How to run the `rodeo` examples

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1 Installation of R and auxiliary tools

Extensive help on the installation of R and related utilities can be found on `https://cran.r-project.org/doc/manuals/r-release/R-admin.html`. Please consult this document if the following short instructions are insufficient.

1.1 Install R

Make sure that you really need to install R. If this is the case (first install or upgrade from an old version), go to `https://cloud.r-project.org/` and follow the download links in the box at the top of the page. Linux users probably want to use a package manager instead.

1.2 Install auxiliary tools

Although the `rodeo` package itself does not need compilation, it requires the respective compile/build tools when it is used. This is because of `rodeo`'s built-in Fortran code generator. Before installing any tools, check whether this is necessary. For example, you could enter the command

```
gfortran --version
```

at a terminal. If this succeeds, i.e. shows a version info, the required tools may already be there. Otherwise, see below:

On a Linux system, one typically needs to install the GNU compiler collection, including `gfortran`. See the section 'Essential and useful other programs under a Unix-alike' on `https://cran.r-project.org/doc/manuals/r-release/R-admin.html`.

Windows users need to install the so-called `Rtools` from `https://cran.r-project.org/bin/windows/Rtools`. Chose the version that is compatible with the installed R version. Please read the section 'The-Windows-toolset' (currently appendix D) on `https://cran.r-project.org/doc/manuals/r-release/R-admin.html` to circumvent typical pitfalls during and after installation. I recommend to install into a directory whose name does not contain blanks. If the automatic installer has an option to edit the PATH environment variable, let it do so.

2 After the installation

On Windows, make sure that the directory with the Rtools is listed at the very beginning of your PATH environment variable. The installation folder of R itself should also be included in PATH.

The two commands

```
R CMD SHLIB --help
gfortran --help
```

should work now when entered in a terminal, e.g. bash (on Linux) or CMD on Windows. If these commands don't work, please check whether

- the necessary software (Sect. 1) was actually installed.
- the installation directories are properly listed in the PATH variable. Please make sure that
  - the listed paths do actually exist in the file system.
  - the order of the paths is the same as recommended in section 'The-Windows-toolset' (currently appendix D) of https://cran.r-project.org/doc/manuals/r-release/R-admin.html.

3 Installation of R-packages

The following packages are required to run the examples:

rodeo	The code generator
deSolve	Numerical solvers for differential equations
readxl	Reads spreadsheet data (.xlsx files)
lhs	Latin hypercube sampling methods

The packages are all available on CRAN (https://cran.r-project.org/) and installation is most conveniently done from within R, using

```
install.packages(c("rodeo", "deSolve", "readxl", "lhs"))
```

The installation may take some time because dependent packages are installed along with the above-mentioned ones.

The latest development version of rodeo can also be installed directly from the source code repository using the devtools package.

```
library("devtools")
install_github("dkneis/rodeo")
```