The DATA-FRAME Reference Manual

Data frames for Common Lisp, version 1.0.0

Steve Nunez <steve@symbolics.tech>

This manual was generated automatically by Declt 4.0b2.

Table of Contents

Copying

This program is distributed under the terms of the Microsoft Public License.

1 Systems

The main system appears first, followed by any subsystem dependency.

1.1 data-frame

A data manipulation library for statistical computing

Long Name
Data frames for Common Lisp

Author Steve Nunez <steve@symbolics.tech>

Source Control
(GIT https://github.com/Lisp-Stat/data-frame.git)

Bug Tracker
https://github.com/Lisp-Stat/data-frame/issues

License MS-PL

Long Description
A data manipulation library, conceptually similar to R's data.frame

Version 1.0.0

Dependencies

- alexandria (system).
- alexandria+ (system).
- anaphora (system).
- array-operations (system).
- num-utils (system).
- select (system).
- let-plus (system).
- duologue (system).

Source [data-frame.asd], page 5.

Child Components

- [pkgdcl.lisp], page 5 (file).
- [utils.lisp], page 5 (file).
- [conditions.lisp], page 5 (file).
- [data-frame.lisp], page 6 (file).
- [pprint.lisp], page 7 (file).
- [formatted-output.lisp], page 8 (file).
- [summary.lisp], page 8 (file).
- [defdf.lisp], page 10 (file).
- [properties.lisp], page 11 (file).
- [missing.lisp], page 11 (file).
- [plist-aops.lisp], page 11 (file).

2 Files

Files are sorted by type and then listed depth-first from the systems components trees.

2.1 Lisp

2.1.1 data-frame/data-frame.asd

Source [data-frame.asd], page 5.

Parent Component
[data-frame], page 3 (system).

ASDF Systems
[data-frame], page 3.

2.1.2 data-frame/pkgdcl.lisp

Source [data-frame.asd], page 5.

Parent Component
[data-frame], page 3 (system).

Packages [data-frame], page 13.

2.1.3 data-frame/utils.lisp

Dependency
[pkgdcl.lisp], page 5 (file).

Source [data-frame.asd], page 5.

Parent Component
[data-frame], page 3 (system).

Public Interface
[column-type], page 21 (function).

Internals

- [get-type], page 36 (function).
- [types-in-column], page 41 (function).

2.1.4 data-frame/conditions.lisp

Dependency
[utils.lisp], page 5 (file).

Source [data-frame.asd], page 5.

Parent Component
[data-frame], page 3 (system).

Public Interface

- [duplicate-key], page 28 (condition).
- [key-not-found], page 28 (condition).
- [large-data], page 28 (condition).

Internals

- [data-size], page 42 (reader method).
- [missing-data], page 43 (condition).

2.1.5 data-frame/data-frame.lisp

Dependency
[conditions.lisp], page 5 (file).

Source [data-frame.asd], page 5.

Parent Component
[data-frame], page 3 (system).

Public Interface

- [*large-data*], page 19 (special variable).
- [add-column!], page 20 (function).
- [add-columns], page 20 (function).
- [add-columns!], page 20 (function).
- [alist-df], page 20 (function).
- [alist-dv], page 20 (function).
- [as-alist], page 26 (method).
- [as-array], page 26 (method).
- [as-array], page 26 (method).
- [axis-dimension], page 26 (method).
- [canonical-representation], page 26 (method).
- [column], page 20 (function).
- [(setf column)], page 21 (function).
- [column-names], page 21 (function).
- [columns], page 21 (function).
- [copy], page 21 (function).
- [count-rows], page 21 (function).
- [data-frame], page 31 (class).
- [data-type], page 32 (type).
- [data-vector], page 31 (class).
- [df], page 21 (function).
- [df-remove-duplicates], page 22 (function).
- [dims], page 27 (method).
- [dims], page 27 (method).
- [do-rows], page 22 (function).
- [dv], page 22 (function).
- [element-type], page 27 (method).
- [initialize-instance], page 27 (method).
- [keys], page 22 (function).
- [make-df], page 22 (function).
- [make-dv], page 22 (function).
- [map-columns], page 22 (function).
- [map-df], page 23 (function).
- [map-rows], page 23 (function).
- [mask-rows], page 23 (function).

- [matrix-df], page 23 (function).
- [ncol], page 27 (method).
- [nrow], page 27 (method).
- [plist-df], page 23 (function).
- [plist-dv], page 23 (function).
- [print-object], page 27 (method).
- [print-object], page 27 (method).
- [print-object], page 27 (method).
- [remove-columns], page 24 (function).
- [rename!], page 20 (macro).
- [replace-column], page 24 (function).
- [replace-column!], page 24 (function).
- [rows], page 24 (function).
- [select], page 27 (method).
- [select], page 28 (method).
- [select], page 28 (method).

Internals

- [%rename!], page 42 (method).
- [add-key!], page 32 (function).
- [add-keys], page 32 (function).
- [alist-data], page 33 (function).
- [check-column-compatibility], page 42 (generic function).
- [copy-ordered-keys], page 34 (function).
- [data], page 45 (class).
- [define-data-subclass], page 32 (macro).
- [df-env-p], page 34 (function).
- [ensure-arguments-alist], page 34 (function).
- [key-index], page 36 (function).
- [keys-count], page 36 (function).
- [keys-vector], page 36 (function).
- [make-data], page 37 (function).
- [make-ordered-keys], page 37 (function).
- [ordered-keys], page 38 (function).
- [ordered-keys], page 43 (structure).
- [ordered-keys-p], page 38 (function).
- [ordered-keys-table], page 38 (reader).
- [plist-data], page 38 (function).

2.1.6 data-frame/pprint.lisp

Dependency

[data-frame.lisp], page 6 (file).

Source [data-frame.asd], page 5.

Parent Component
[data-frame], page 3 (system).

Public Interface
- [head], page 25 (method).
- [print-array], page 23 (function).
- [print-data], page 23 (function).
- [short-string], page 24 (function).
- [tail], page 26 (method).

Internals
- [*max-digits*], page 32 (special variable).
- [*row-numbers-p*], page 32 (special variable).
- [2d-array-to-list], page 32 (function).
- [column-type-format], page 33 (function).
- [default-column-formats], page 42 (method).
- [max-decimal], page 37 (function).
- [max-width], page 37 (function).
- [printer-status], page 38 (function).
- [reverse-df], page 40 (function).

2.1.7 data-frame/formatted-output.lisp

Dependency
[pprint.lisp], page 7 (file).

Source [data-frame.asd], page 5.

Parent Component
[data-frame], page 3 (system).

Public Interface
- [df-print], page 21 (function).
- [print-markdown], page 23 (function).

Internals
- [aesthetic-string], page 33 (function).
- [print-table], page 38 (function).
- [weave], page 41 (function).

2.1.8 data-frame/summary.lisp

Dependency
[formatted-output.lisp], page 8 (file).

Source [data-frame.asd], page 5.

Parent Component
[data-frame], page 3 (system).

Public Interface
- [*distinct-maximum*], page 19 (special variable).
- [*distinct-threshold*], page 19 (special variable).
- [*quantile-threshold*], page 19 (special variable).

Internals

- [make-generic-variable-summary], page 37 (function).
- [make-real-variable-summary], page 37 (function).
- [make-variable-summary%], page 37 (function).
- [monotonicp], page 37 (function).
- [print-count-and-percentage], page 38 (function).
- [real-variable-summary-desc], page 38 (function).
- [real-variable-summary-length], page 39 (function).
- [real-variable-summary-max], page 39 (reader).
- [real-variable-summary-mean], page 39 (reader).
- [real-variable-summary-min], page 39 (reader).
- [real-variable-summary-missing], page 39 (function).
- [real-variable-summary-name], page 39 (function).
- [real-variable-summary-p], page 39 (function).
- [real-variable-summary-q25], page 39 (reader).
- [real-variable-summary-q50], page 39 (reader).
- [real-variable-summary-q75], page 40 (reader).
- [summarize-dataframe], page 40 (function).
- [summarize-factor-variable], page 40 (function).
- [summarize-generic-variable], page 40 (function).
- [summarize-real-variable], page 40 (function).
- [variable-summary%], page 44 (structure).
- [variable-summary%-desc], page 41 (reader).
- [variable-summary%-length], page 41 (reader).
- [variable-summary%-missing], page 41 (reader).
- [variable-summary%-name], page 41 (reader).
- [variable-summary%-p], page 41 (function).

2.1.9 data-frame/defdf.lisp

Dependency

[summary.lisp], page 8 (file).

Source [data-frame.asd], page 5.

Parent Component

[data-frame], page 3 (system).

Public Interface

- [*ask-on-redefine*], page 19 (special variable).
- [data-frame], page 25 (reader method).
- [defdf], page 20 (macro).
- [defdf-env], page 21 (function).
- [show-data-frames], page 25 (function).

Internals

- [*data-frames*], page 32 (special variable).
- [data-frame-exists], page 43 (condition).
- [df-exists-p], page 34 (function).

- [invalid-df-name], page 36 (function).
- [show-symbols], page 40 (function).
- [undef-env], page 41 (function).

2.1.10 data-frame/properties.lisp

Dependency
[defdf.lisp], page 10 (file).

Source [data-frame.asd], page 5.

Parent Component
[data-frame], page 3 (system).

Public Interface
- [heuristicate-types], page 22 (function).
- [set-properties], page 24 (function).

Internals
- [get-property], page 36 (function).
- [set-property], page 40 (function).
- [show-properties], page 40 (function).

2.1.11 data-frame/missing.lisp

Dependency
[properties.lisp], page 11 (file).

Source [data-frame.asd], page 5.

Parent Component
[data-frame], page 3 (system).

Public Interface
- [drop-missing], page 25 (method).
- [drop-missing], page 25 (method).
- [missingp], page 25 (generic function).
- [replace-missing], page 26 (method).

Internals [drop-na], page 34 (function).

2.1.12 data-frame/plist-aops.lisp

Dependency
[missing.lisp], page 11 (file).

Source [data-frame.asd], page 5.

Parent Component
[data-frame], page 3 (system).

Internals [ensure-plist], page 32 (macro).

3 Packages

Packages are listed by definition order.

3.1 data-frame

I really need to write this

Source [pkgdcl.lisp], page 5.

Nickname df

Use List

- alexandria.
- alexandria+.
- anaphora.
- common-lisp.
- let-plus.
- select.
- select-dev.

Used By List

- dfio.
- lisp-stat.

Public Interface

- [*ask-on-redefine*], page 19 (special variable).
- [*distinct-maximum*], page 19 (special variable).
- [*distinct-threshold*], page 19 (special variable).
- [*large-data*], page 19 (special variable).
- [*quantile-threshold*], page 19 (special variable).
- [*summary-minimum-length*], page 19 (special variable).
- [add-column!], page 20 (function).
- [add-columns], page 20 (function).
- [add-columns!], page 20 (function).
- [alist-df], page 20 (function).
- [alist-dv], page 20 (function).
- [bit-variable-summary], page 29 (structure).
- [column], page 20 (function).
- [(setf column)], page 21 (function).
- [column-names], page 21 (function).
- [column-type], page 21 (function).
- [columns], page 21 (function).
- [copy], page 21 (function).
- [count-rows], page 21 (function).
- [data-frame], page 25 (generic reader).
- [data-frame], page 31 (class).
- [data-type], page 32 (type).

- [tail], page 26 (generic function).

Internals

- [%rename!], page 42 (generic function).
- [*data-frames*], page 32 (special variable).
- [*max-digits*], page 32 (special variable).
- [*row-numbers-p*], page 32 (special variable).
- [2d-array-to-list], page 32 (function).
- [add-key!], page 32 (function).
- [add-keys], page 32 (function).
- [aesthetic-string], page 33 (function).
- [alist-data], page 33 (function).
- [bit-variable-summary-count], page 33 (reader).
- [bit-variable-summary-desc], page 33 (function).
- [bit-variable-summary-length], page 33 (function).
- [bit-variable-summary-missing], page 33 (function).
- [bit-variable-summary-name], page 33 (function).
- [bit-variable-summary-p], page 33 (function).
- [check-column-compatibility], page 42 (generic function).
- [column-length], page 42 (generic function).
- [column-type-format], page 33 (function).
- [copy-bit-variable-summary], page 33 (function).
- [copy-factor-variable-summary], page 34 (function).
- [copy-generic-variable-summary], page 34 (function).
- [copy-ordered-keys], page 34 (function).
- [copy-real-variable-summary], page 34 (function).
- [copy-variable-summary%], page 34 (function).
- [data], page 45 (class).
- [data-frame-exists], page 43 (condition).
- [data-size], page 42 (generic reader).
- [default-column-formats], page 42 (generic function).
- [define-data-subclass], page 32 (macro).
- [df-env-p], page 34 (function).
- [df-exists-p], page 34 (function).
- [distinct], page 34 (function).
- [drop-na], page 34 (function).
- [ensure-arguments-alist], page 34 (function).
- [ensure-not-ratio], page 35 (function).
- [ensure-plist], page 32 (macro).
- [factor-variable-summary-desc], page 35 (function).
- [factor-variable-summary-element-count-alist], page 35 (reader).
- [factor-variable-summary-length], page 35 (function).
- [factor-variable-summary-missing], page 35 (function).

4 Definitions

Definitions are sorted by export status, category, package, and then by lexicographic order.

4.1 Public Interface

4.1.1 Special variables

`*ask-on-redefine*` [Special Variable]
If non-nil, the system will ask the user for confirmation before redefining a data frame

Package [`data-frame`], page 13.

Source [`defdf.lisp`], page 10.

`*distinct-maximum*` [Special Variable]
If a string/factor variable has > *distinct-maximum* values, exclude it

Package [`data-frame`], page 13.

Source [`summary.lisp`], page 8.

`*distinct-threshold*` [Special Variable]
If an integer variable has <= discrete values, consider it a factor

Package [`data-frame`], page 13.

Source [`summary.lisp`], page 8.

`*large-data*` [Special Variable]
An indication that the data set is large for a particular use case.
This should be bound by a user to the maximum number of data points they consider to be 'normal'. The function can then signal a large-data warning if it is exceeded.

E.g. (let ((df:*large-data* 50000))
(handler-bind ((large-data ...
(some-data-operation ; this will signal if the data is too large
(restart-bind ...

Package [`data-frame`], page 13.

Source [`data-frame.lisp`], page 6.

`*quantile-threshold*` [Special Variable]
If the number of unique reals exceeds this threshold, they will be summarized with quantiles, otherwise print frequency table

Package [`data-frame`], page 13.

Source [`summary.lisp`], page 8.

`*summary-minimum-length*` [Special Variable]
Columns are only summarised when longer than this, otherwise they are returned as is.

Package [`data-frame`], page 13.

Source [`summary.lisp`], page 8.

4.1.2 Macros

`defdf` (*name data* **&optional** *documentation*) [Macro]
Define a data-frame

Package [`data-frame`], page 13.

Source [`defdf.lisp`], page 10.

`rename!` (*data-frame new old*) [Macro]

Package [`data-frame`], page 13.

Source [`data-frame.lisp`], page 6.

`summary` (*df* **&optional** *stream*) [Macro]

Package [`data-frame`], page 13.

Source [`summary.lisp`], page 8.

4.1.3 Ordinary functions

`add-column!` (*data key column*) [Function]
Modify DATA (a data-frame or data-vector) by adding COLUMN with KEY. Return DATA.

Package [`data-frame`], page 13.

Source [`data-frame.lisp`], page 6.

`add-columns` (*data* **&rest** *keys-and-columns*) [Function]
Return a new data-frame or data-vector with keys and columns added. Does not modify DATA.

Package [`data-frame`], page 13.

Source [`data-frame.lisp`], page 6.

`add-columns!` (*data* **&rest** *keys-and-columns*) [Function]
Modify DATA (a data-frame or data-vector) by adding columns with keys.

Package [`data-frame`], page 13.

Source [`data-frame.lisp`], page 6.

`alist-df` (*alist*) [Function]

Package [`data-frame`], page 13.

Source [`data-frame.lisp`], page 6.

`alist-dv` (*alist*) [Function]

Package [`data-frame`], page 13.

Source [`data-frame.lisp`], page 6.

`column` (*data key*) [Function]
Return column corresponding to key.

Package [`data-frame`], page 13.

Source [`data-frame.lisp`], page 6.

`(setf column)` (*data key*) [Function]
Set column corresponding to key.

Package [`data-frame`], page 13.

Source [`data-frame.lisp`], page 6.

`column-names` (*df*) [Function]
Return a list of column names in DF, as strings

Package [`data-frame`], page 13.

Source [`data-frame.lisp`], page 6.

`column-type` (*col*) [Function]
Return the most specific type found in COL

Package [`data-frame`], page 13.

Source [`utils.lisp`], page 5.

`columns` (*data* **&optional** *slice*) [Function]
Return the columns of DATA as a vector, or a selection if given (keys are resolved).

Package [`data-frame`], page 13.

Source [`data-frame.lisp`], page 6.

`copy` (*data* **&key** *key*) [Function]
Copy data frame or vector. Keys are copied (and thus can be modified), columns or elements are copyied using KEY, making the default give a shallow copy.

Package [`data-frame`], page 13.

Source [`data-frame.lisp`], page 6.

`count-rows` (*data-frame keys predicate*) [Function]
Count the number of rows for which PREDICATE called on the columns corresponding to KEYS returns non-NIL.

Package [`data-frame`], page 13.

Source [`data-frame.lisp`], page 6.

`defdf-env` (*data-frame old-keys*) [Function]

Package [`data-frame`], page 13.

Source [`defdf.lisp`], page 10.

`df` (**&rest** *plist-or-alist*) [Function]

Package [`data-frame`], page 13.

Source [`data-frame.lisp`], page 6.

`df-print` (*df*) [Function]
Print DF to *standard-output* in table format

Package [`data-frame`], page 13.

Source [`formatted-output.lisp`], page 8.

`df-remove-duplicates` (*data*) [Function]
Return a modified copy of DATA from which any element (row, if a DATA-FRAME) that matches another element has been removed

Package [`data-frame`], page 13.

Source [`data-frame.lisp`], page 6.

`do-rows` (*data-frame keys function*) [Function]
Traverse rows from first to last, calling FUNCTION on the columns corresponding to KEYS. Return no values.

Package [`data-frame`], page 13.

Source [`data-frame.lisp`], page 6.

`dv` (**&rest** *plist-or-alist*) [Function]

Package [`data-frame`], page 13.

Source [`data-frame.lisp`], page 6.

`get-summaries` (*df*) [Function]
Return a list of summaries of the variables in DF

Package [`data-frame`], page 13.

Source [`summary.lisp`], page 8.

`heuristicate-types` (*df*) [Function]
Coerce each element of the column vectors to the most specific type in the column
Often when reading in a data set, the types will be inconsistent in a variable. For example one observation might be 5.1, and another 5. Whilst mathmatically equivalent, we want our variable vectors to have identical types. The COLUMN-TYPE function returns the most specific numeric type in the column, then coerces all the vector elements to this type

Package [`data-frame`], page 13.

Source [`properties.lisp`], page 11.

`keys` (*data*) [Function]
Vector of keys.

Package [`data-frame`], page 13.

Source [`data-frame.lisp`], page 6.

`make-df` (*keys columns*) [Function]

Package [`data-frame`], page 13.

Source [`data-frame.lisp`], page 6.

`make-dv` (*keys columns*) [Function]

Package [`data-frame`], page 13.

Source [`data-frame.lisp`], page 6.

`map-columns` (*data function* **&optional** *result-class*) [Function]
Map columns of DATA-FRAME or DATA-VECTOR using FUNCTION. The result is a new DATA-FRAME with the same keys.

Package [`data-frame`], page 13.

Source [`data-frame.lisp`], page 6.

`map-df` (*data-frame keys function result-keys*) [Function]
Map DATA-FRAME to another one by rows. Function is called on the columns corresponding to KEYS, and should return a sequence with the same length as RESULT-KEYS, which give the keys of the resulting data frame. RESULT-KETS should be either symbols, or of the format (symbol &optional (element-type t)).

Package [`data-frame`], page 13.

Source [`data-frame.lisp`], page 6.

`map-rows` (*data-frame keys function* **&key** *element-type*) [Function]
Map rows using FUNCTION, on the columns corresponding to KEYS. Return the result with the given ELEMENT-TYPE.

Package [`data-frame`], page 13.

Source [`data-frame.lisp`], page 6.

`mask-rows` (*data-frame keys predicate*) [Function]
Return a bit-vector containing the result of calling PREDICATE on rows of the columns corresponding to KEYS (0 for NIL, 1 otherwise).

Package [`data-frame`], page 13.

Source [`data-frame.lisp`], page 6.

`matrix-df` (*keys matrix*) [Function]
Convert a matrix to a data-frame with the given keys.

Package [`data-frame`], page 13.

Source [`data-frame.lisp`], page 6.

`plist-df` (*plist*) [Function]

Package [`data-frame`], page 13.

Source [`data-frame.lisp`], page 6.

`plist-dv` (*plist*) [Function]

Package [`data-frame`], page 13.

Source [`data-frame.lisp`], page 6.

`print-array` (*arr* **&optional** *stream row-numbers-p*) [Function]
Print an array to STREAM, defaulting to *standard-output*, in a tabular format. If ROW-NUMBERS-P, print row numbers.

Package [`data-frame`], page 13.

Source [`pprint.lisp`], page 7.

`print-data` (*data-frame* **&optional** *stream row-numbers-p max-digits*) [Function]
Print DATA-FRAME to STREAM using the pretty printer

Package [`data-frame`], page 13.

Source [`pprint.lisp`], page 7.

`print-markdown` (*df* **&key** *stream row-numbers*) [Function]
Print data frame DF, in markdown format, to STREAM
If ROW-NUMBERS is true, also print row numbers as the first column

Package [`data-frame`], page 13.

Source [`formatted-output.lisp`], page 8.

`remove-columns` (*data keys*) [Function]
ARGS: DATA data frame
KEYS list of keys (variables) to be removed
Return a new data-frame or data-vector with keys and columns removed. Does not modify DATA.

Package [`data-frame`], page 13.

Source [`data-frame.lisp`], page 6.

`replace-column` (*data key function-or-column* **&key** *element-type*) [Function]
Create a new data frame with new column KEY from data-frame DATA by replacing it either with the given column, or applying the function to the current values (ELEMENT-TYPE is used.)

Package [`data-frame`], page 13.

Source [`data-frame.lisp`], page 6.

`replace-column!` (*data key function-or-column* **&key** *element-type*) [Function]
Modify column KEY of data-frame DATA by replacing it either with the given column, or applying the function to the current values (ELEMENT-TYPE is used.)

Package [`data-frame`], page 13.

Source [`data-frame.lisp`], page 6.

`rows` (*data*) [Function]
Return the rows of DATA as a vector

Package [`data-frame`], page 13.

Source [`data-frame.lisp`], page 6.

`set-properties` (*df property prop-values*) [Function]
Set the PROPERTY of each variable in DF to a value. The value is specified in the plist PROP-VALUES. Example:
To give the variables in the mtcars dataset a unit, use:
(set-properties mtcars :unit '(:mpg m/g
:cyl :NA
:disp in^3
:hp hp
:drat :NA
:wt lb
:qsec s
:vs :NA
:am :NA
:gear :NA
:carb :NA))

Package [`data-frame`], page 13.

Source [`properties.lisp`], page 11.

`short-string` (*str*) [Function]
Return up to the first newline
This is useful when docstrings are multi-line. By convention, the first line is the title.

Package [`data-frame`], page 13.

Source [`pprint.lisp`], page 7.

`show-data-frames` (**&key** *head stream*) [Function]
Print all data frames in the current environment in reverse order of creation, i.e. most recently created first. if HEAD is not NIL, print the first six rows, similar to the (head) function

Package [`data-frame`], page 13.

Source [`defdf.lisp`], page 10.

`summarize-column` (*column*) [Function]
Return a summary struct for COLUMN

Package [`data-frame`], page 13.

Source [`summary.lisp`], page 8.

4.1.4 Generic functions

`data-frame` (*condition*) [Generic Reader]

Package [`data-frame`], page 13.

Methods

`data-frame` ((*condition* *[`data-frame-exists`], page 43*)) [Reader Method]

Source [`defdf.lisp`], page 10.

Target Slot
[`data-frame`], page 43.

`drop-missing` (*df* **&optional** *predicate*) [Generic Function]

Package [`data-frame`], page 13.

Methods

`drop-missing` ((*var* `vector`) **&optional** *predicate*) [Method]
Remove all values from VAR that are missing according to PREDICATE

Source [`missing.lisp`], page 11.

`drop-missing` ((*df* *[`data-frame`], page 31*) **&optional** *predicate*) [Method]
Remove all rows from DF that are missing values according to PREDICATE

Source [`missing.lisp`], page 11.

`head` (*df* **&optional** *n*) [Generic Function]

Package [`data-frame`], page 13.

Methods

`head` ((*df* *[`data-frame`], page 31*) **&optional** *n*) [Method]
Return the first N rows of DF; N defaults to 6

Source [`pprint.lisp`], page 7.

`missingp` (*data*) [Generic Function]
Return a vector indicating the position of any missing value indicators. They currently are :na and :missing

Package [`data-frame`], page 13.

Source [`missing.lisp`], page 11.

Methods

`missingp` (*data*) [Method]

`missingp` ((*data* `(eql :na)`)) [Method]

`missingp` ((*data* `(eql :missing)`)) [Method]

`missingp` ((*data* `string`)) [Method]

`missingp` ((*data* `sequence`)) [Method]

`missingp` ((*data* `array`)) [Method]

`missingp` ((*data* *[`data-frame`], page 31*)) [Method]

`replace-missing` (*df map-alist*) [Generic Function]

Package [`data-frame`], page 13.

Methods

`replace-missing` ((*df* *[`data-frame`], page 31*) *map-alist*) [Method]

Replace missing values with the values specified
The alist consists of a column name in the CAR and the replacement value in the CDR Example: (replace-missing mtcarsm '((mpg . foo)))

Source [`missing.lisp`], page 11.

`tail` (*df* **&optional** *n*) [Generic Function]

Package [`data-frame`], page 13.

Methods

`tail` ((*df* *[`data-frame`], page 31*) **&optional** *n*) [Method]

Return the last N rows of DF; N defaults to 6

Source [`pprint.lisp`], page 7.

4.1.5 Standalone methods

`as-alist` ((*data* *[`data`], page 45*)) [Method]

Key-column pairs as an alist.

Package `num-utils.utilities`.

Source [`data-frame.lisp`], page 6.

`as-array` ((*data-vector* *[`data-vector`], page 31*)) [Method]

Package `array-operations/generic`.

Source [`data-frame.lisp`], page 6.

`as-array` ((*data-frame* *[`data-frame`], page 31*)) [Method]

Package `array-operations/generic`.

Source [`data-frame.lisp`], page 6.

`axis-dimension` ((*axis* *[`ordered-keys`], page 43*)) [Method]

Package `select-dev`.

Source [`data-frame.lisp`], page 6.

`canonical-representation` ((*axis* *[`ordered-keys`], page 43*) (*slice* `symbol`)) [Method]

Package `select-dev`.

Source [`data-frame.lisp`], page 6.

`dims` ((*data-vector* [`data-vector`], *page 31*)) [Method]

Package `array-operations/generic`.

Source [`data-frame.lisp`], page 6.

`dims` ((*data-frame* [`data-frame`], *page 31*)) [Method]

Package `array-operations/generic`.

Source [`data-frame.lisp`], page 6.

`element-type` ((*data* [`data`], *page 45*)) [Method]

Package `array-operations/generic`.

Source [`data-frame.lisp`], page 6.

`initialize-instance` *:after* ((*data-frame* [`data-frame`], *page 31*) **&rest** *initargs*) [Method]

Source [`data-frame.lisp`], page 6.

`ncol` ((*data-frame* [`data-frame`], *page 31*)) [Method]

Package `array-operations/generic`.

Source [`data-frame.lisp`], page 6.

`nrow` ((*data-frame* [`data-frame`], *page 31*)) [Method]

Package `array-operations/generic`.

Source [`data-frame.lisp`], page 6.

`print-object` ((*data-vector* [`data-vector`], *page 31*) *stream*) [Method]

Source [`data-frame.lisp`], page 6.

`print-object` ((*df* [`data-frame`], *page 31*) *stream*) [Method]

Print DATA-FRAME dimensions and type
After defining this method it is permanently associated with data-frame objects

Source [`data-frame.lisp`], page 6.

`print-object` ((*object* [`generic-variable-summary`], *page 29*) *stream*) [Method]

Source [`summary.lisp`], page 8.

`print-object` ((*object* [`bit-variable-summary`], *page 29*) *stream*) [Method]

Source [`summary.lisp`], page 8.

`print-object` ((*object* [`real-variable-summary`], *page 30*) *stream*) [Method]

Source [`summary.lisp`], page 8.

`print-object` ((*object* [`factor-variable-summary`], *page 29*) *stream*) [Method]

Source [`summary.lisp`], page 8.

`print-object` ((*ordered-keys* [`ordered-keys`], *page 43*) *stream*) [Method]

Source [`data-frame.lisp`], page 6.

`select` ((*data-vector* [`data-vector`], *page 31*) **&rest** *slices*) [Method]

Package `select`.

Source [`data-frame.lisp`], page 6.

`select` ((*data-frame [*`data-frame`*], page 31*) **&rest** *slices*) [Method]

Package `select`.

Source [`data-frame.lisp`], page 6.

`select` ((*ordered-keys [*`ordered-keys`*], page 43*) **&rest** *selections*) [Method]

Package `select`.

Source [`data-frame.lisp`], page 6.

4.1.6 Conditions

`duplicate-key` [Condition]

Duplicate key.

Package [`data-frame`], page 13.

Source [`conditions.lisp`], page 5.

Direct superclasses

`error`.

Direct slots

`key` [Slot]

Initargs `:key`

`key-not-found` [Condition]

Key not found.

Package [`data-frame`], page 13.

Source [`conditions.lisp`], page 5.

Direct superclasses

`error`.

Direct slots

`key` [Slot]

Initargs `:key`

`keys` [Slot]

Initargs `:keys`

`large-data` [Condition]

Warn user about potentially large data sets

Package [`data-frame`], page 13.

Source [`conditions.lisp`], page 5.

Direct superclasses

`warning`.

Direct methods

[`data-size`], page 42.

Direct slots

`data-size` [Slot]

Initargs `:data-size`

Readers [`data-size`], page 42.

Writers *This slot is read-only.*

4.1.7 Structures

`bit-variable-summary` [Structure]
Summary of a bit vector.

Package [`data-frame`], page 13.

Source [`summary.lisp`], page 8.

Direct superclasses
[`variable-summary%`], page 44.

Direct methods
[`print-object`], page 27.

Direct slots

`count` [Slot]

Package `common-lisp`.

Type `alexandria:array-index`

Initform `0`

Readers [`bit-variable-summary-count`], page 33.

Writers *This slot is read-only.*

`factor-variable-summary` [Structure]
Summary for factor variables

Package [`data-frame`], page 13.

Source [`summary.lisp`], page 8.

Direct superclasses
[`variable-summary%`], page 44.

Direct methods
[`print-object`], page 27.

Direct slots

`element-count-alist` [Slot]

Type `list`

Readers [`factor-variable-summary-element-count-alist`], page 35.

Writers *This slot is read-only.*

`generic-variable-summary` [Structure]
Summary for generic variables, i.e. those with mixed types.

Package [`data-frame`], page 13.

Source [`summary.lisp`], page 8.

Direct superclasses
[`variable-summary%`], page 44.

Direct methods
[`print-object`], page 27.

Direct slots

`quantiles` [Slot]

Type `(or null data-frame:real-variable-summary)`

Readers [generic-variable-summary-quantiles], page 36.

Writers *This slot is read-only.*

element-count-alist [Slot]

Type list

Readers [generic-variable-summary-element-count-alist], page 35.

Writers *This slot is read-only.*

real-variable-summary [Structure]

Summary of a real elements (using quantiles).

Package [data-frame], page 13.

Source [summary.lisp], page 8.

Direct superclasses

[variable-summary%], page 44.

Direct methods

[print-object], page 27.

Direct slots

min [Slot]

Package common-lisp.

Type real

Initform 0

Readers [real-variable-summary-min], page 39.

Writers *This slot is read-only.*

q25 [Slot]

Type real

Initform 0

Readers [real-variable-summary-q25], page 39.

Writers *This slot is read-only.*

q50 [Slot]

Type real

Initform 0

Readers [real-variable-summary-q50], page 39.

Writers *This slot is read-only.*

mean [Slot]

Package alexandria.

Type real

Initform 0

Readers [real-variable-summary-mean], page 39.

Writers *This slot is read-only.*

`q75` [Slot]

Type `real`

Initform `0`

Readers [`real-variable-summary-q75`], page 40.

Writers *This slot is read-only.*

`max` [Slot]

Package `common-lisp`.

Type `real`

Initform `0`

Readers [`real-variable-summary-max`], page 39.

Writers *This slot is read-only.*

4.1.8 Classes

`data-frame` [Class]

Package [`data-frame`], page 13.

Source [`data-frame.lisp`], page 6.

Direct superclasses

[`data`], page 45.

Direct methods

- [`as-array`], page 26.
- [`check-column-compatibility`], page 42.
- [`dims`], page 27.
- [`drop-missing`], page 25.
- [`head`], page 25.
- [`initialize-instance`], page 27.
- [`missingp`], page 26.
- [`ncol`], page 27.
- [`nrow`], page 27.
- [`print-object`], page 27.
- [`replace-missing`], page 26.
- [`select`], page 28.
- [`tail`], page 26.

`data-vector` [Class]

Package [`data-frame`], page 13.

Source [`data-frame.lisp`], page 6.

Direct superclasses

[`data`], page 45.

Direct methods

- [`as-array`], page 26.
- [`dims`], page 27.
- [`print-object`], page 27.
- [`select`], page 27.

4.1.9 Types

`data-type` () [Type]

Package [`data-frame`], page 13.

Source [`data-frame.lisp`], page 6.

4.2 Internals

4.2.1 Special variables

`*data-frames*` [Special Variable]

Global list of all data frames

Package [`data-frame`], page 13.

Source [`defdf.lisp`], page 10.

`*max-digits*` [Special Variable]

Package [`data-frame`], page 13.

Source [`pprint.lisp`], page 7.

`*row-numbers-p*` [Special Variable]

Package [`data-frame`], page 13.

Source [`pprint.lisp`], page 7.

4.2.2 Macros

`define-data-subclass` (*class abbreviation*) [Macro]

Package [`data-frame`], page 13.

Source [`data-frame.lisp`], page 6.

`ensure-plist` (*pl*) [Macro]

Package [`data-frame`], page 13.

Source [`plist-aops.lisp`], page 11.

4.2.3 Ordinary functions

`2d-array-to-list` (*array*) [Function]

Convert an array to a list of lists

Package [`data-frame`], page 13.

Source [`pprint.lisp`], page 7.

`add-key!` (*ordered-keys key*) [Function]

Modify ORDERED-KEYS by adding KEY.

Package [`data-frame`], page 13.

Source [`data-frame.lisp`], page 6.

`add-keys` (*ordered-keys* **&rest** *keys*) [Function]

Package [`data-frame`], page 13.

Source [`data-frame.lisp`], page 6.

`aesthetic-string` (*thing*) [Function]
Return the string used to represent ‘thing‘ when printing aesthetically.

Package [`data-frame`], page 13.

Source [`formatted-output.lisp`], page 8.

`alist-data` (*class alist*) [Function]
Create an object of CLASS (subclass of DATA) from ALIST which contains key-column pairs.

Package [`data-frame`], page 13.

Source [`data-frame.lisp`], page 6.

`bit-variable-summary-count` (*instance*) [Reader]

Package [`data-frame`], page 13.

Source [`summary.lisp`], page 8.

Target Slot
[`count`], page 29.

`bit-variable-summary-desc` (*instance*) [Function]

Package [`data-frame`], page 13.

Source [`summary.lisp`], page 8.

`bit-variable-summary-length` (*instance*) [Function]

Package [`data-frame`], page 13.

Source [`summary.lisp`], page 8.

`bit-variable-summary-missing` (*instance*) [Function]

Package [`data-frame`], page 13.

Source [`summary.lisp`], page 8.

`bit-variable-summary-name` (*instance*) [Function]

Package [`data-frame`], page 13.

Source [`summary.lisp`], page 8.

`bit-variable-summary-p` (*object*) [Function]

Package [`data-frame`], page 13.

Source [`summary.lisp`], page 8.

`column-type-format` (*sequence*) [Function]
Return a format string for the most specific type found in sequence Use this for sequences of type T to determine how to format the column.

Package [`data-frame`], page 13.

Source [`pprint.lisp`], page 7.

`copy-bit-variable-summary` (*instance*) [Function]

Package [`data-frame`], page 13.

Source [`summary.lisp`], page 8.

`copy-factor-variable-summary` (*instance*) [Function]

Package [`data-frame`], page 13.

Source [`summary.lisp`], page 8.

`copy-generic-variable-summary` (*instance*) [Function]

Package [`data-frame`], page 13.

Source [`summary.lisp`], page 8.

`copy-ordered-keys` (*ordered-keys*) [Function]

Package [`data-frame`], page 13.

Source [`data-frame.lisp`], page 6.

`copy-real-variable-summary` (*instance*) [Function]

Package [`data-frame`], page 13.

Source [`summary.lisp`], page 8.

`copy-variable-summary%` (*instance*) [Function]

Package [`data-frame`], page 13.

Source [`summary.lisp`], page 8.

`df-env-p` (*df*) [Function]

Returns T if there is environment set-up for the data frame, or NIL if there isn't one.

Package [`data-frame`], page 13.

Source [`data-frame.lisp`], page 6.

`df-exists-p` (*s*) [Function]

Package [`data-frame`], page 13.

Source [`defdf.lisp`], page 10.

`distinct` (*column*) [Function]

Returns the number of distinct elements in COLUMN Useful for formatting columns for human output

Package [`data-frame`], page 13.

Source [`summary.lisp`], page 8.

`drop-na` (*df*) [Function]

Remove all rows from DF that are missing values. Convenience R-like function.

Package [`data-frame`], page 13.

Source [`missing.lisp`], page 11.

`ensure-arguments-alist` (*rest*) [Function]

Recognizes the following and converts them to an alist:

plist
alist
(plist)
(alist)
(data-frame)

Package [`data-frame`], page 13.

Source [`data-frame.lisp`], page 6.

`ensure-not-ratio` (*real*) [Function]
When REAL is a RATIO, convert it to a float, otherwise return as is. Used for printing.

Package [`data-frame`], page 13.

Source [`summary.lisp`], page 8.

`factor-variable-summary-desc` (*instance*) [Function]

Package [`data-frame`], page 13.

Source [`summary.lisp`], page 8.

`factor-variable-summary-element-count-alist` (*instance*) [Reader]

Package [`data-frame`], page 13.

Source [`summary.lisp`], page 8.

Target Slot
[`element-count-alist`], page 29.

`factor-variable-summary-length` (*instance*) [Function]

Package [`data-frame`], page 13.

Source [`summary.lisp`], page 8.

`factor-variable-summary-missing` (*instance*) [Function]

Package [`data-frame`], page 13.

Source [`summary.lisp`], page 8.

`factor-variable-summary-name` (*instance*) [Function]

Package [`data-frame`], page 13.

Source [`summary.lisp`], page 8.

`factor-variable-summary-p` (*object*) [Function]

Package [`data-frame`], page 13.

Source [`summary.lisp`], page 8.

`generic-variable-summary-desc` (*instance*) [Function]

Package [`data-frame`], page 13.

Source [`summary.lisp`], page 8.

`generic-variable-summary-element-count-alist` (*instance*) [Reader]

Package [`data-frame`], page 13.

Source [`summary.lisp`], page 8.

Target Slot
[`element-count-alist`], page 30.

`generic-variable-summary-length` (*instance*) [Function]

Package [`data-frame`], page 13.

Source [`summary.lisp`], page 8.

`generic-variable-summary-missing` (*instance*) [Function]

Package [`data-frame`], page 13.

Source [`summary.lisp`], page 8.

`generic-variable-summary-name` (*instance*) [Function]

Package [`data-frame`], page 13.

Source [`summary.lisp`], page 8.

`generic-variable-summary-p` (*object*) [Function]

Package [`data-frame`], page 13.

Source [`summary.lisp`], page 8.

`generic-variable-summary-quantiles` (*instance*) [Reader]

Package [`data-frame`], page 13.

Source [`summary.lisp`], page 8.

Target Slot
[`quantiles`], page 29.

`get-property` (*variable property*) [Function]
Return the PROPERTY of data variable VARIABLE

Package [`data-frame`], page 13.

Source [`properties.lisp`], page 11.

`get-type` (*x*) [Function]
Return the most specific type symbol for x

Package [`data-frame`], page 13.

Source [`utils.lisp`], page 5.

`invalid-df-name` (*s*) [Function]

Package [`data-frame`], page 13.

Source [`defdf.lisp`], page 10.

`key-index` (*ordered-keys key*) [Function]
Return the index for KEY.

Package [`data-frame`], page 13.

Source [`data-frame.lisp`], page 6.

`keys-count` (*ordered-keys*) [Function]
Number of keys.

Package [`data-frame`], page 13.

Source [`data-frame.lisp`], page 6.

`keys-vector` (*ordered-keys*) [Function]
Vector of all keys.

Package [`data-frame`], page 13.

Source [`data-frame.lisp`], page 6.

`make-bit-variable-summary` (**&key** *length missing name desc count*) [Function]

Package [`data-frame`], page 13.

Source [`summary.lisp`], page 8.

`make-data` (*class keys columns*) [Function]
Create a DATA object from KEYS and COLUMNS. FOR INTERNAL USE. Always creates a copy of COLUMNS in order to ensure that it is an adjustable array with a fill pointer. KEYS are converted to ORDERED-KEYS if necessary.

Package [`data-frame`], page 13.

Source [`data-frame.lisp`], page 6.

`make-factor-variable-summary` (**&key** *length missing name desc element-count-alist*) [Function]

Package [`data-frame`], page 13.

Source [`summary.lisp`], page 8.

`make-generic-variable-summary` (**&key** *length missing name desc quantiles element-count-alist*) [Function]

Package [`data-frame`], page 13.

Source [`summary.lisp`], page 8.

`make-ordered-keys` (**&key** *table*) [Function]

Package [`data-frame`], page 13.

Source [`data-frame.lisp`], page 6.

`make-real-variable-summary` (**&key** *length missing name desc min q25 q50 mean q75 max*) [Function]

Package [`data-frame`], page 13.

Source [`summary.lisp`], page 8.

`make-variable-summary%` (**&key** *length missing name desc*) [Function]

Package [`data-frame`], page 13.

Source [`summary.lisp`], page 8.

`max-decimal` (*sequence* **&optional** *max-digits*) [Function]
Return the maximum number of digits to the right of the decimal point in the numbers of SEQUENCE, equal to or less than MAX-DIGITS

Package [`data-frame`], page 13.

Source [`pprint.lisp`], page 7.

`max-width` (*sequence* **&optional** *max-width*) [Function]
Return the largest printed string size of the elements of SEQUENCE, equal to or less than MAX-WIDTH

Package [`data-frame`], page 13.

Source [`pprint.lisp`], page 7.

`monotonicp` (*column*) [Function]
Returns t if all elements of COLUMN are increasing monotonically Useful for detecting row numbers in imported data

Package [`data-frame`], page 13.

Source [`summary.lisp`], page 8.

`ordered-keys` (*keys*) [Function]
Create an ORDERED-KEYS object from KEYS (a sequence).

Package [`data-frame`], page 13.

Source [`data-frame.lisp`], page 6.

`ordered-keys-p` (*object*) [Function]

Package [`data-frame`], page 13.

Source [`data-frame.lisp`], page 6.

`ordered-keys-table` (*instance*) [Reader]

Package [`data-frame`], page 13.

Source [`data-frame.lisp`], page 6.

Target Slot
[`table`], page 44.

`plist-data` (*class plist*) [Function]
Create an object of CLASS (subclass of DATA) from PLIST which contains keys and columns, interleaved.

Package [`data-frame`], page 13.

Source [`data-frame.lisp`], page 6.

`print-count-and-percentage` (*stream count length*) [Function]
Print COUNT as is and also as a rounded percentage of

Package [`data-frame`], page 13.

Source [`summary.lisp`], page 8.

`print-table` (*rows* **&optional** *stream*) [Function]
Print ‘rows‘ as a nicely-formatted table.
Each row should have the same number of colums.
Columns will be justified properly to fit the longest item in each one. Example:
(print-table ’((1 :red something)
(2 :green more)))
=>
1 | RED | SOMETHING
2 | GREEN | MORE

Package [`data-frame`], page 13.

Source [`formatted-output.lisp`], page 8.

`printer-status` () [Function]
Print values of all the printer variables

Package [`data-frame`], page 13.

Source [`pprint.lisp`], page 7.

`real-variable-summary-desc` (*instance*) [Function]

Package [`data-frame`], page 13.

Source [`summary.lisp`], page 8.

`real-variable-summary-length` (*instance*) [Function]

Package [`data-frame`], page 13.

Source [`summary.lisp`], page 8.

`real-variable-summary-max` (*instance*) [Reader]

Package [`data-frame`], page 13.

Source [`summary.lisp`], page 8.

Target Slot
[`max`], page 31.

`real-variable-summary-mean` (*instance*) [Reader]

Package [`data-frame`], page 13.

Source [`summary.lisp`], page 8.

Target Slot
[`mean`], page 30.

`real-variable-summary-min` (*instance*) [Reader]

Package [`data-frame`], page 13.

Source [`summary.lisp`], page 8.

Target Slot
[`min`], page 30.

`real-variable-summary-missing` (*instance*) [Function]

Package [`data-frame`], page 13.

Source [`summary.lisp`], page 8.

`real-variable-summary-name` (*instance*) [Function]

Package [`data-frame`], page 13.

Source [`summary.lisp`], page 8.

`real-variable-summary-p` (*object*) [Function]

Package [`data-frame`], page 13.

Source [`summary.lisp`], page 8.

`real-variable-summary-q25` (*instance*) [Reader]

Package [`data-frame`], page 13.

Source [`summary.lisp`], page 8.

Target Slot
[`q25`], page 30.

`real-variable-summary-q50` (*instance*) [Reader]

Package [`data-frame`], page 13.

Source [`summary.lisp`], page 8.

Target Slot
[`q50`], page 30.

`real-variable-summary-q75` (*instance*) [Reader]

Package [`data-frame`], page 13.

Source [`summary.lisp`], page 8.

Target Slot
[`q75`], page 31.

`reverse-df` (*df*) [Function]
Return DF with columns in reverse order

Package [`data-frame`], page 13.

Source [`pprint.lisp`], page 7.

`set-property` (*symbol value property*) [Function]
Set the PROPERTY of SYMBOL to VALUE

Package [`data-frame`], page 13.

Source [`properties.lisp`], page 11.

`show-properties` (*df*) [Function]
Show the standard properties of the variables of the data frame DF Standard properties are 'label', 'type' and 'unit'

Package [`data-frame`], page 13.

Source [`properties.lisp`], page 11.

`show-symbols` (*pkg*) [Function]
Print all symbols in PKG Example: (show-symbols 'mtcars)

Package [`data-frame`], page 13.

Source [`defdf.lisp`], page 10.

`summarize-dataframe` (*data-frame* **&optional** *stream*) [Function]
Print a summary of DF to STREAM, using heuristics for better formatting

Package [`data-frame`], page 13.

Source [`summary.lisp`], page 8.

`summarize-factor-variable` (*column*) [Function]
Return an alist of factor/count pairs

Package [`data-frame`], page 13.

Source [`summary.lisp`], page 8.

`summarize-generic-variable` (*column*) [Function]
Return an object that summarizes COLUMN of a DATA-FRAME. Primarily intended for printing, not analysis, returned values should print nicely. This function can be used on any type of column, even one with mixed types

Package [`data-frame`], page 13.

Source [`summary.lisp`], page 8.

`summarize-real-variable` (*column*) [Function]
Return a summary for a float variable

Package [`data-frame`], page 13.

Source [`summary.lisp`], page 8.

`types-in-column` (*seq*) [Function]
Return a list of the types found in SEQ

Package [`data-frame`], page 13.

Source [`utils.lisp`], page 5.

`undef-env` (**&rest** *params*) [Function]
Remove one or more data frames from the environment
PARAMS: a list of SYMBOLs, each bound to an object of type DATA-FRAME.

Essentially reverses what DEFDF does. Returns the data frames that were removed. Don't use this if you have a data frame bound via DEFPARAMETER. Examples:
(undef 'mtcars 'vlcars)

Package [`data-frame`], page 13.

Source [`defdf.lisp`], page 10.

`variable-summary%-desc` (*instance*) [Reader]

Package [`data-frame`], page 13.

Source [`summary.lisp`], page 8.

Target Slot
[`desc`], page 44.

`variable-summary%-length` (*instance*) [Reader]

Package [`data-frame`], page 13.

Source [`summary.lisp`], page 8.

Target Slot
[`length`], page 44.

`variable-summary%-missing` (*instance*) [Reader]

Package [`data-frame`], page 13.

Source [`summary.lisp`], page 8.

Target Slot
[`missing`], page 44.

`variable-summary%-name` (*instance*) [Reader]

Package [`data-frame`], page 13.

Source [`summary.lisp`], page 8.

Target Slot
[`name`], page 44.

`variable-summary%-p` (*object*) [Function]

Package [`data-frame`], page 13.

Source [`summary.lisp`], page 8.

`weave` (**&rest** *lists*) [Function]
Return a list whose elements alternate between each of the lists 'lists'. Weaving stops when any of the lists has been exhausted.

Package [`data-frame`], page 13.

Source [`formatted-output.lisp`], page 8.

4.2.4 Generic functions

`%rename!` (*data new old*) [Generic Function]

Package [`data-frame`], page 13.

Methods

`%rename!` (*data new old*) [Method]
Substitute NEW, a SYMBOL, for OLD in DF

Useful when reading data files that have an empty or generated column name.

Example: (%substitute-key cars 'name :||) to replace an empty symbol with 'name

Source [`data-frame.lisp`], page 6.

`check-column-compatibility` (*data column*) [Generic Function]
Check if COLUMN is compatible with DATA.

Package [`data-frame`], page 13.

Source [`data-frame.lisp`], page 6.

Methods

`check-column-compatibility` ((*data* [`data-frame`], page 31) *column*) [Method]

`check-column-compatibility` ((*data* [`data`], page 45) *column*) [Method]

`column-length` (*column*) [Generic Function]
Return the length of column.

Package [`data-frame`], page 13.

Source [`summary.lisp`], page 8.

Methods

`column-length` ((*column* `vector`)) [Method]

`data-size` (*condition*) [Generic Reader]

Package [`data-frame`], page 13.

Methods

`data-size` ((*condition* [`large-data`], page 28)) [Reader Method]

Source [`conditions.lisp`], page 5.

Target Slot
[`data-size`], page 28.

`default-column-formats` (*array*) [Generic Function]

Package [`data-frame`], page 13.

Methods

`default-column-formats` ((*array* `simple-array`)) [Method]
Return a list of formatting strings for ARRAY
The method returns a set of default formatting strings using heuristics.

Source [`pprint.lisp`], page 7.

4.2.5 Conditions

`data-frame-exists` [Condition]
An attempt to redefine an existing data frame. Triggered if either the symbol is bound or the package exists.

Package [`data-frame`], page 13.

Source [`defdf.lisp`], page 10.

Direct superclasses
`error`.

Direct methods
[`data-frame`], page 25.

Direct slots

`data-frame` [Slot]
Initargs `:data-frame`
Readers [`data-frame`], page 25.
Writers *This slot is read-only.*

`missing-data` [Condition]
A variable has missing data, e.g. :na, nil

Package [`data-frame`], page 13.

Source [`conditions.lisp`], page 5.

Direct superclasses
`error`.

Direct slots

`name` [Slot]
Initargs `:name`

`data` [Slot]
Initargs `:data`

4.2.6 Structures

`ordered-keys` [Structure]
Representation of ordered keys.

TABLE maps keys to indexes, starting from zero.

Package [`data-frame`], page 13.

Source [`data-frame.lisp`], page 6.

Direct superclasses
`structure-object`.

Direct methods
- [`axis-dimension`], page 26.
- [`canonical-representation`], page 26.
- [`print-object`], page 27.

- [select], page 28.

Direct slots

`table` [Slot]

Type `hash-table`

Initform `(make-hash-table :test (function eq))`

Readers [ordered-keys-table], page 38.

Writers *This slot is read-only.*

`variable-summary%` [Structure]

Base class for summarizing variables. Not exported.

Package [data-frame], page 13.

Source [summary.lisp], page 8.

Direct superclasses

`structure-object`.

Direct subclasses

- [bit-variable-summary], page 29.
- [factor-variable-summary], page 29.
- [generic-variable-summary], page 29.
- [real-variable-summary], page 30.

Direct slots

`length` [Slot]

Package `common-lisp`.

Type `alexandria:array-index`

Initform `0`

Readers [variable-summary%-length], page 41.

Writers *This slot is read-only.*

`missing` [Slot]

Type `fixnum`

Initform `0`

Readers [variable-summary%-missing], page 41.

Writers *This slot is read-only.*

`name` [Slot]

Type `string`

Initform `""`

Readers [variable-summary%-name], page 41.

Writers *This slot is read-only.*

`desc` [Slot]

Type `string`

Initform `""`

Readers [variable-summary%-desc], page 41.

Writers *This slot is read-only.*

4.2.7 Classes

`data` [Class]

This class is used for implementing both data-vector and data-frame, and represents an ordered collection of key-column pairs. Columns are not assumed to have any specific attributes. This class is not exported.

Package [`data-frame`], page 13.

Source [`data-frame.lisp`], page 6.

Direct subclasses

- [`data-frame`], page 31.
- [`data-vector`], page 31.

Direct methods

- [`as-alist`], page 26.
- [`check-column-compatibility`], page 42.
- [`element-type`], page 27.

Direct slots

`ordered-keys` [Slot]

Type `data-frame::ordered-keys`

Initargs `:ordered-keys`

`columns` [Slot]

Type `vector`

Initargs `:columns`

Appendix A Indexes

A.1 Concepts

(Index is nonexistent)

A.2 Functions

%

(

2

A

B

C

D

E

F

G

H

I

K

M

N

O

P

R

S

T

U

V

W

A.3 Variables

*

C

D

E

K

L

M

N

O

Q

S

T

A.4 Data types