Packages

Are you struggling?

Plan for today

- Brief recap
- Packages

Recap of using variables

- Most of the time, we want to do more than add, subtract, multiply etc.
- We want to act on our variables. We do this with operators & functions
 - Each function has a unique name
 - Each function requires some input, and the function can be modified using arguments
 - *Each function* will produce an output
- Remember:
 - objects are *nouns*
 - functions & operators are verbs
 - arguments are *adverbs*

Recap of using variables

Where do you find functions?

Some exist in R by default

```
o t.test()
o cor()
o scale()
```

Lots of people all over the world write their own functions. And they (rightly!) think it's useful to share these functions.

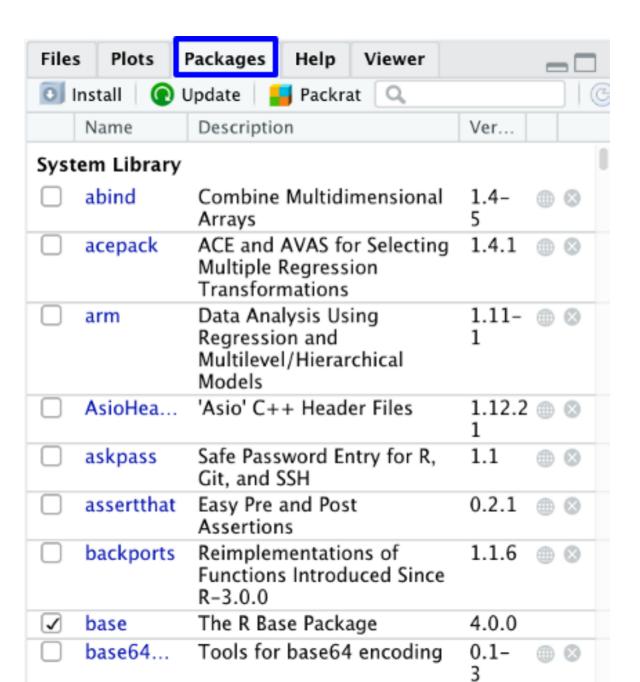
Packages

What is a package?

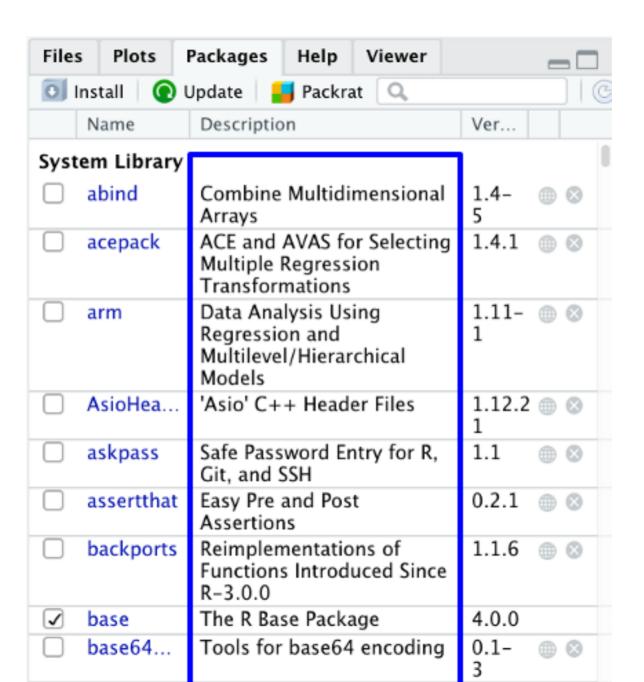
- A collection of functions and datasets
- Open source

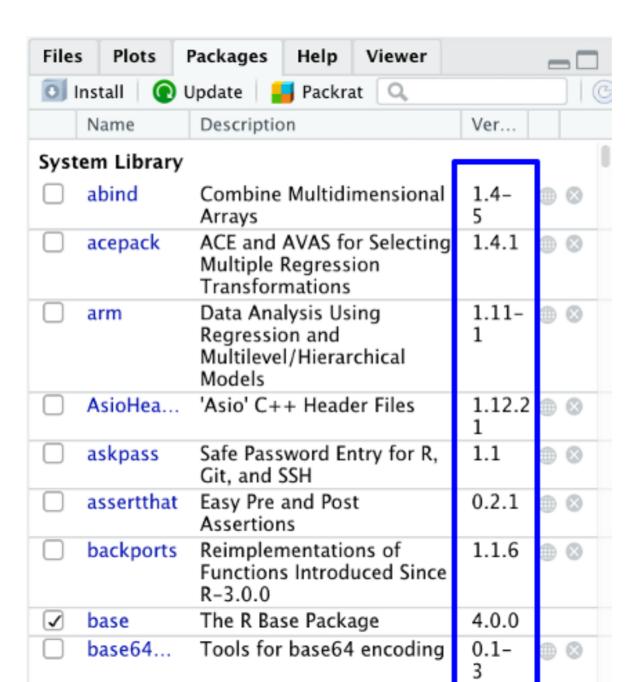
Packages are the reason R is so powerful!

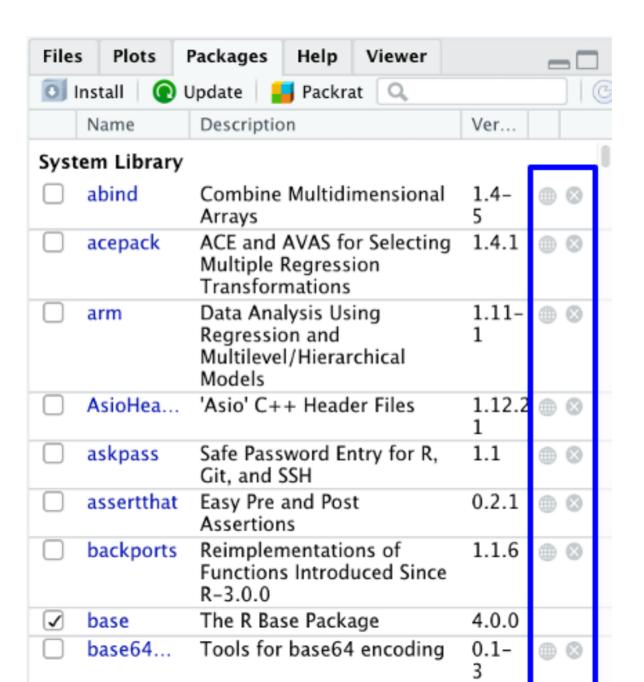
• While you can definitely write your own functions, most of what you need to do someone else has already done for you!

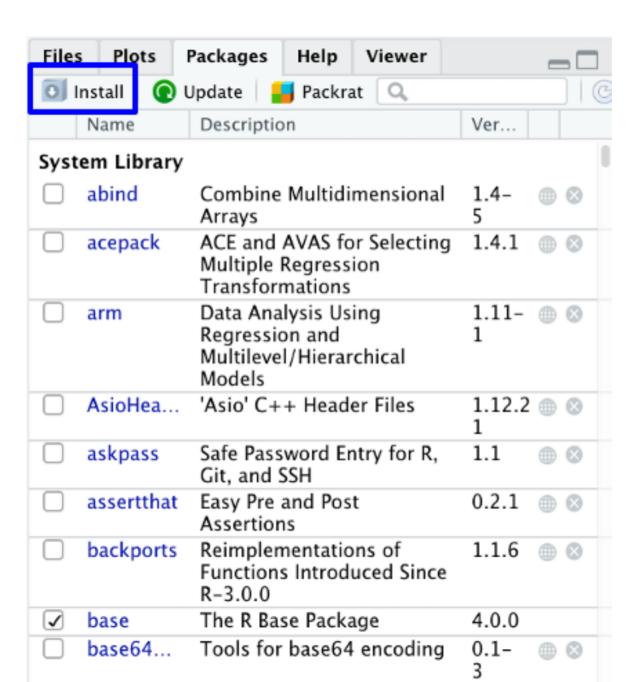


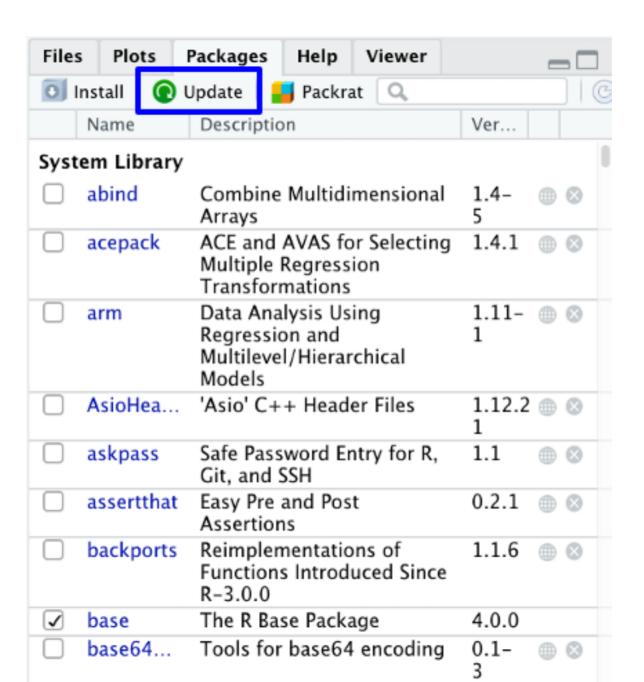
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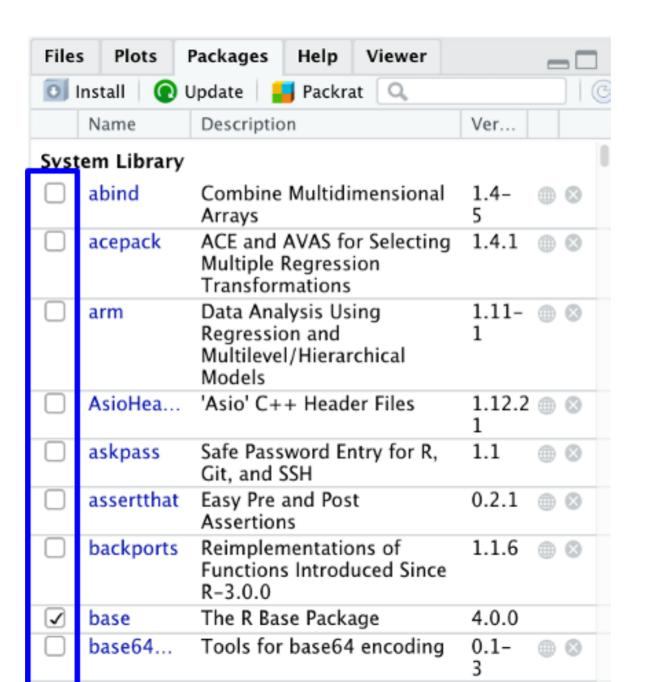












How do I get packages?

Packages can be downloaded from the CRAN (Comprehensive R Archive Network)

You will do this from inside R

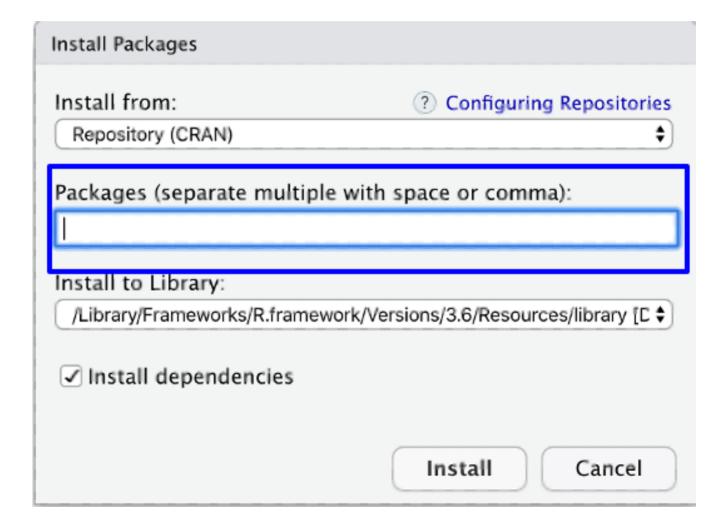
Need to be connected to the internet!

2 ways to install packages

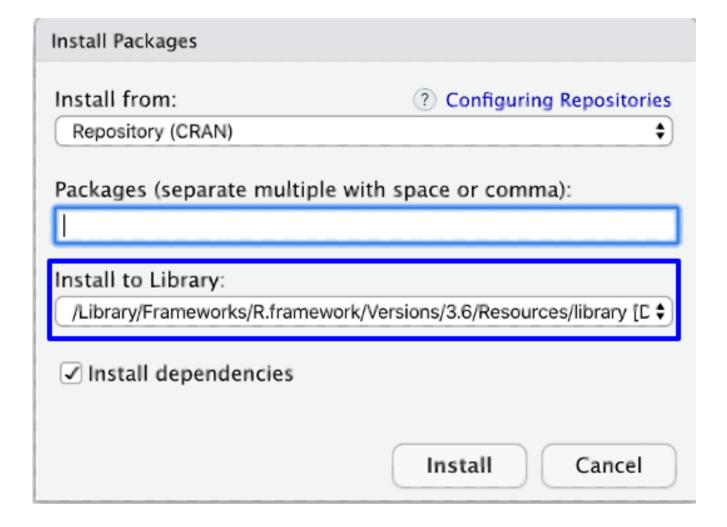
- 1. Install button in the Packages tab
- 2. R Code

Either way, you need to know the name of the package

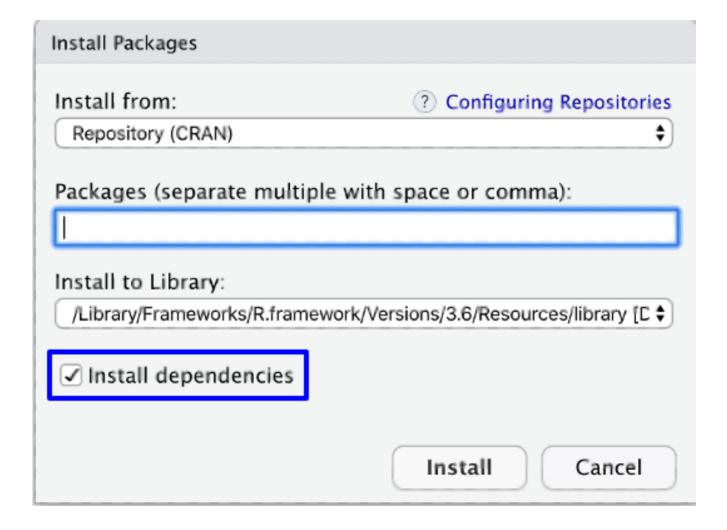
Install Button



Install Button



Install Button



R code to install packages

install.packages("psych")

Packages

INSTALLING

- Downloading the package and saving it to your computer
- Like installing Microsoft Word on your computer
- Do this **ONCE**

LOADING

- Like opening Microsoft Word to write a paper
- Once a package is loaded, you can use all of it's functions and datasets are ready to use
- You need to do this **EVERY TIME** you open a new R session

2 ways to load packages

- 1. Checkbox in the packages tab (not recommended)
- 2. R code

Either way, you need to know the name of the package

R code to load packages

library(psych)

Dependencies

```
library(lme4)
Loading required package: Matrix
Loading required package: Rcpp
```

Uses functions from other packages

Installed automatically

Loaded automatically

Help! (again)

Ways to find documentation:

?psych -- opens documentation specific to that pacakge or function

??psych -- searches for this in all documentation (that you have installed and loaded)

To find a package that does what you need: Google

Summary

Packages are a collection of functions and data sets

- 1. You **install** the package once; must be connected to the internet
- 2. You **load** the package every time you use it; do not need to be connected to the internet

How do you find the function you need? How do you now what package it's in?

- G-o-o-g-l-e!
- "structural equation modeling in R"

How do you know how to use the function? What are the function's arguments?

- Help documentation in R
- ? function.name