Chapter 1

Introduction to R, Rstudio and Posit Cloud

1.1 Installing R and Rstudio

- **Step 1:** First download R freely from the Comprehensive R Archive Network (CRAN) https://cran.r-project.org/. (At the moment of writing, R 4.3.1 is the latest version. Choose the most recent one.)
- **Step 2:** Then install R Studio's IDE (stands for integrated development environment), a powerful user interface for R from [https://posit.co/download/rstudio-desktop/](https://posit.co/download/rstudio-desktop/. Get the Open Source Edition of RStudio Desktop. RStudio allows you to run R in a more user-friendly environment.
  - You need to install **both** R and Rstudio to use RStudio.
  - If you have a pre-existing installation of R and/or RStudio, I highly recommend that you reinstall both and get as current as possible.
- **Step 3:** Then open **Rstudio**.

1.1.1 Posit Cloud

- In 2022, RStudio changed its corporate name to Posit with the aim of expanding its focus beyond R to include users of Python and Visual Studio Code.
- If you don't want to download or install R and R Studio, you can use RStudio on Posit Cloud (https://posit.cloud/) for free.

1.2 RStudio layout

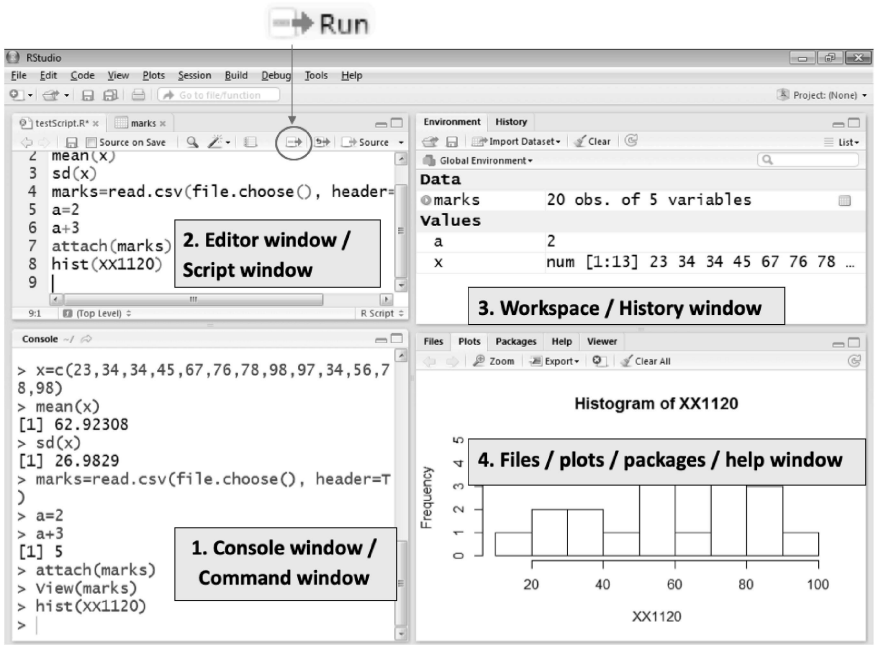
The RStudio interface consists of four windows (see Figure 1 and 2).

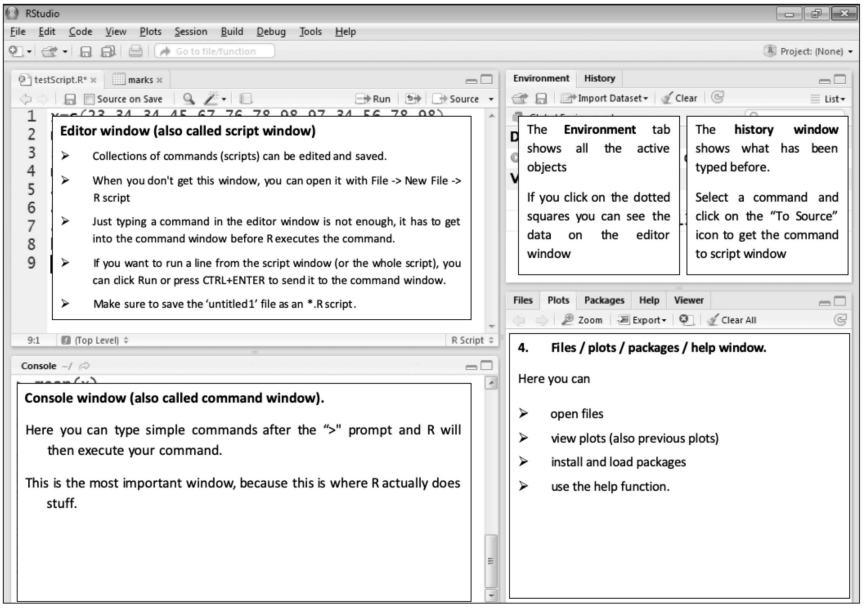
1. Bottom left: console window (also called command window). **This is where you type and run all your R commands**

2. Top left: editor window (also called script window).

3. Top right: workspace / history window.

4. Bottom right: Files / plots / packages / help window.





Now you are familiar with the layout. Let's begin with R basics.

1.3 Installing an R Package

- The primary location for obtaining R packages is CRAN
- Packages can be installed with the `install.packages()` function in R
- To install a single package, pass the name of the package to the `install.packages()` function as the first argument

The following the code installs the `tidyverse` package from CRAN

```
install.packages("tidyverse")
```

- This command downloads the `tidyverse` package from CRAN and installs it on your computer
- Any packages on which this package depends will also be downloaded and installed
- **Installing the tidyverse package could take several minutes. You only need to do this once**.

1.4 Loading an R Packages

- Installing a package does not make it immediately available to you in R; you must load the package
- The `library()` function is used to load packages into R
- The following code is used to load the tidyverse package into R
- **NOTE:** Do not put the package name in quotes!

```
library(tidyverse)
```

```
## -- Attaching core tidyverse packages ------------------------ tidyverse 2.0.0 --
## v dplyr     1.1.2     v readr     2.1.4
## v forcats   1.0.0     v stringr   1.5.0
## v ggplot2   3.4.1     v tibble    3.2.1
## v lubridate 1.9.2     v tidyr     1.3.0
## v purrr     1.0.1
## -- Conflicts ------------------------------------------ tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()
## i Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflict
```

- Some packages produce messages when they are loaded (but some don't)

1.5 Getting started with R

An Introduction to R: https://cran.r-project.org/doc/manuals/R-intro.pdf