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GETTING STARTED WITH R AND RSTUDIO

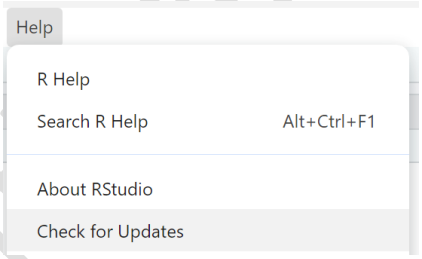
INTRODUCTION

R is a powerful programming language and software environment specifically designed for statistical computing and data analysis. It provides a platform for data manipulation, calculation, statistical analysis and data visualisation.

RStudio is an integrated development environment (IDE) for R, providing a user-friendly interface that enhances the R programming experience.

INSTALLATION

1. **Download and install R** from https://cran.rstudio.com/
2. **Download and install RStudio** from https://posit.co/download/rstudio-desktop/
   * If you have already installed R and RStudio for some time, you might want to update them.
   - **Update RStudio:** Locate **Help** tab in RStudio and click **Check for Updates**. If it's not the latest version, download and install RStudio again, as per step 2.



   - **Update R:** Run the following commands on RGui.If prompted to choose CRAN mirrors, just select any of the Australian for the fastest installation.

```
install.packages("installr")
library(installr)
updateR()
```

3. **Install recommended packages**
   This can be done by running the `installation.packages()` command on the RStudio Console or locating **Tools** tab and then **Install Packages**.

Package	Command	Description
swirl	`install.packages("swirl")`	Free R interactive lessons right in the R console.
tidyverse	`Install.packages("tidyverse")`	Collection of packages designed for data science.
rmarkdown	`Install.packages("rmarkdown")`	Creating dynamic documents in R. Combine text, code, and output in a single document.
knitr markdown tinytex	`install.packages(c("knitr", "markdown", "tinytex"))`	Enhance R Markdown experience - knitr: report generating engine - markdown: HTML conversion package - tinytex: LaTeX distribution (optional)

   - Collectively install every recommended packages at once:

```
install.packages(c("swirl", "tidyverse", "rmarkdown", "knitr",
"markdown", "tinytex"))
```

   - Installation of Rtools is optional.

USER INTERFACE

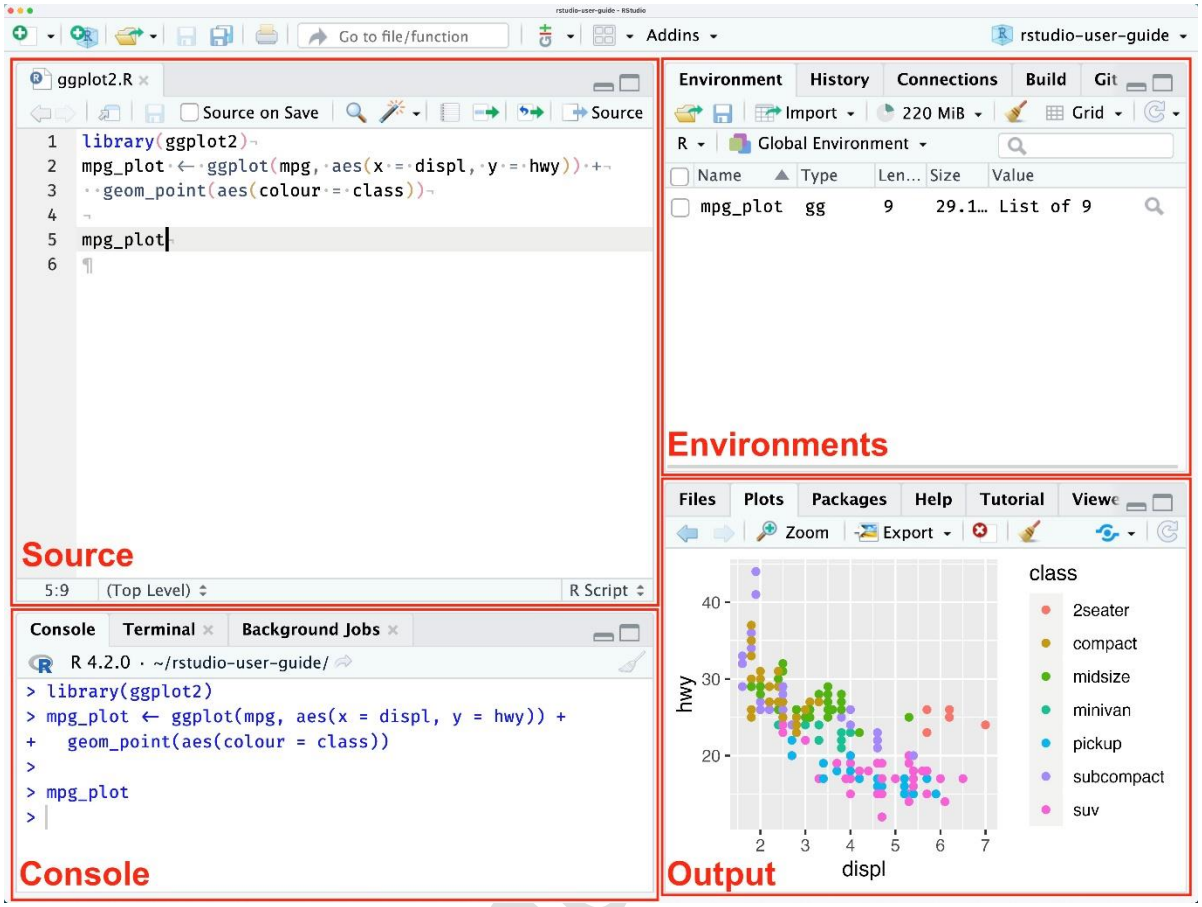


Figure 1 RStudio user interface pane layout (https://docs.posit.co/ide/user/ide/guide/ui/ui-panes.html)

1. The **Source** pane is where you can edit and save R scripts or author documents like R Markdown.
2. The **Console** pane is used to write short interactive R commands.
3. The **Environment** pane displays temporary R objects as created during that R session.
4. The **Output** pane displays the plots, tables, or HTML outputs of executed code along with files saved to disk.

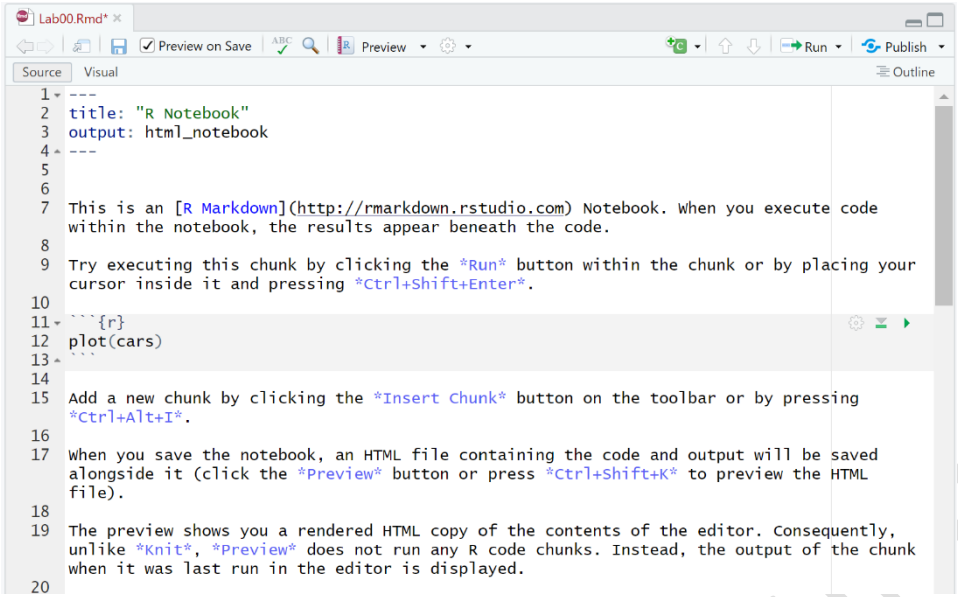
READY TO BEGIN?

Start with **swirl** package, run the following command:

```
library(swirl)    # call library() function to load the package
```

SETTING UP A WORKING ENVIRONMENT

1. Create a new project under your directory: **File** -> **New Project**
   The Output pane will now switch to Files tab, showing your current directory.
2. Create a new R Notebook and save it: **File** -> **New File** -> **R Notebook** -> **Save**



- ✓ Tick the **Preview on Save** box
- ✓ Setting/Gear icon -> Select **Preview in Viewer Pane**

USEFUL RESOURCES

R for Data Science Textbook	https://r4ds.hadley.nz/
R Cookbook, 2nd Edition	https://rc2e.com/
R Graphics Cookbook	http://www.cookbook-r.com/
Swirl package page	https://swirlstats.com/students.html
W3Schools R Tutorial	https://www.w3schools.com/r/
RStudio User Guide	https://docs.posit.co/ide/user/
RStudio IDE Cheat Sheet	https://posit.co/wp-content/uploads/2022/10/rstudio-ide-1.pdf
R Markdown Cheat Sheet	https://rstudio.github.io/cheatsheets/rmarkdown.pdf
Collection of Cheat Sheets	https://posit.co/resources/cheatsheets/