Package 'profile'

May 11, 2020

Title Read, Manipulate, and Write Profiler Data

Version 1.0.2

Date 2020-05-10

Description Defines a data structure for profiler data, and methods to read and write from the 'Rprof' and 'pprof' file formats.

License MIT + file LICENSE

URL https://github.com/r-prof/profile, https://r-prof.github.io/profile

BugReports https://github.com/r-prof/profile/issues

Imports methods, rlang, tibble, withr

Suggests dm, DiagrammeR, DiagrammeRsvg, RProtoBuf, testthat

Encoding UTF-8

LazyData true

RoxygenNote 7.1.0

Collate 'api.R' 'compat-purrr.R' 'pprof-from-ds.R' 'rprof-read.R' 'pprof-read.R' 'pprof-to-ds.R' 'rprof-write.R' 'pprof-write.R' 'profile-package.R' 'proto.R' 'rprof-from-ds.R' 'rprof-to-ds.R' 'utils.R'

NeedsCompilation no

Author Kirill Müller [aut, cre], R Consortium [fnd]

Maintainer Kirill Müller <krlmlr+r@mailbox.org>

Repository CRAN

Date/Publication 2020-05-11 10:50:03 UTC

R topics documented:

`profile-package` *profile: Read, Manipulate, and Write Profiler Data*

Description

The profiler package defines a stable data format for profiler data, see `validate_profile()` for a definition. It supports reading and writing Rprof `.out` and pprof `.proto` files.

Author(s)

Maintainer: Kirill Müller <krlmlr+r@mailbox.org>

Other contributors:

- R Consortium [funder]

See Also

Useful links:

- https://github.com/r-prof/profile
- https://r-prof.github.io/profile
- Report bugs at https://github.com/r-prof/profile/issues

`read_rprof` *File I/O for profiler data*

Description

These functions read profile data from files, or store profile data to files. Readers call `validate_profile()` on input, writers on output.

`read_rprof()` reads a file generated by `Rprof()`, `write_rprof()` writes in a compatible format.

`read_pprof()` reads a file generated by `pprof -proto`, `write_pprof()` writes a Gzip-compressed file that can be processed with `pprof`.

Usage

```
read_rprof(path, ..., version = "1.0")

read_pprof(path, ..., version = "1.0")

write_rprof(x, path)

write_pprof(x, path)
```

Arguments

path	File name
...	Ignored
version	Version of the data, currently only "1.0" is supported. Pass an explicit value to this argument if your code depends on the data format.
x	Profiler data, see validate_profile()

Details

Use the **proftools**, **profvis**, or **prof.tree** R packages to further analyze files created by the write_rprof() function.

Use the pprof tool in conjunction with the _pprof() functions. The tool is available in the **pprof** R package, or (in newer versions) via go get github.com/google/pprof.

Value

Valid profile data (readers), input data (writers).

Examples

```
rprof_file <- system.file("samples/rprof/1.out", package = "profile")
ds <- read_rprof(rprof_file)
ds
if (requireNamespace("RProtoBuf", quietly = TRUE)) {
  pprof_file <- tempfile("profile", fileext = ".pb.gz")
  write_pprof(ds, pprof_file)
}
```

---

validate_profile *Definition of the profile data format*

Description

The data format is stable between major releases. In case of major updates, compatibility functions will be provided.

The validate_profile() function checks a profile data object for compatibility with the specification. Versioning information embedded in the data is considered.

The dm_from_profile() function converts a profile to a dm object. The **dm** package must be installed. See dm::dm() for more information.

Usage

```
validate_profile(x)

dm_from_profile(x)
```

Arguments

x	Profile data, e.g., as returned by `read_pprof()` or `read_rprof()`.

Details

The profile data is stored in an object of class `"profile_data"`, which is a named list of tibbles. This named list has the following components, subsequently referred to as *tables*:

- `meta`
- `sample_types`
- `samples`
- `locations`
- `functions` (Components with names starting with a dot are permitted after the required components, but will be ignored.)

The `meta` table has two character columns, `key` and `value`. Additional columns with a leading dot in the name are allowed after the required columns. It is currently restricted to one row with key `"version"` and a value that is accepted by `package_version()`.

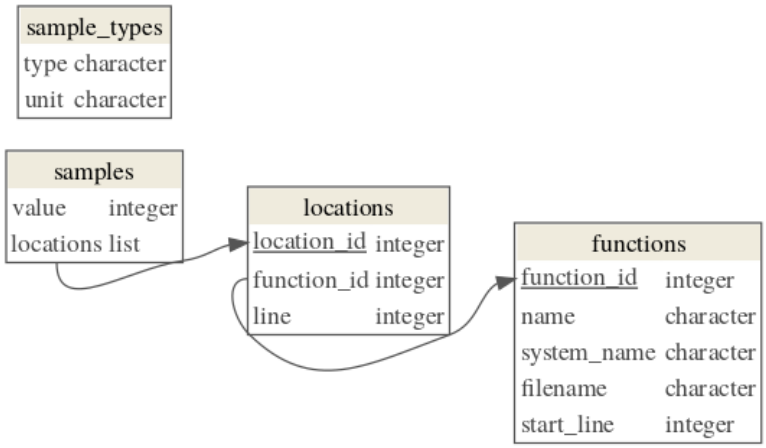
The `sample_types` table has two character columns, `type` and `unit`. Additional columns with a leading dot in the name are allowed after the required columns. It is currently restricted to one row with values `"samples"` and `"count"`, respectively.

The `samples` table has two columns, `value` (integer) and `locations` (list). Additional columns with a leading dot in the name are allowed after the required columns. The `value` column describes the number of consecutive samples for the given location, and must be greater than zero. Each element of the `locations` column is a tibble with one integer column, `location_id`. For each `location_id` value a corresponding observation in the `locations` table must exist. The locations are listed in inner-first order, i.e., the first location corresponds to the innermost entry of the stack trace.

The `locations` table has three integer columns, `location_id`, `function_id`, and `line`. Additional columns with a leading dot in the name are allowed after the required columns. All `location_id` values are unique. For each `function_id` value a corresponding observation in the `functions` table must exist. `NA` values are permitted. The `line` column describes the line in the source code this location corresponds to, zero if unknown. All values must be nonnegative. `NA` values are permitted.

The `functions` table has five columns, `function_id` (integer), `name`, `system_name` and `file_name` (character), and `start_line` (integer). Additional columns with a leading dot in the name are allowed after the required columns. All `function_id` values are unique. The `name`, `system_name` and `filename` columns describe function names (demangled and mangled), and source file names for a function. Both `name` and `system_name` must not contain empty strings. The `start_line` column describes the start line of a function in its source file, zero if unknown. All values must be nonnegative.

Data model



Examples

```
rprof_file <- system.file("samples/rprof/1.out", package = "profile")
ds <- read_rprof(rprof_file)
validate_profile(ds)

bad_ds <- ds
bad_ds$samples <- NULL
try(validate_profile(bad_ds))

if (rlang::is_installed("dm")) {
  dm <- dm_from_profile(ds)
  print(dm)
  dm::dm_draw(dm)
}
```

Index