

```
unpack_json_cols(x, cols)

## S3 method for class 'data.table'
unpack_json_cols(x, cols)

## S3 method for class 'data.frame'
unpack_json_cols(x, cols)
```

Arguments

`x` a `data.frame`

`cols` character vector. The names of the text columns containing JSON strings that should be expanded.

Value

a `data.frame` with additional columns expanded from the columns containing JSON

Examples

```
x <- data.frame(
  name = "example data",
  fields = '{"letters":["a","b","c"], "LETTERS":["A","B","C"]}',
  stringsAsFactors = FALSE
)
res <- unpack_json_cols(x, "fields")
res
res$letters[[1]]
```

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