



DEVELOPING R PACKAGES

Why Check an R Package?

Aimée Gott

Education Practice Lead, Mango Solutions



What Should You Check?

An R package check includes:

- If the package can be installed
- Description information is correct
- Dependencies
- Code syntax errors
- Documentation is complete
- Tests run
- Vignettes build



Running a Check

```
check("simutils")
```



Errors, Warnings, and Notes

```
...
* DONE

Status: 1 ERROR
See
'C:/Users/ncrane/AppData/Local/Temp/RtmpWwK0AG/simutils.R
check/00check.log'
for details.

R CMD check results
1 error | 0 warnings | 0 notes
checking for file 'simutils/DESCRIPTION' ... ERROR
Required field missing or empty:
'License'
```



DEVELOPING R PACKAGES

Let's practice!



DEVELOPING R PACKAGES

Errors, Warnings and Notes

Nic Crane

Data Science Consultant, Mango Solutions



Package Dependencies

```
check("simutils")
```

```
...  
Updating simutils documentation  
Loading simutils  
Error in (function (dep_name, dep_ver = NA, dep_compare = NA)  :  
  Dependency package sasMap not available.  
...
```



Documentation

```
check("simutils")
```

```
...  
* checking Rd \usage sections ... WARNING  
Undocumented arguments in documentation object 'sample_from_data'  
  'replace'
```

Functions with \usage entries need to have the appropriate \alias entries, and all their arguments documented.

The \usage entries must correspond to syntactically valid R code. See chapter 'Writing R documentation files' in the 'Writing R Extensions' manual.

```
...
```


Documentation

```
check("simutils")
```

```
...
* checking examples ... ERROR
Running examples in 'simutils-Ex.R' failed
The error most likely occurred in:

> base::assign(".ptime", proc.time(), pos = "CheckExEnv")
> ### Name: sample_from_data
> ### Title: Sample from data
> ### Aliases: sample_from_data
>
> ### ** Examples
>
> sample_from_data(airuality, size=10)
Error in sample_from_data(airuality, size = 10) :
  object 'airuality' not found
...

```



PDF Documentation

```
check("simutils", manual = TRUE)
```

```
...  
pdflatex not found! Not building PDF manual or vignettes.  
If you are planning to release this package, please run a check with manual  
and vignettes beforehand.  
...
```



Tests

```
check("simutils")
```

```
...  
* checking tests ...  
  Running 'testthat.R'  
Warning message:  
running command '"C:/PROGRA~1/R/R-34~1.2/bin/x64/R" CMD BATCH --vanilla  
"testthat.R" "testthat.Rout"' had status 1  
ERROR  
Running the tests in 'tests/testthat.R' failed.  
...
```



DEVELOPING R PACKAGES

Let's practice!



DEVELOPING R PACKAGES

Differences in Package Dependencies

Aimée Gott

Education Practice Lead, Mango Solutions

The Depends Field

```
search()
```

```
[1] ".GlobalEnv"      "tools:rstudio"    "package:stats"
[4] "package:graphics" "package:grDevices" "package:utils"
[7] "package:datasets" "package:methods"  "Autoloads"
[10] "package:base"
```

```
library(tidyverse)
search()
```

```
[1] ".GlobalEnv"      "package:dplyr"     "package:purrr"
[4] "package:readr"    "package:tidyr"     "package:tibble"
[7] "package:ggplot2"  "package:tidyverse" "tools:rstudio"
[10] "package:stats"    "package:graphics"  "package:grDevices"
[13] "package:utils"    "package:datasets"  "package:methods"
[16] "Autoloads"        "package:base"
```



Imports

```
Package: simutils
Title: Simulation Analysis Tools
Version: 1.0.0.0
Authors@R: c(
  person("Nic", "Crane", email = "ncrane@mango-solutions.com", role = c("aut", "cre")),
  person("Aimee", "Gott", email = "agott@mango-solutions.com", role = c("aut", "ctb")))
Description: A series of tools for simulation analysis used for learning about
distributions.

Depends:
  R (>= 3.4.2)

License: GPL-2
LazyData: true
RoxygenNote: 6.0.1
Imports: dplyr,
  purrr
Suggests: testthat,
  knitr,
  rmarkdown
VignetteBuilder: knitr
```



Suggests

```
Package: simutils
Title: Simulation Analysis Tools
Version: 1.0.0.0
Authors@R: c(
  person("Nic", "Crane", email = "ncrane@mango-solutions.com", role = c("aut", "cre")),
  person("Aimee", "Gott", email = "agott@mango-solutions.com", role = c("aut", "ctb")))
Description: A series of tools for simulation analysis used for learning about
  distributions.
Depends:
  R (>= 3.4.2)
License: GPL-2
LazyData: true
RoxygenNote: 6.0.1
Imports: dplyr,
  purrr
Suggests: testthat,
  knitr,
  rmarkdown
VignetteBuilder: knitr
```




Adding a Dependency

```
use_package("dplyr") ## adds to imports
```

```
use_package("ggplot2", "suggests") ## adds to suggests
```



DEVELOPING R PACKAGES

Let's practice!



DEVELOPING R PACKAGES

Building Packages with Continuous Integration

Nic Crane

Data Science Consultant, Mango Solutions



Building with devtools

Build the source:

```
build("simutils")
```

Build the binary:

```
build("simutils", binary = TRUE)
```



What is Continuous Integration?

- Automatically runs checks when code changed
- Used with version control
- Runs every time you make an update



Adding Continuous Integration for a Package

```
use_travis("simutils")
```



DEVELOPING R PACKAGES

Let's practice!