Package ‘rSymPy’

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Title R Interface to SymPy Computer Algebra System
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R topics documented:

Sym ................................................................. 1
sympy ............................................................... 2

Index

| Sym | sympy variables |

Description

Create and manipulate sympy variables.

Usage

Sym(..., retclass = c("Sym", "character"))
Arguments

... Variable name as a string by which sympy should identify this variable

retclass Class of object to be returned.

Details

An object of class "Sym" is internally a sympy character string. One can combine such objects using the Math and Ops R operators (see help(Math) and help(Ops) for a list). Also the following are supported: as.character.Sym, as.expression.Sym, Ops.Sym, Math.Sym, print.Sym, deriv.Sym, Limit, Var.Sym, solve.Sym, Integrate, t.Sym, List, Matrix, Var, Zero, Zeros and Eye.

Value

As in retclass.

See Also

sympy

Examples

## Not run:
x <- Var("x")
x+x

## End(Not run)

Description

Interface to the sympy computer algebra system.

Usage

sympy(..., retclass = c("character", "Sym", "NULL"), debug = FALSE)

Arguments

... Character strings which are pasted together with space separators. The resulting string is passed to sympy.

retclass Character string representing the class of the output or the string "NULL" to mean no output.

debug Logical. If TRUE then additional debugging info is shown.
sympy

Details

The sympy function passes an input string to SymPy and returns the output. The first time sympy is
invoked in a session it also starts up SymPy by invoking sympystart (which sets the appropriate
paths, calls jythonstart and then imports sympy). As a result the first invocation of sympy can be
expected to much slower than subsequent ones. jythonStart creates a variable .Jython which is
stored in the global environment holding the connection information to the SymPy/Jython session.

Internally if the argument output=TRUE, the default, input character string is prefaced with __Rsympy=
so if such preface would cause an error then ensure that the argument output=FALSE.

Note that error messages from SymPy appear on the shell/batch console, not on the R console. In
the case of an error message the returned value may be wrong.

Value

The character string produced from SymPy.

Note

SymPy is run under Jython, the Java version of Python.

References

http://code.google.com/p/sympy/, http://www.jython.org/Project/

Examples

## not run
# these examples are mostly from: http://wiki.sympy.org/wiki/Tutorial

# create a SymPy variable called x
sympy("var('x')")
sympy("y = x*x")
sympy("y")

sympy("limit(1/x, x, oo)")

# the next line fails under jython even without R
# and seems to corrupt the rest of the session
# sympy("(1/cos(x)).series(x, 0, 10)"")
sympy("diff(sin(RJxIL xL 1)")
sympy("diff(sin(2*x), x, 2)")

sympy("integrate(exp(-x), (x, 0, oo))")

sympy("xr = Symbol('xr', real=True")
sympy("exp(I*xr).expand(complex=Trave")

# Matrices are stored row by row (unlike R matrices)
cat(sympy("A = Matrix([[1,x], [y,1]])", "\n")
cat(sympy("A**2")", "\n")
## end(Not run)
Index

*Topic symbolmath
   Sym, 1
   sympy, 2
   as.character.Sym (Sym), 1
   as.expression.Sym (Sym), 1
   deriv.Sym (Sym), 1
   Eye (Sym), 1
   Integrate (Sym), 1
   jythonStart (sympy), 2
   Limit (Sym), 1
   List (Sym), 1
   Math.Sym (Sym), 1
   Matrix (Sym), 1
   Ops.Sym (Sym), 1
   print.Sym (Sym), 1
   solve.Sym (Sym), 1
   Sym, 1
   sympy, 2, 2
   sympyStart (sympy), 2
   t.Sym (Sym), 1
   Var (Sym), 1
   Zero (Sym), 1
   Zeros (Sym), 1