DSI Data Science: Introduction to R
Precourse Assessment

Anjali Silva, PhD

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Due: Email TA before 5.50 pm EST on 7 November 2022. Not for grades.

Introduction and Goals

Read all instructions carefully.

Welcome to Introduction to R! We are excited to learn with you. In this course we will be using R, which is a programming language and an environment for statistical computing and graphics (R Core Team, 2022). R was initially written by Ross Ihaka and Robert Gentleman in early 1990s (Ihaka, R. and Gentleman, R., 1996). Currently, R is maintained by the R Core Team and the R Foundation for Statistical Computing. R is free, open-source, cross-platform, and has a large, welcoming community, which has contributed to its popularity. Homepage of R is `https://www.r-project.org/`. There are multiple ways to use R, but for this course we'll be using RStudio, which is an integrated development environment (IDE) for R (RStudio Team, 2022). RStudio contains many features that can make programming more user-friendly, including a console, syntax-highlighting editor that supports direct code execution, and tools for plotting, history, debugging and workspace management (RStudio Team, 2022). Further, RStudio permit to work with data interactively. RStudio is available in open source and commercial editions, and we'll be using the free, open source version for this course. The aim of this assessment is to ensure that learners are able to:

- Download and install R and RStudio.
- Access RStudio to run simple commands.

Tasks

1 R Download

Learners must have access to a computer with a Mac or Windows (or Linux) operating system that they have administrative privileges on. Ensure you are able to use the administrative account, not a Guest account on computer, as this may impact the learner's ability to download software or R packages later in the course. First, let's download R. The The Comprehensive R Archive Network (CRAN) store versions of code and documentation for R. For downloading R, we have the option to choose the CRAN mirror, i.e., which copy of R we'll be downloading. If you are interested in seeing all mirrors, you can visit `https://cran.r-project.org/mirrors.html`. We'll use the 0-Cloud CRAN mirror. Visit this CRAN mirror link and choose appropriate operating system: `https://cloud.r-project.org/` and download R. Once download is complete, you should be able to locate R icon. See Figure 1. Clicking on this opens up what is called the R Graphical User Interace (GUI). However, we will not use the R GUI in this in this course. Close the R GUI.

2 RStudio Desktop Download

Visit this link and choose the FREE version appropriate for your operating system: `https://www.rstudio.com/products/rstudio/download/#download`.

3 Run Commands on RStudio and Email Output to TA

RStudio contains many features that can make programming more user-friendly, including a console for typing commands. We will try running some commands on RStudio by typing them in the console. Refer Figure 2 to locate console. In the console, where a blue greater than symbol > appears, you may enter commands. Enter the following command as shown in Figure 3:

```
R.Version()$version.string
```

Then press <ENTER> to run the command. `R.Version()$version.string` provides detailed information about the version of R you are running in the current computer. Next enter:

```
RStudio.Version()$version
```

Again press <ENTER> to run the command. `RStudio.Version()$version` provides the version of RStudio you are running in the current computer. Next enter:

```
sessionInfo()
```

Again press <ENTER> to run the command. `sessionInfo()` provides details about R, the operating system, and attached or loaded packages in the current session. These details may not make a lot of sense right now. Not to worry; you'll learn by the end of the course. Email the output from first two commands above, ordred by numbers 1) and 2) to the TA. You may play around with more commands or close the RStudio.

Final Notes

The course instructor will be using R version 4.2.1 and RStudio Desktop version 2022.02.3 for the course. If you have a different version, that is fine. However, our output may slightly differ due to version differences. If you have any questions or encounter issues with R/RStudio installation, attend the tutorial and seek help. You may share your RStudio screen during help sessions with TA, time permitting. Ensure to adjust your privacy settings via Zoom Support Link `https://support.zoom.us/hc/en-us/articles/201362153-Sharing-your-screen-or-desktop-on-Zoom`.

References

- R Core Team (2022). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. URL https://www.R-project.org/.
- RStudio Team (2022). RStudio: Integrated Development for R. RStudio, PBC, Boston, MA URL http://www.rstudio.com/.
- Ihaka,R. and Gentleman,R. (1996) R: a language for data analysis and graphics. *J. Comput. Graph. Statist.*, 5, 299–314. `https://www.stat.auckland.ac.nz/~ihaka/downloads/R-paper.pdf`

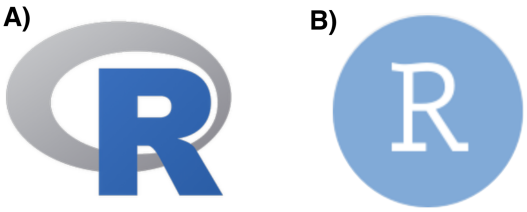

Figure 1: A) Icon of R Graphical User Interace. B) Icon of RStudio. We'll be using RStudio in this course.

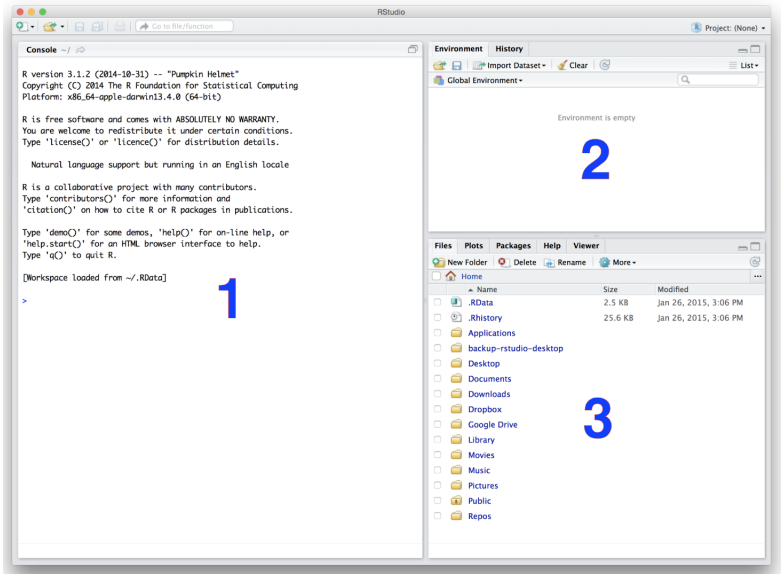

Figure 2: For interactive analysis of data, we'll use RStudio in this course. Anatomy of default RStudio is shown. 1. This is the Console. 2. Environment and History. 3. Files, Plots, Packages, Help and Viewer. If a script is opened up, it will appear on top of Console.

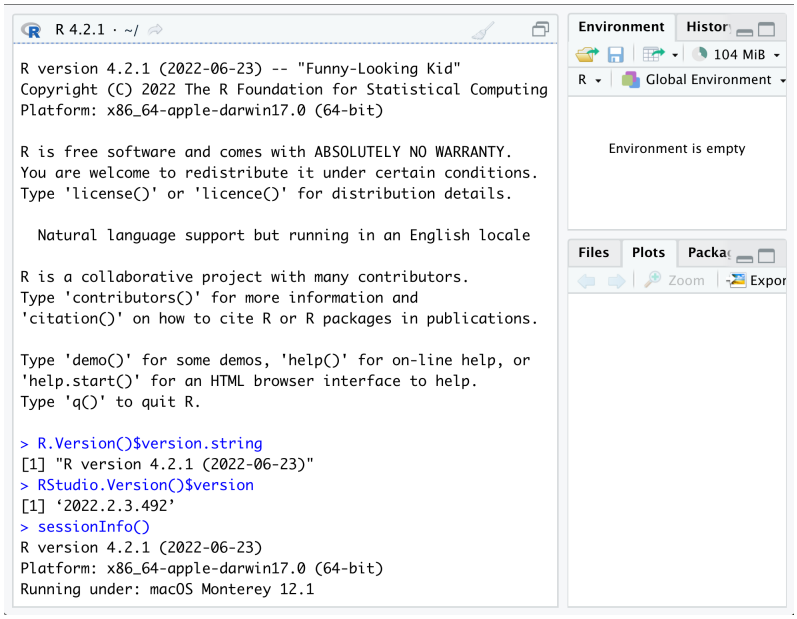

Figure 3: In the console, where a blue greater than symbol > appears, a user may enter commands. After entering a command, press <ENTER> to run the command.