

Package ‘nlopt’

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Type Package

Title Call Optimization Solvers with .nl Files

Version 0.1.1

Description The purpose of this library is to call different optimization solvers (such as Gonzalez Rodriguez et al. (2022) <doi:10.1007/s10898-022-01229-w>, Tawarmalani and Sahinidis (2005) <doi:10.1007/s10107-005-0581-8>, and Byrd et al. (2006) <doi:10.1007/0-387-30065-1_4>) to solve problems given by a standard nl file.

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check_solver *Checks if solver exists*

Description

Function that checks if the solver exists and it can be run without any issue

Usage

```
check_solver(solver)
```

Arguments

solver name of the solver (it has to be in the PATH)

Value

TRUE if the solver exists and FALSE otherwise

Examples

```
check_solver(solver = "ipopt")
```

example_sol_file *Returns an example.sol file*

Description

Function that returns an example.sol file

Usage

```
example_sol_file()
```

Value

An example.sol file

Examples

```
example_sol_file()
```

`get_available_options` *Gets the available options for a solver*

Description

Function that gets a vector with all the available options for a solver

Usage

```
get_available_options(solver)
```

Arguments

`solver` name of the solver (it has to be in the PATH)

Value

vector with all the available options for a solver

Examples

```
get_available_options(solver = "ipopt")
```

`get_minlplib_problem` *Gets problem from MINLPLib*

Description

Function that gets the corresponding problem from MINLPLib library

Usage

```
get_minlplib_problem(name)
```

Arguments

`name` name of the problem

Value

TRUE if there is no error getting the problem and FALSE otherwise

Examples

```
get_minlplib_problem(name = "alkyl")
```

optimize	<i>Optimizes the problem</i>
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Description

Function that calls the corresponding solver with custom options to solve the problem given by the .nl file

Usage

```
optimize(solver, file, options)
```

Arguments

solver	name of the solver (it has to be in the PATH)
file	.nl file with the optimization problem. If the name of the file starts with MINLPLib:: then the problem will be downloaded from MINLPLib library
options	list with the options for the solver

Value

list with a string of the output given by the solver (output), the optimal value of the problem (objective), the status returned by the solver (status), the optimal primal solution (primal_solution), and the optimal dual solution (dual_solution)

Examples

```
optimize(solver = "ipopt", file = "MINLPLib::alkyl", options=list(max_cpu_time=300, outlev=3))
```

print_available_options

Prints the available options of the solver

Description

Function that prints the available options of the solver

Usage

```
print_available_options(solver)
```

Arguments

solver	name of the solver (it has to be in the PATH)
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Value

No return value

Examples

```
print_available_options(solver = "ipopt")
```

<code>print_help</code>	<i>Prints the help of the solver</i>
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Description

Function that prints the help of the solver

Usage

```
print_help(solver)
```

Arguments

`solver` name of the solver (it has to be in the PATH)

Value

No return value

Examples

```
print_help(solver = "ipopt")
```

<code>print_solver_version</code>	<i>Prints the version of the solver</i>
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Description

Function that prints the version of the solver

Usage

```
print_solver_version(solver)
```

Arguments

`solver` name of the solver (it has to be in the PATH)

Value

No return value

Examples

```
print_solver_version(solver = "ipopt")
```

read_sol_file	<i>Reads the .sol file</i>
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Description

Function that reads the corresponding .sol file

Usage

```
read_sol_file(solfile)
```

Arguments

solfile .sol file with the solution

Value

list with a string of the output given by the solver (output), the optimal value of the problem (objective), the status returned by the solver (status), the optimal primal solution (primal_solution), and the optimal dual solution (dual_solution)

Examples

```
read_sol_file(solfile = "example.sol")
```

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