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

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

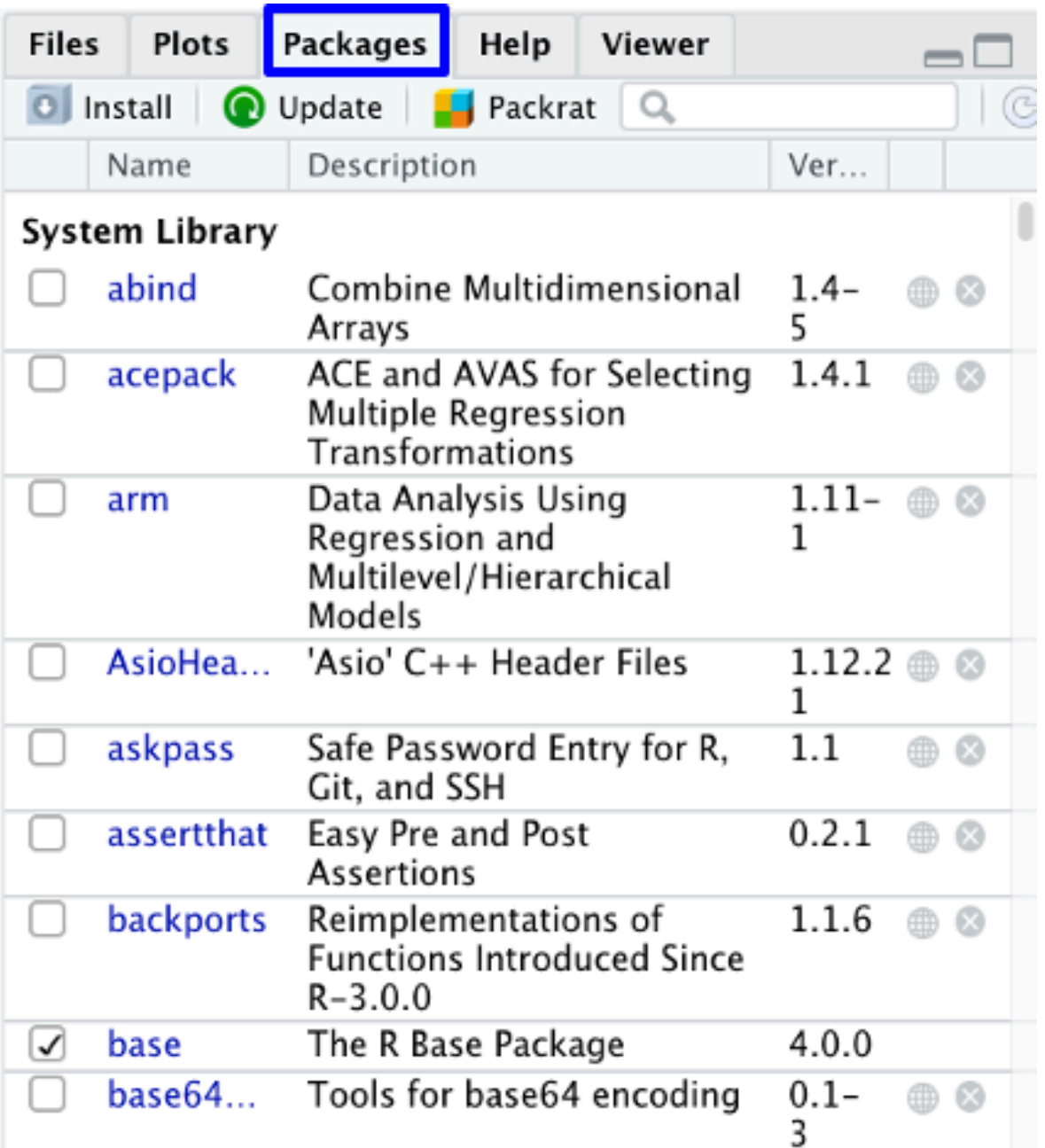
Packages

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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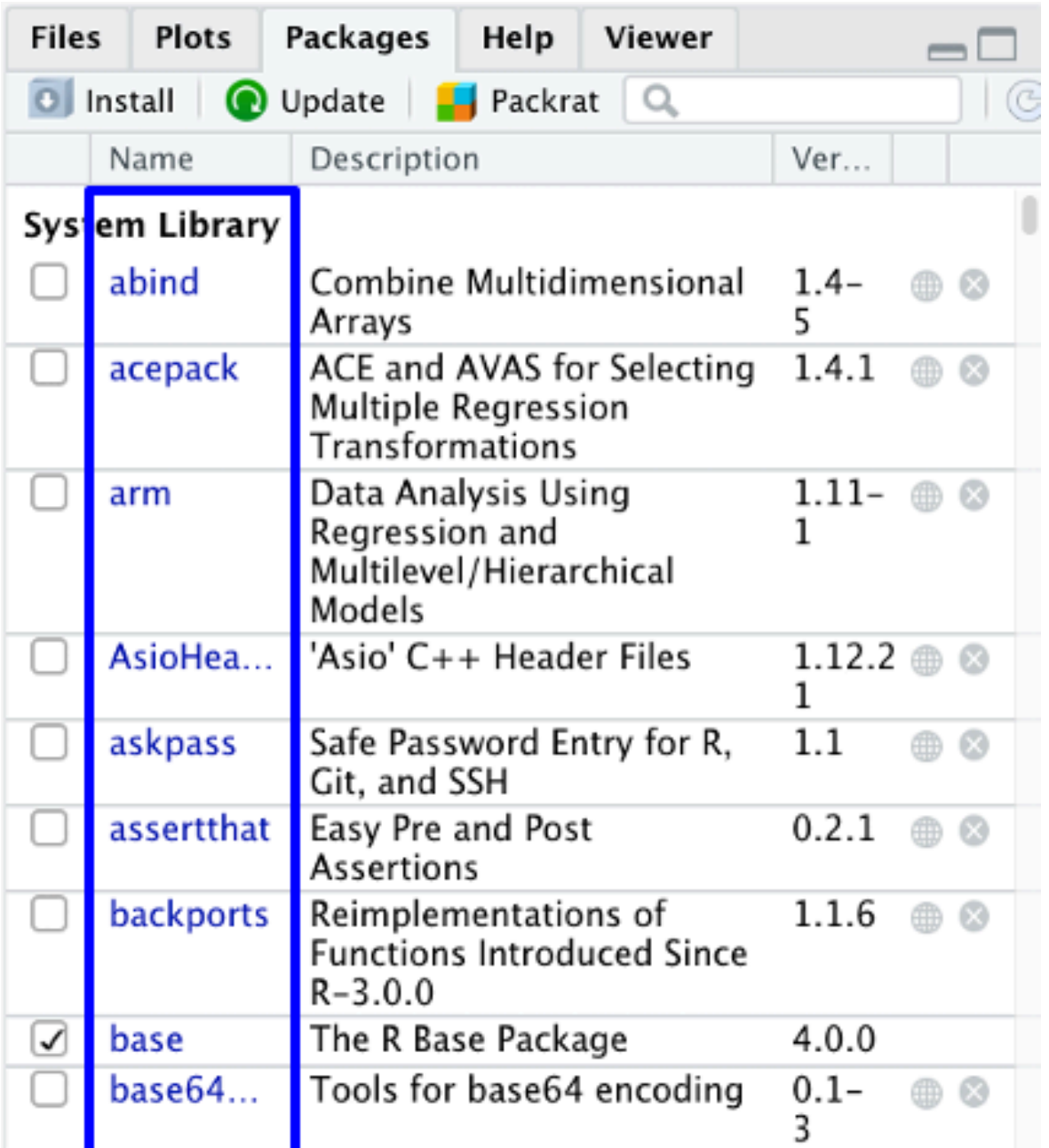
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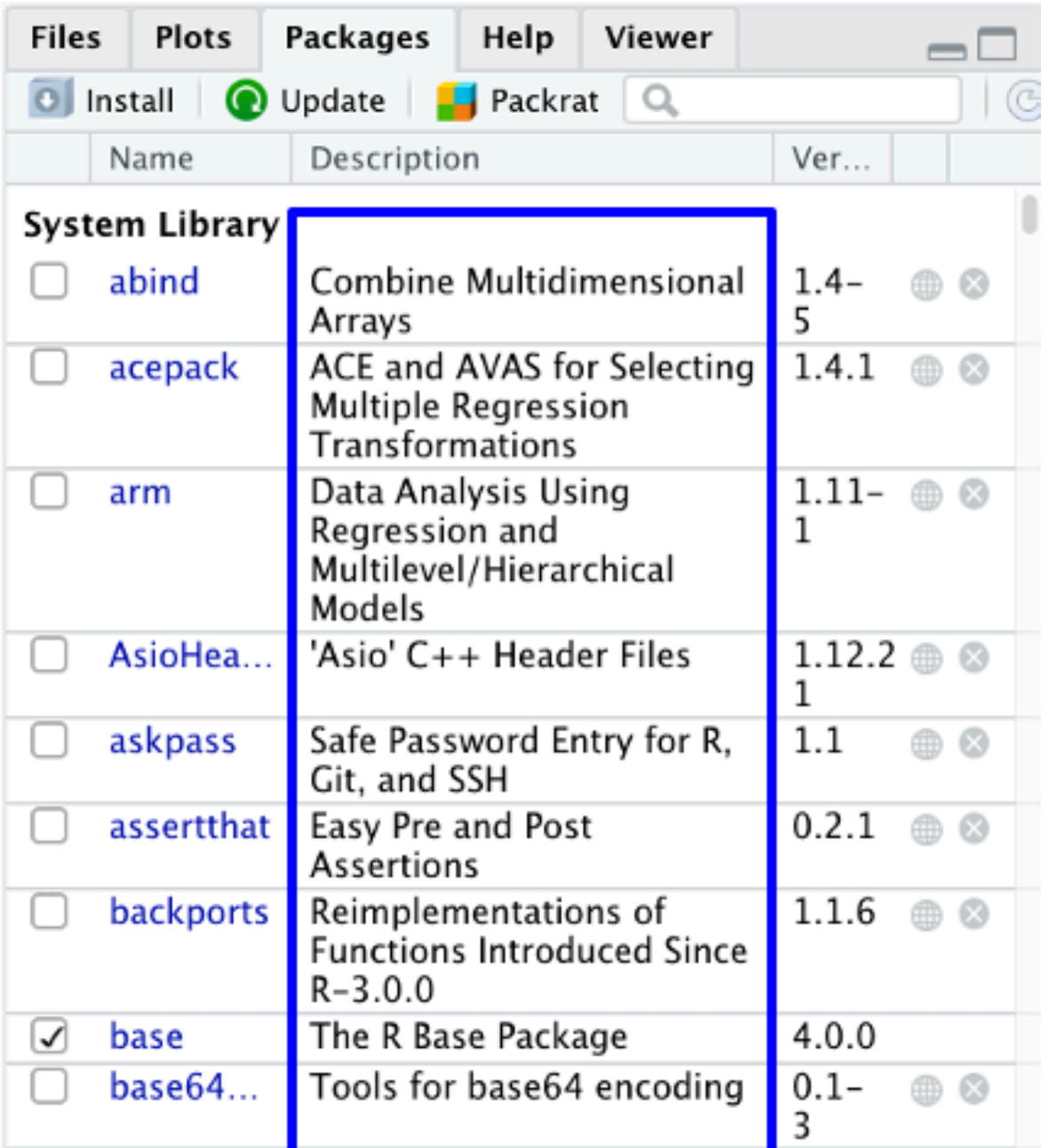
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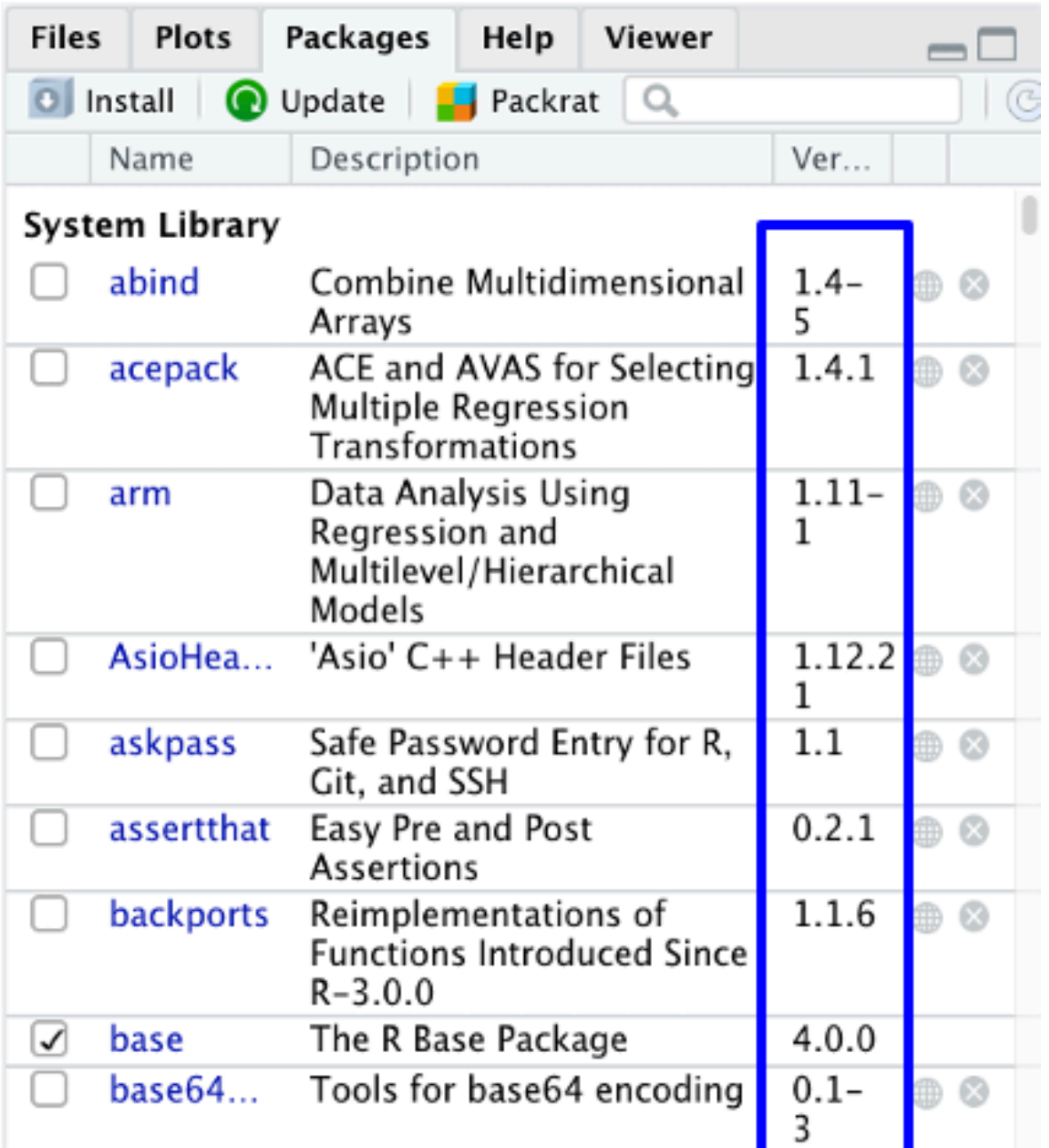
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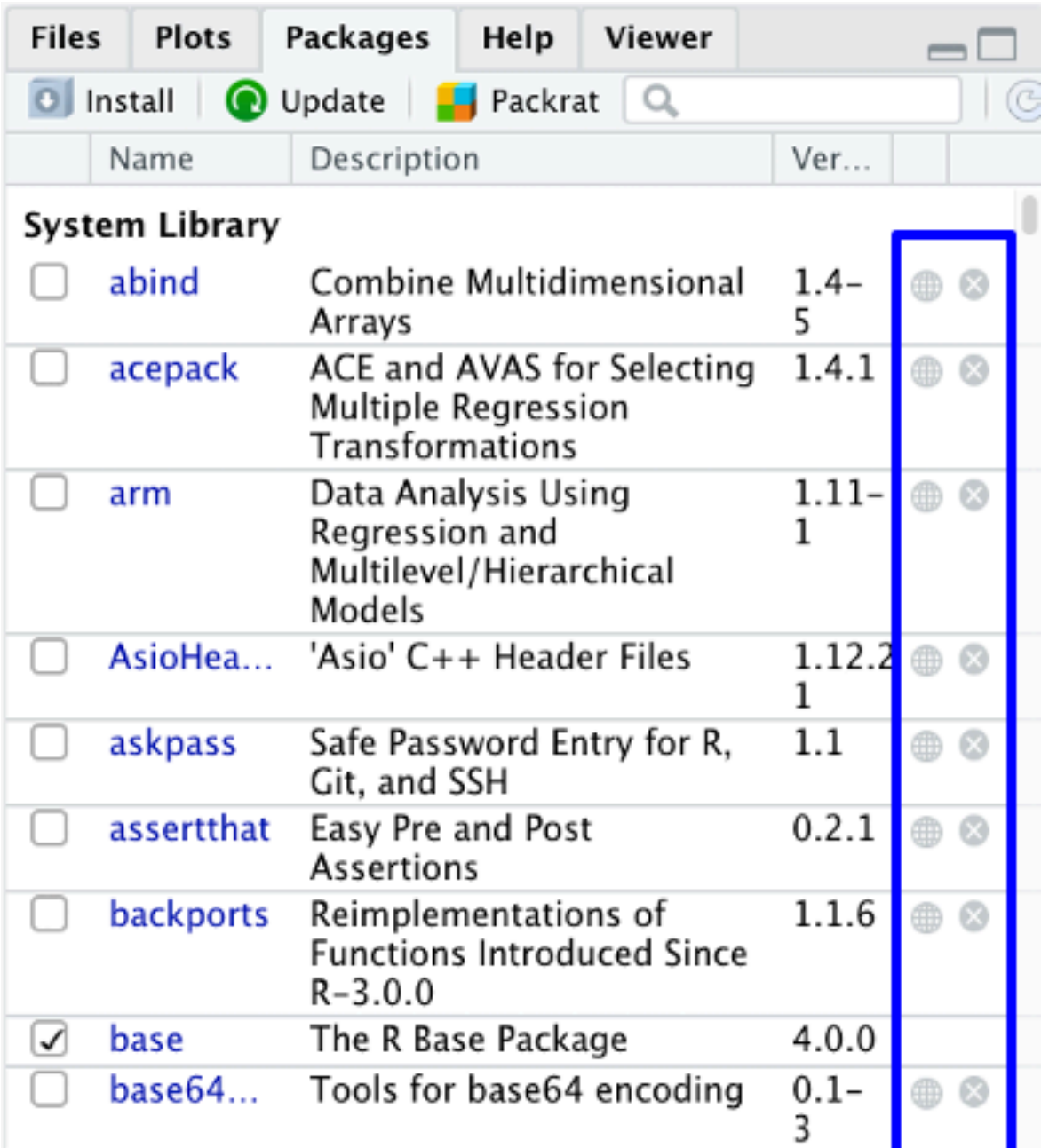
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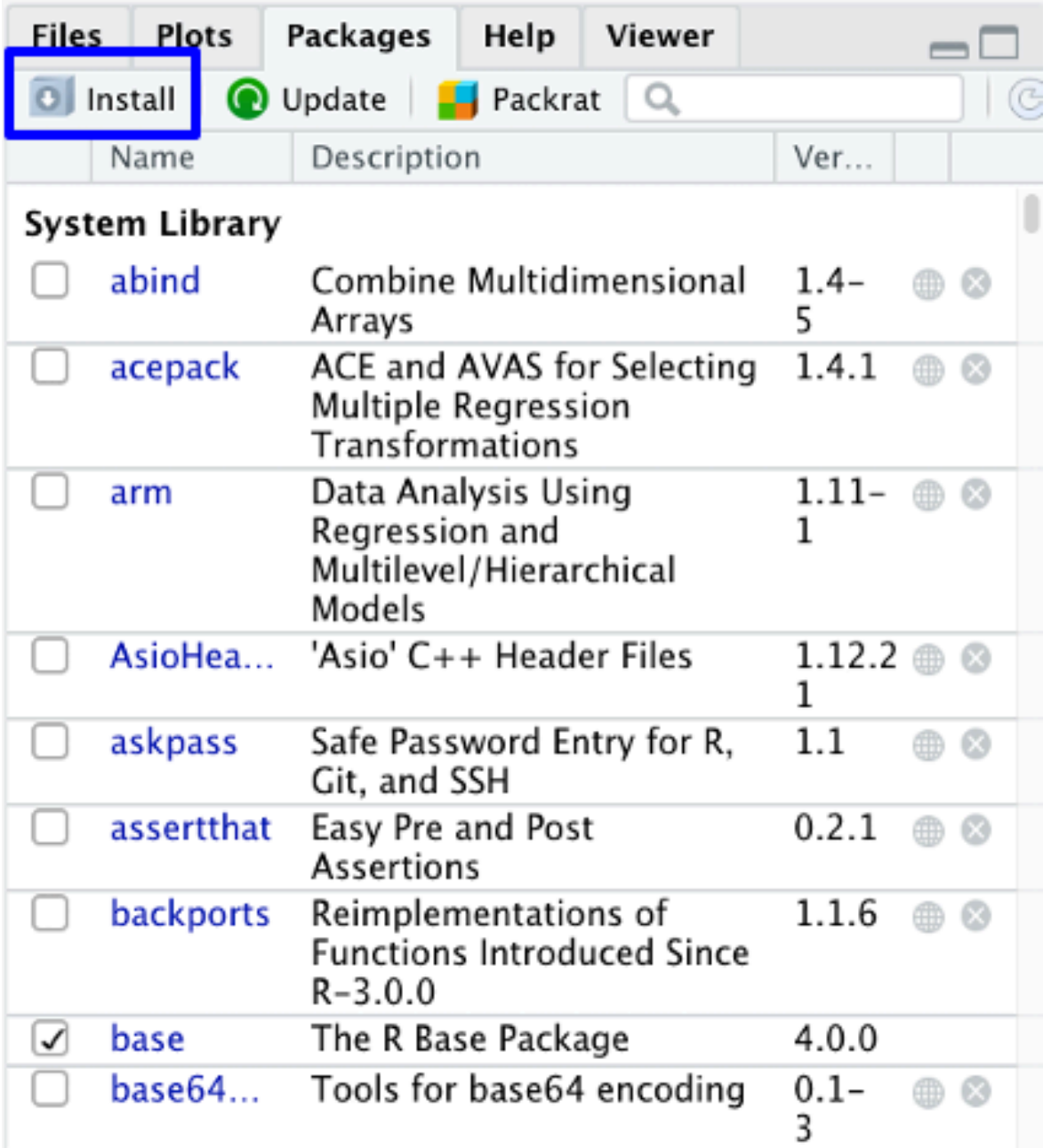
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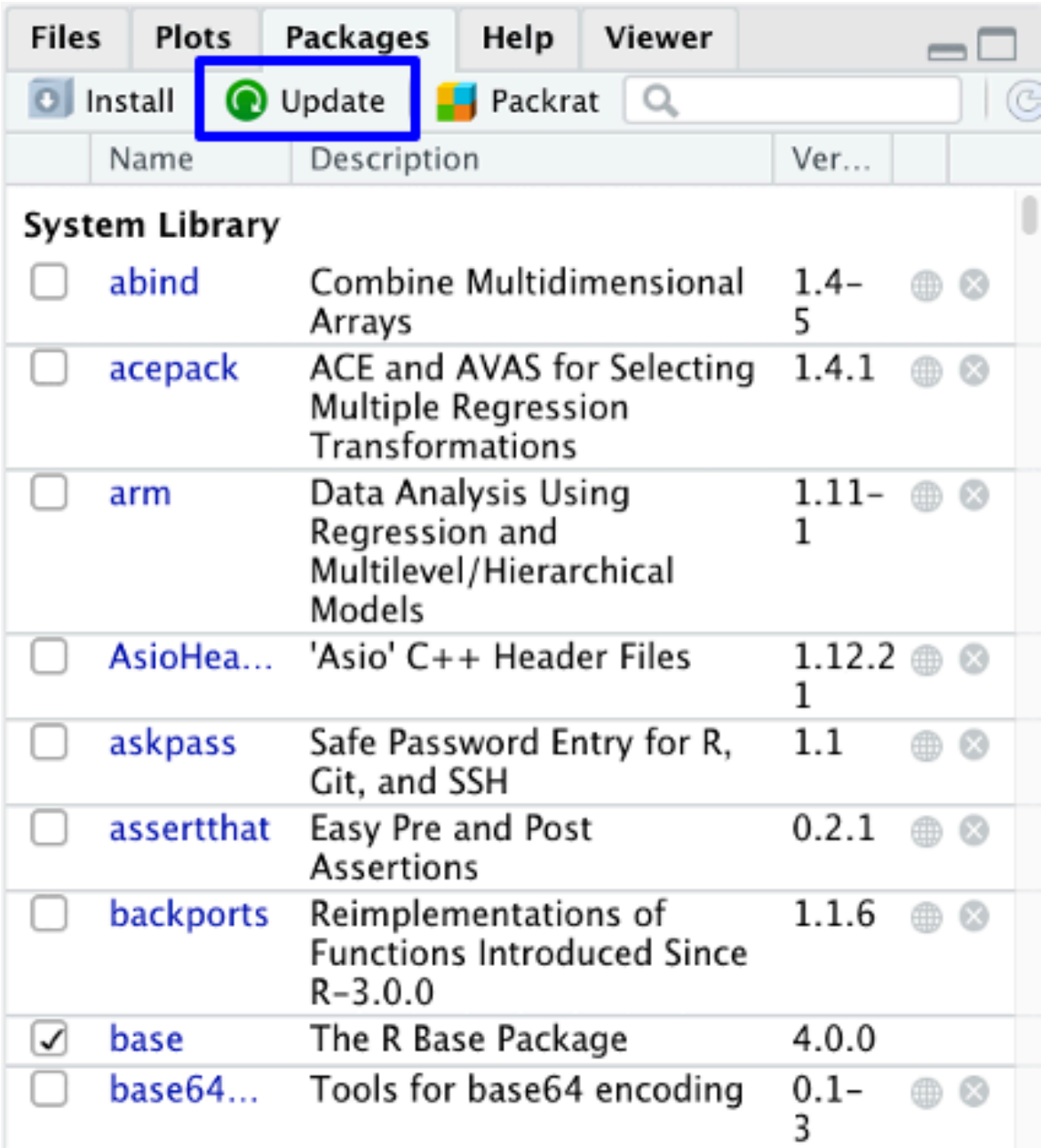
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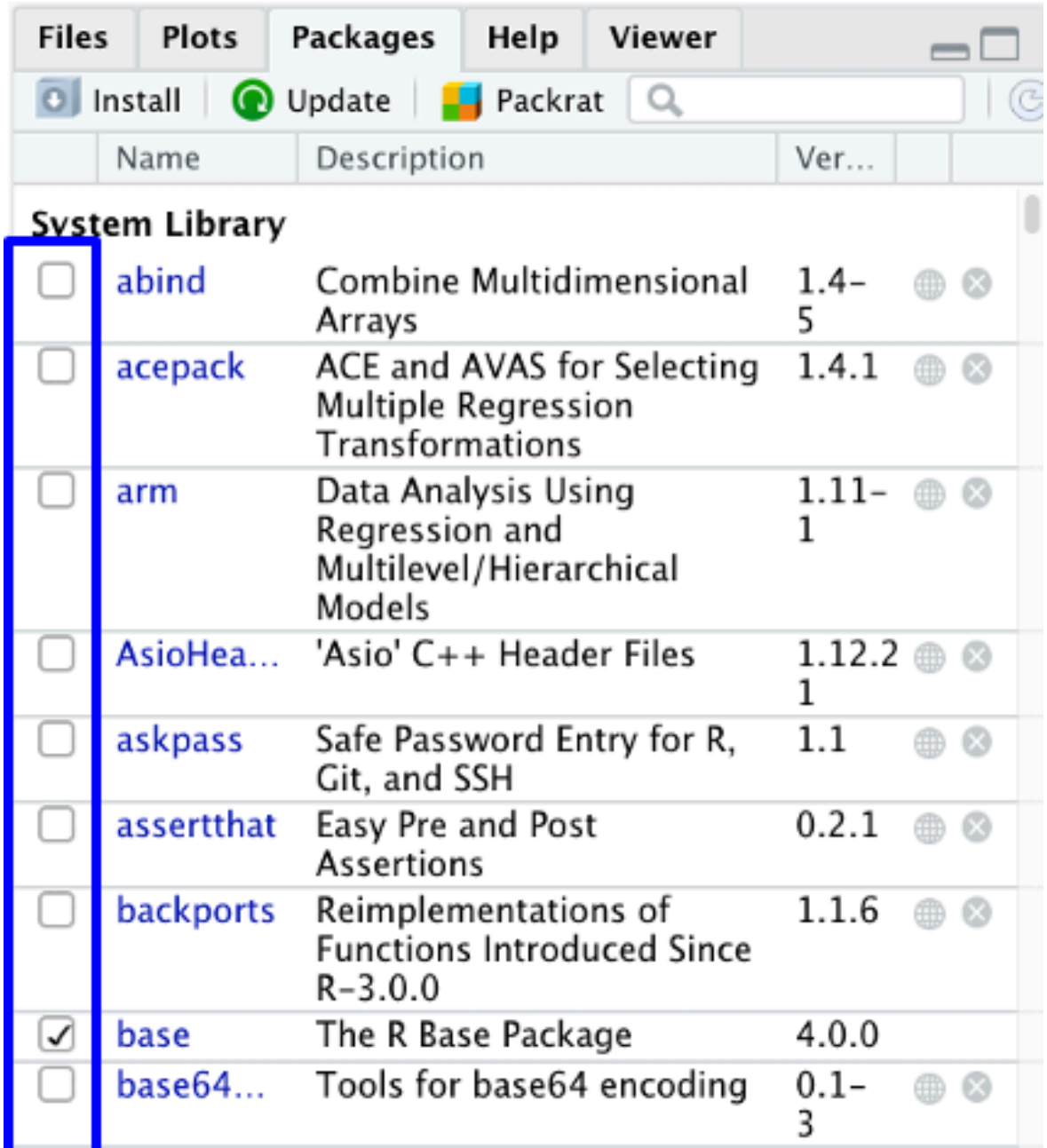
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How do I get packages?

Packages can be downloaded from the *CRAN* (*C*omprehensive *R* *A*rchive *N*etwork)

You will do this from inside R

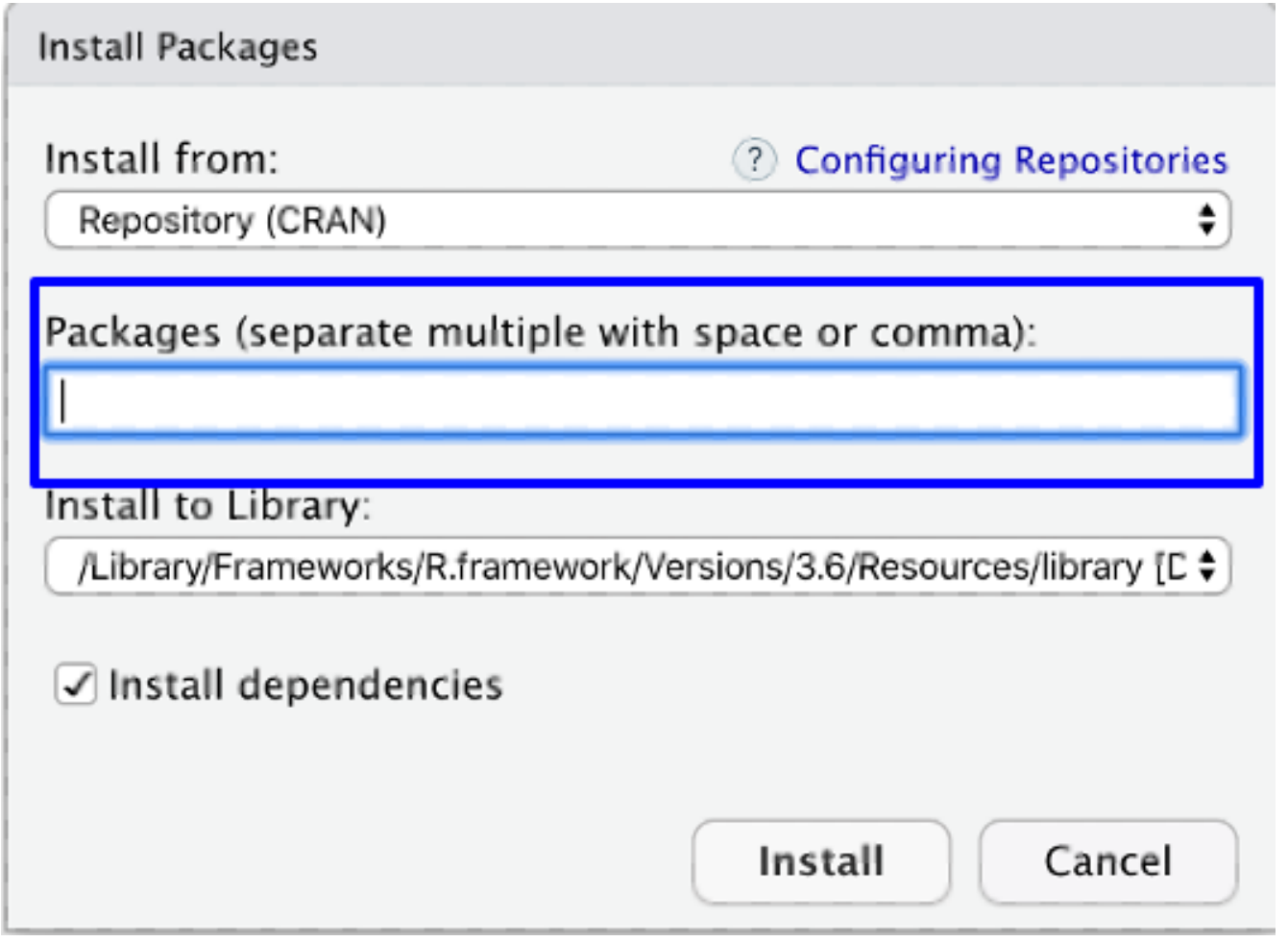
Need to be connected to the internet!

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



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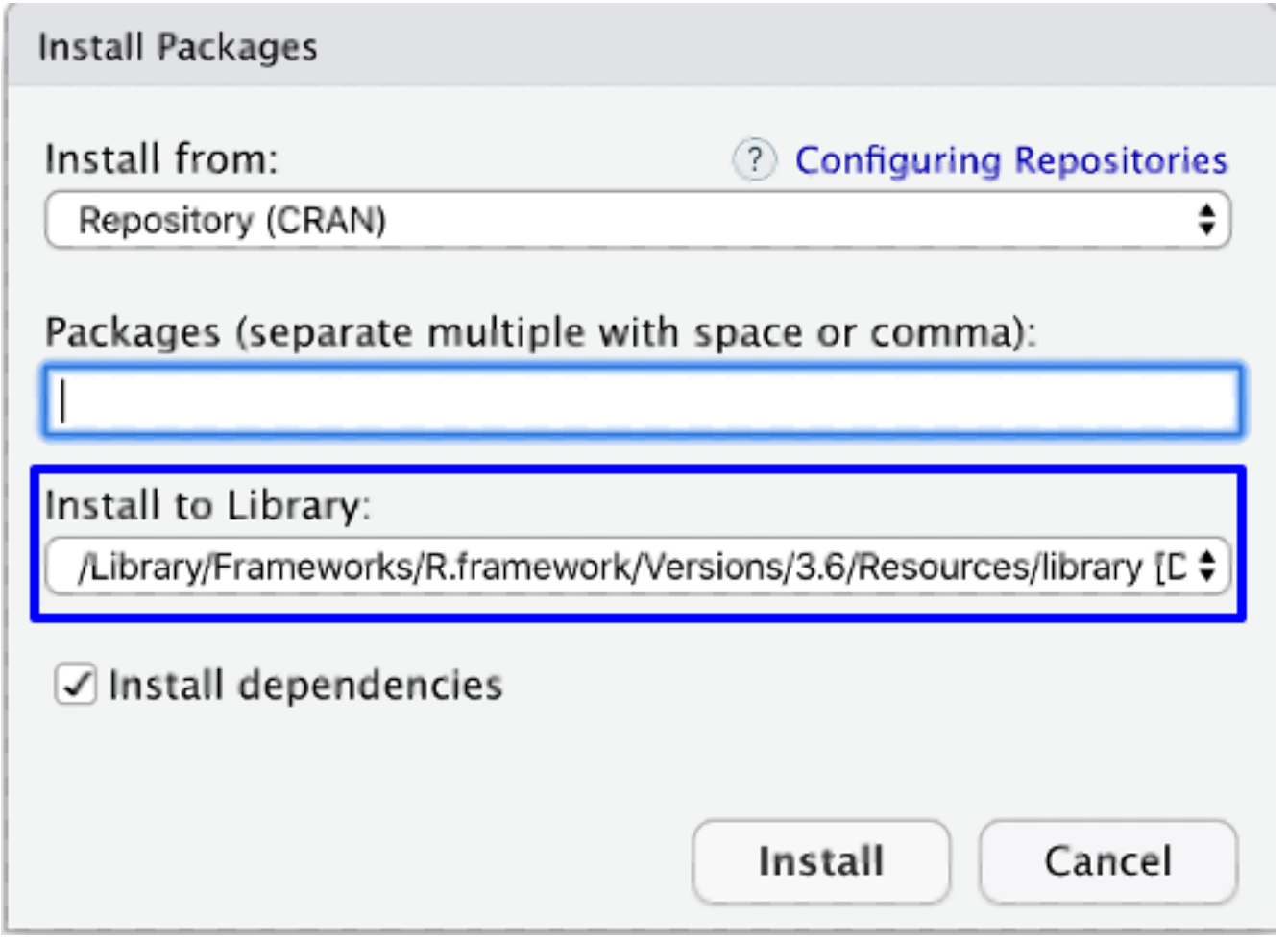

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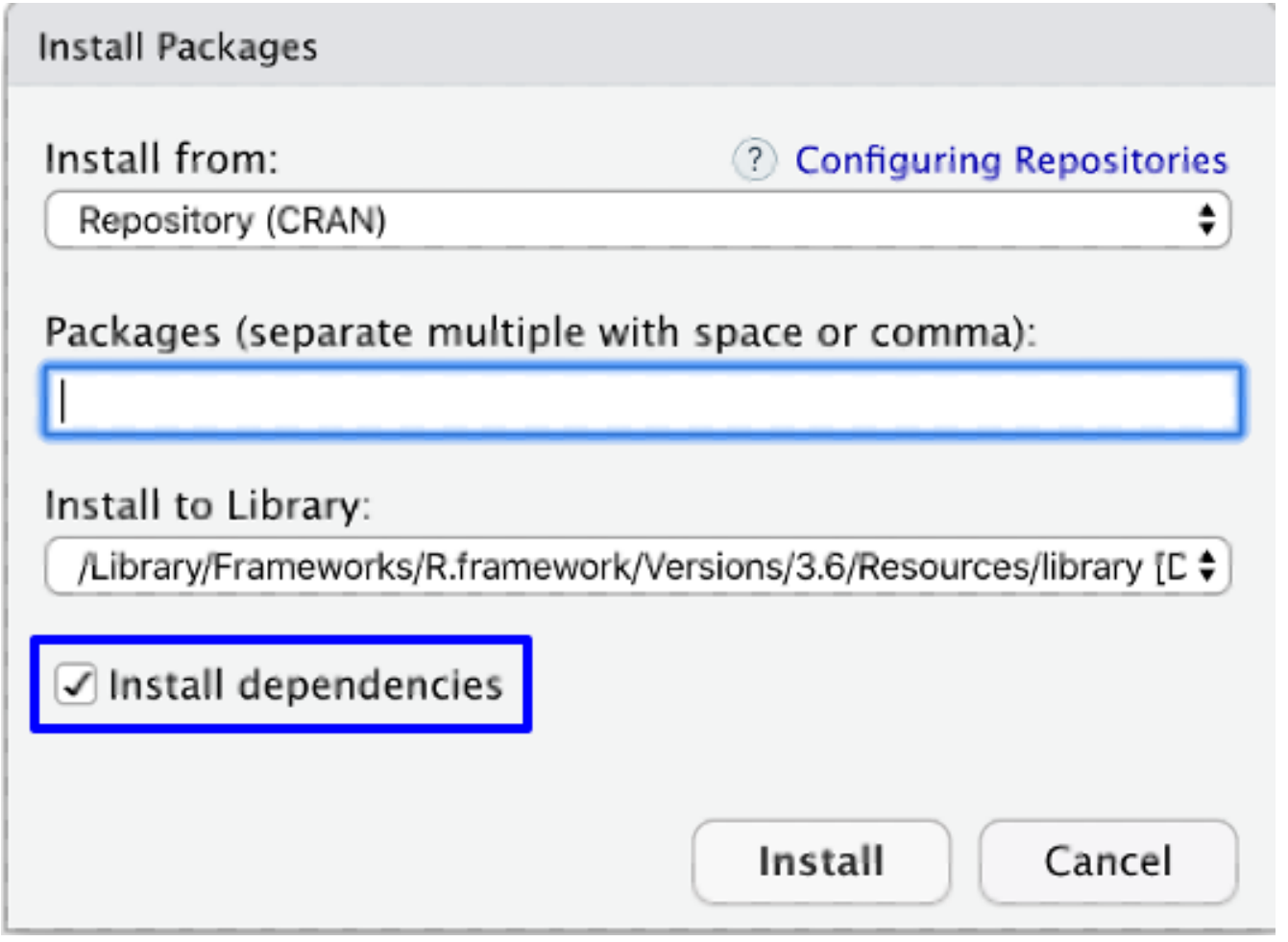

R code to install packages

```
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`