Package: sundials (via r-universe)

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Type Package

Title Vendored 'SUNDIALS' Solver Suite for Linking by Other Packages

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Description Bundles the pure-C part of the 'SUNDIALS' suite (CVODE, CVODES, ARKODE, IDA, IDAS and KINSOL with the serial vector and the dense, band and iterative linear solvers) and builds it into a static library. Other packages use it by adding 'sundials' to 'LinkingTo' for the headers and calling sundials::LdFlags() from their 'Makevars' to link the library. No 'Fortran', 'MPI', GPU or external third-party-library modules are included. 'SUNDIALS' is described in Hindmarsh et al. (2005) <doi:10.1145/1089014.1089020>.

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URL https://github.com/Konrad1991/sundials, https://computing.llnl.gov/projects/sundials

BugReports https://github.com/Konrad1991/sundials/issues

Encoding UTF-8

NeedsCompilation yes

SystemRequirements GNU make

Suggests tinytest, Rcpp, deSolve

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`sundials-package` *Vendored SUNDIALS solver suite for linking by other packages*

Description

Bundles the pure-C part of the SUNDIALS suite (CVODE, CVODES, ARKODE, IDA, IDAS, KINSOL, with the serial N_Vector and the dense, band and iterative linear solvers) and builds it into a static library, '`libsundials.a`', under the package's '`lib`' directory. Other packages link it with `LinkingTo: sundials` (for the headers) and `LdFlags()` in their '`Makevars`'.

No Fortran, MPI, GPU or external third-party-library modules are included. The build is double precision with 64-bit indices.

References

Hindmarsh, A. C., Brown, P. N., Grant, K. E., Lee, S. L., Serban, R., Shumaker, D. E., Woodward, C. S. (2005). SUNDIALS: Suite of Nonlinear and Differential/Algebraic Equation Solvers. *ACM Transactions on Mathematical Software*, 31(3), 363-396. doi:10.1145/1089014.1089020

`https://computing.llnl.gov/projects/sundials`

See Also

`LdFlags`

inlineCxxPlugin — *Rcpp plugin for the vendored SUNDIALS library*

Description

Lets `Rcpp::sourceCpp` and `Rcpp::cppFunction` compile against the SUNDIALS headers and static library shipped in this package. Not called directly; it is picked up by the attribute

```
// [[Rcpp::depends(sundials)]]
```

Usage

```
inlineCxxPlugin(...)
```

Arguments

`...`	Ignored; present for compatibility with the plugin interface.

Value

A list with element `env` holding `PKG_CPPFLAGS` (the include flag) and `PKG_LIBS` (the linker flags from `LdFlags`).

See Also

`LdFlags`, `CFlags`

Examples

```
str(inlineCxxPlugin())
```

LdFlags — *Build flags for the vendored SUNDIALS library*

Description

`LdFlags` prints `-L<libdir> -lsundials` for linking against the static SUNDIALS library shipped in this package. `CFlags` prints `-I<includedir>` for its headers; this is only needed outside the `LinkingTo` mechanism.

Usage

```
LdFlags()

CFlags()
```

Details

In the dependent package's `DESCRIPTION`:

```
LinkingTo: sundials
```

In its `src/Makevars` and `src/Makevars.win`:

```
PKG_LIBS = $(shell "$(R_HOME)/bin/Rscript" -e "sundials::LdFlags()")
```

The vendored build is double precision with 64-bit indices (`sunindextype = int64_t`) and contains no Fortran, MPI, GPU or external-library modules.

Value

The flag string, returned invisibly and also printed to `stdout` so it can be captured by `$(shell ...)` in a Makevars file.

Examples

```
LdFlags()
CFlags()
```

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