Package 'BufferedMatrix'

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Title A matrix data storage object held in temporary files

Author Benjamin Milo Bolstad <bmb@bmbolstad.com>

Maintainer Benjamin Milo Bolstad <bmb@bmbolstad.com>

Depends R (>= 2.6.0), methods

Description A tabular style data object where most data is stored outside main memory. A buffer is used to speed up access to data.

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Collate allGenerics.R BufferedMatrix.R as.BufferedMatrix.R createBufferedMatrix.R init.R

LazyLoad yes

biocViews Infrastructure

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as.BufferedMatrix *Check or Coerce object to BufferedMatrix*

Description

'as.BufferedMatrix' will coerce the supplied object into a BufferedMatrix. 'is.BufferedMatrix' checks whether the supplied argument is a BufferedMatrix.

Usage

```
as.BufferedMatrix(x, bufferrows=1, buffercols=1,directory=getwd())
is.BufferedMatrix(x)
```

Arguments

x	an R object
bufferrows	number of rows to be buffered if the row buffer is activated
buffercols	number of columns to be buffered
directory	path to directory where temporary files should be stored

Details

These functions are useful for converting between R matrix objects and BufferedMatrix objects.

Author(s)

B. M. Bolstad <bmb@bmbolstad.com>

BufferedMatrix-class *Class BufferedMatrix*

Description

This is a class representation of a buffered matrix (of numeric data). In this case data is primarily stored outide main memory in temporary files.

Objects from the Class

Objects can be created using the function createBufferedMatrix

Slots

rawBufferedMatrix**:** a pointer to an external structure used to access and store the matrix data.

rownames**:** rownames for the matrix.

colnames**:** colnames for the matrix.

Methods

ncol signature(object = "BufferedMatrix"): Returns the number of columns in the matrix

nrow signature(object = "BufferedMatrix"): Returns the number of rows in the matrix

dim signature(object = "BufferedMatrix"): Returns the dimensions of the matrix

buffer.dim signature(object = "BufferedMatrix"): Returns the number of columns and the number of rows to be stored in the buffer

set.buffer.dim signature(object = "BufferedMatrix"): Set the buffer size or resize it

[signature(object = "BufferedMatrix"): matrix accessor

[<- signature(object = "BufferedMatrix"): matrix replacer

show signature(object = "BufferedMatrix"): prints basic information about the BufferedMatrix out to screen

is.RowMode signature(object = "BufferedMatrix"): returns TRUE if the row buffer is active and FALSE otherwise.

is.ColMode signature(object = "BufferedMatrix"): returns TRUE if the row buffer is inactive and FALSE otherwise.

RowMode signature(object = "BufferedMatrix"): Activate the row buffer.

ColMode signature(object = "BufferedMatrix"): Deactivate the row buffer

duplicate signature(object = "BufferedMatrix"): Make a copy of the BufferedMatrix

prefix signature(object = "BufferedMatrix"): return the initial part of the string used for temporary files

directory signature(object = "BufferedMatrix"): return the location where temporary files are stored

filenames signature(object = "BufferedMatrix"): return the fully pathed filenames for each column in the matrix

ewApply signature(object = "BufferedMatrix"): apply a function elementwise

exp signature(object = "BufferedMatrix"): Compute the exponential elementwise of the matrix

sqrt signature(object = "BufferedMatrix"): Compute the square-root elementwise of the matrix

pow signature(object = "BufferedMatrix"): Compute x^power elementwise of the matrix

log signature(object = "BufferedMatrix"): Compute logarithm elementwise of the matrix

colMax signature(object = "BufferedMatrix"): Returns a vector containing maximums by column

rowMax signature(object = "BufferedMatrix"): Returns a vector containing maximums by row

colMeans signature(object = "BufferedMatrix"): Returns a vector containing means by column

rowMeans signature(object = "BufferedMatrix"): Returns a vector containing means by row

colMin signature(object = "BufferedMatrix"): Returns a vector containing minimums by column

rowMin signature(object = "BufferedMatrix"): Returns a vector containing minimums by row

colVars signature(object = "BufferedMatrix"): Returns a vector containing sample variances by column

rowVars signature(object = "BufferedMatrix"): Returns a vector containing sample variances by row

colSd signature(object = "BufferedMatrix"): Returns a vector containing sample standard deviations by column

rowSd signature(object = "BufferedMatrix"): Returns a vector containing sample standard deviations by row

colSums signature(object = "BufferedMatrix"): Returns a vector containing sum by column

rowSums signature(object = "BufferedMatrix"): Returns a vector containing sum by row

colMedians signature(object = "BufferedMatrix"): Returns a vector containing medians by column

rowMedians signature(object = "BufferedMatrix"): Returns a vector containing medians by row. Best only used when the matrix is in RowMode (otherwise it is extremely slow)

Max signature(object = "BufferedMatrix"): Returns the maximum of all elements in the matrix

Min signature(object = "BufferedMatrix"): Returns the minimum of all elements in the matrix

Var signature(object = "BufferedMatrix"): Returns the sample variance of all elements in the matrix

Sd signature(object = "BufferedMatrix"): Returns the sample standard deviations of all elements in the matrix

Sum signature(object = "BufferedMatrix"): Returns the sum of all elements in the matrix

mean signature(object = "BufferedMatrix"): Returns the mean of all elements in the matrix

colApply signature(object = "BufferedMatrix"): apply a function columnwise. Returns either a vector or BufferedMatrix.

rowApply signature(object = "BufferedMatrix"): apply a function row-wise. Returns either a vector or BufferedMatrix.

as.matrix signature(object = "BufferedMatrix"): coerce BufferedMatrix into a regular R matrix

subBufferedMatrix signature(object = "BufferedMatrix"): gets data from BufferedMatrix and returns it in another BufferedMatrix

rownames signature(object = "BufferedMatrix") : access the row names

colnames signature(object = "BufferedMatrix") : access the column names

rownames<- signature(object = "BufferedMatrix") : replace the row names

colnames<- signature(object = "BufferedMatrix") : replace the column names

dimnames signature(object = "BufferedMatrix") : Access the row and column names

dimnames signature(object = "BufferedMatrix") : Replace the row and column names

ReadOnlyMode signature(object = "BufferedMatrix") : Toggles the Read Only mode on and off

is.ReadOnlyMode signature(object = "BufferedMatrix") : Finds out if it is in Read Only Mode

memory.usage signature(object = "BufferedMatrix") : Give amount of RAM currently in use by BufferedMatrix object

disk.usage signature(object = "BufferedMatrix") : Give amount of disk space currently in use by BufferedMatrix object

as(matrix,BufferedMatrix)**:** Coerce matrix to BufferedMatrix.

as(BufferedMatrix,matrix)**:** Coerce the Buffered to matrix.

AddColumn**:** Add an additional column to the matrix. Will be all empty (set to 0)

MoveStorageDirectory**:** Move the temporary files used to store the matrix from one location to another

Author(s)

B. M. Bolstad <bmb@bmbolstad.com>

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createBufferedMatrix *createBufferedMatrix*

Description

Creates a Buffered Matrix object

Usage

```
createBufferedMatrix(rows, cols=0, bufferrows=1, buffercols=1,prefix="BM",directory=getwd())
```

Arguments

rows	Number of rows in the matrix
cols	Initial number of coulmns in the matrix
bufferrows	number of rows to be buffered if the row buffer is activated
buffercols	number of columns to be buffered
prefix	String to be used as start of name for any temporary files
directory	path to directory where temporary files should be stored

Author(s)

B. M. Bolstad <bmb@bmbolstad.com>

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