**Step 1 — Installing R**

Because R is a fast-moving project, the latest stable version isn’t always available from Ubuntu’s repositories, so you’ll start by adding the external repository maintained by CRAN.

**Note:** CRAN maintains the repositories within their network, but not all external repositories are reliable. Be sure to install only from trusted sources.

To begin you’ll need to add the R project’s public GPG key to your server, and then configure the package repository. First you’ll download the key with the wget command and convert it to a format that apt can use to verify downloaded packages using the gpg --dearmor command.

Download the key and install it:

1. wget -qO- https://cloud.r-project.org/bin/linux/ubuntu/marutter\_pubkey.asc | sudo gpg --dearmor -o /usr/share/keyrings/r-project.gpg

Copy

Next, add the R source list to the sources.list.d directory, where APT will search for new sources:

1. echo "deb [signed-by=/usr/share/keyrings/r-project.gpg] https://cloud.r-project.org/bin/linux/ubuntu jammy-cran40/" | sudo tee -a /etc/apt/sources.list.d/r-project.list

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The [signed-by=/usr/share/keyrings/r-project.gpg] portion of the file instructs apt to use the key that you downloaded to verify repository and file information for R packages.

Next, update your package lists so APT will read the new R source:

1. sudo apt update

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Among the output that displays, you should identify lines similar to the following:

Output

...

Get:7 https://cloud.r-project.org/bin/linux/ubuntu jammy-cran40/ InRelease [3622 B]

Get:8 https://cloud.r-project.org/bin/linux/ubuntu jammy-cran40/ Packages [15.6 kB]

...

If the lines above appear in the output from the update command, you’ve successfully added the repository. Now you can be sure we won’t accidentally install an older version.

At this point, you’re ready to install R with the following command.

1. sudo apt install --no-install-recommends r-base

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If prompted to confirm installation, press y to continue. The --no-install-recommends arguments ensures that no extra packages are installed.

As of the time of writing, the latest stable version of R from CRAN is 4.2.0, which is displayed when you start R.

Since this tutorial will explore installing an example package for every user on the system, start R as root so that the libraries will be available to all users automatically. Alternatively, if you run the R command without sudo, a personal library can be set up for your user.

1. sudo -i R

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Output

R version 4.2.0 (2022-04-22) -- "Vigorous Calisthenics"

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Platform: x86\_64-pc-linux-gnu (64-bit)

. . .

Type 'demo()' for some demos, 'help()' for on-line help, or

'help.start()' for an HTML browser interface to help.

Type 'q()' to quit R.

>

This confirms that you’ve successfully installed R and entered its interactive shell.

**Step 2 — Installing R Packages from CRAN**

Part of R’s strength is its available abundance of add-on packages. For demonstration purposes, you’ll install [txtplot](https://cran.r-project.org/web/packages/txtplot/index.html), a library that outputs ASCII graphs that include scatterplot, line plot, density plot, acf and bar charts:

1. install.packages('txtplot')

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**Note:** The following output shows where the package will be installed.

Output

...

Installing package into ‘/usr/local/lib/R/site-library’

(as ‘lib’ is unspecified)

. . .

This site-wide path is available because we ran R as root. This location will make the package available to all users.

When the installation is complete, load the txtplot library:

1. library('txtplot')

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If there are no error messages, the library has successfully loaded. Let’s put it in action now with an example which demonstrates a basic plotting function with axis labels. The example data, supplied by R’s datasets package, contains [the speed of cars and the distance required to stop based on data from the 1920s](https://stat.ethz.ch/R-manual/R-devel/library/datasets/html/cars.html):

1. txtplot(cars[,1], cars[,2], xlab = 'speed', ylab = 'distance')

Copy

Output

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120 + \* +

| |

d 100 + \* +

i | \* \* |

s 80 + \* \* +

t | \* \* \* \* |

a 60 + \* \* \* \* \* +

n | \* \* \* \* \* |

c 40 + \* \* \* \* \* \* \* +

e | \* \* \* \* \* \* \* |

20 + \* \* \* \* \* +

| \* \* \* |

0 +----+-----------+------------+-----------+-----------+--+

5 10 15 20 25

speed

If you are interested to learn more about txtplot, use help(txtplot) from within the R interpreter.

Any precompiled package can be installed from CRAN with install.packages(). To learn more about what’s available, you can find a listing of official packages organized by name via the [Available CRAN Packages By Name list](https://cran.r-project.org/web/packages/available_packages_by_name.html).

To exit R, you can type q(). You can press n when prompted, unless you want to save the workspace image.