Package 'spam64'

October 14, 2022

Type Package

Title 64-Bit Extension of the SPArse Matrix R Package 'spam'

Version 2.9-0

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Description Provides the Fortran code of the R package 'spam'
with 64-bit integers. Loading this package together with the R package
spam enables the sparse matrix class spam to handle huge sparse matrices
with more than 2^31-1 non-zero elements.
Documentation is provided in Gerber, Moesinger and Furrer (2017) <doi:10.1016/j.cageo.2016.11.015>.

Suggests spam (== 2.9-0)

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URL https://git.math.uzh.ch/reinhard.furrer/spam

NeedsCompilation yes

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R topics documented:

`spam64-package` *64-bit extension for the SPArse Matrix Package spam*

Description

Provides the Fortran code of the R package **spam** with 64-bit integers. Loading this package together with the R package **spam** enables the sparse matrix class spam to handle huge sparse matrices with more than 2^31-1 non-zero elements.

Note

It is intended to use **spam64** together with **spam**. To avoid issues on 32-bit platforms we did not link the packages **spam** and **spam64** using dependencies.
Conversion between the structures happens when calling low-level functions and for some other selected operations.
Some **spam64** functions have been successfully tested with 64-bit matrices. However, we expect that some functions of **spam** do not work with 64-bit matrices (yet). Please do not hesitate to contact us via email or https://git.math.uzh.ch/reinhard.furrer/spam in case you would like to use a spam function with 64-bit matrices that is not working properly in the current version.

Author(s)

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References

F. Gerber, K. Moesinger, R. Furrer (2017), Extending R packages to support 64-bit compiled code: An illustration with spam64 and GIMMS NDVI3g data, Computer & Geoscience 104, 109-119, https://doi.org/10.1016/j.cageo.2016.11.015.

spam64 uses the R package dotCall64 to call compiled code: F. Gerber, K. Moesinger, R. Furrer (2018), dotCall64: An R package providing an efficient interface to compiled C, C++, and Fortran code supporting long vectors. SoftwareX, 7, 217-221, https://doi.org/10.1016/j.softx.2018.06.002.

Examples

```
library("spam")
library("spam64")

tiny <- spam(1)
pad(tiny) <- c(3,2^32)
tiny
```

```
str(tiny)     # tiny matrix big time

print(A <- spam_random(3))
options(spam.force64 = TRUE)    # forcing 64-bit structure
print( B <- spam_random(3))
A+B

options(spam.force64 = FALSE)
B          # No operations, structure is preserved
A+B        # Lowlevel operation, structure is adapted
```

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