Lecture 3: Tour of RStudio

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Overview

- In this lecture, we'll take a guided tour of **RStudio**, exploring:
    - The **interface layout** and key panels.
    - How to write and run **R scripts**.
    - Where to find **help** when working with R.

1. Overview of RStudio

- **What is RStudio?**
    - **RStudio** is an Integrated Development Environment (IDE) designed specifically for R programming.
    - It simplifies the process of writing code, analyzing data, and visualizing results.

- **Why use RStudio?**
    - User-friendly interface for **writing** and **running** R scripts.
    - Tools for managing data, **visualizing results**, and **navigating R packages**.

2. RStudio Interface Layout

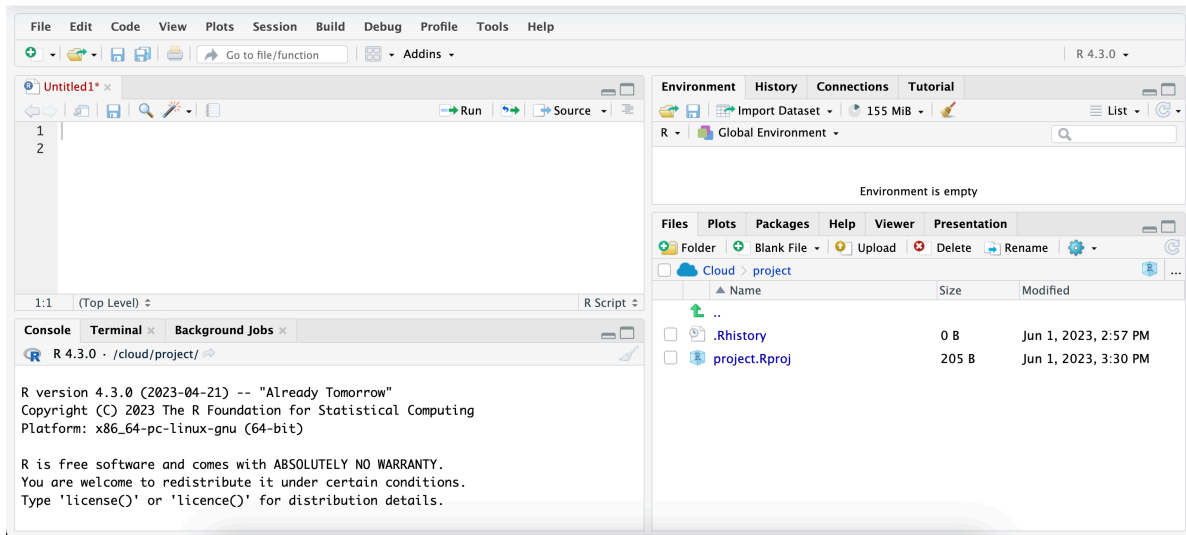- The RStudio interface is divided into **four main panels**:

Figure 1: RStudio Layout

1. **Source Panel** (Top-left):

   - Where you **write** and **edit** R scripts and functions.
   - To create a new script, navigate to `File -> New File -> R Script`.
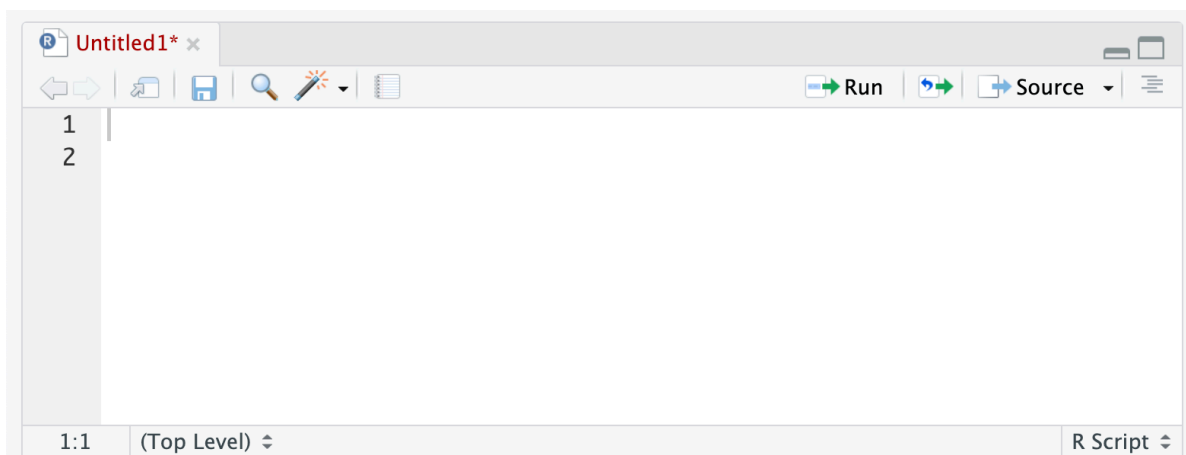   - All code written here can be run in the **Console** or sourced entirely.

Figure 2: Source Panel

2. **Console Panel** (Bottom-left):

   - Where R code is **executed**.
   - Any command typed or run from the script appears here.
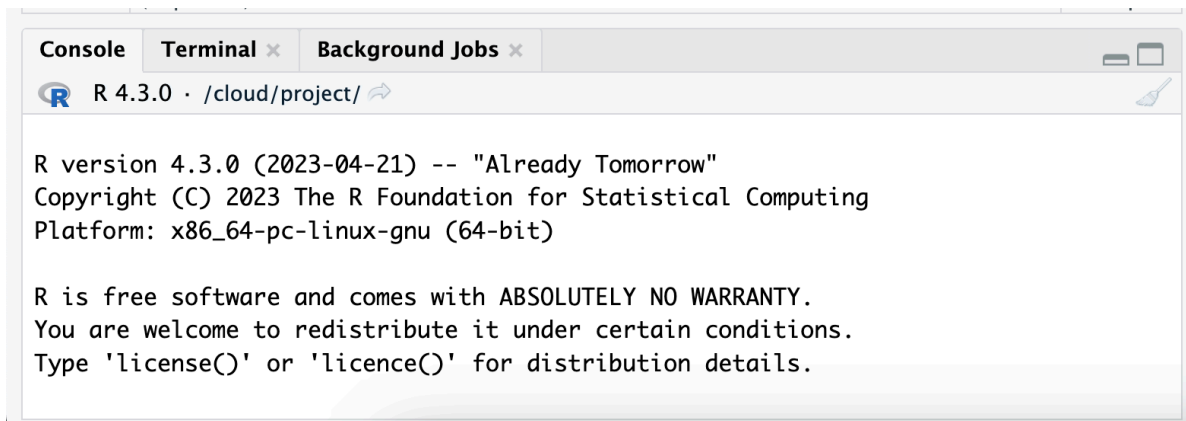   - You can also type commands directly into the console to get immediate results.

Figure 3: Console Panel

3. **Environment/History Panel** (Top-right):

   - **Environment Tab**:
     - Shows all **variables**, **data frames**, and **objects** currently loaded in memory.
   - **History Tab**:
     - Keeps a record of all commands you've executed.
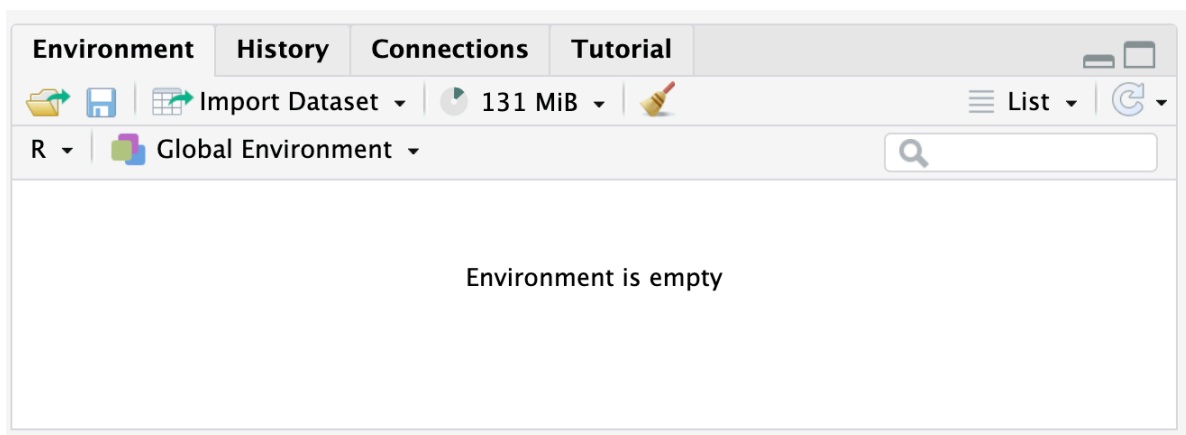   - This makes it easy to review and reuse past commands.

Figure 4: Environment/History Panel

4. **Files/Plots/Packages/Help Panel** (Bottom-right):

   - **Files Tab**: Browse your files, including R scripts and datasets.
   - **Plots Tab**: Displays any **graphs** or **visualizations** generated in your R code.
   - **Packages Tab**: Manage installed packages and see what packages are available.
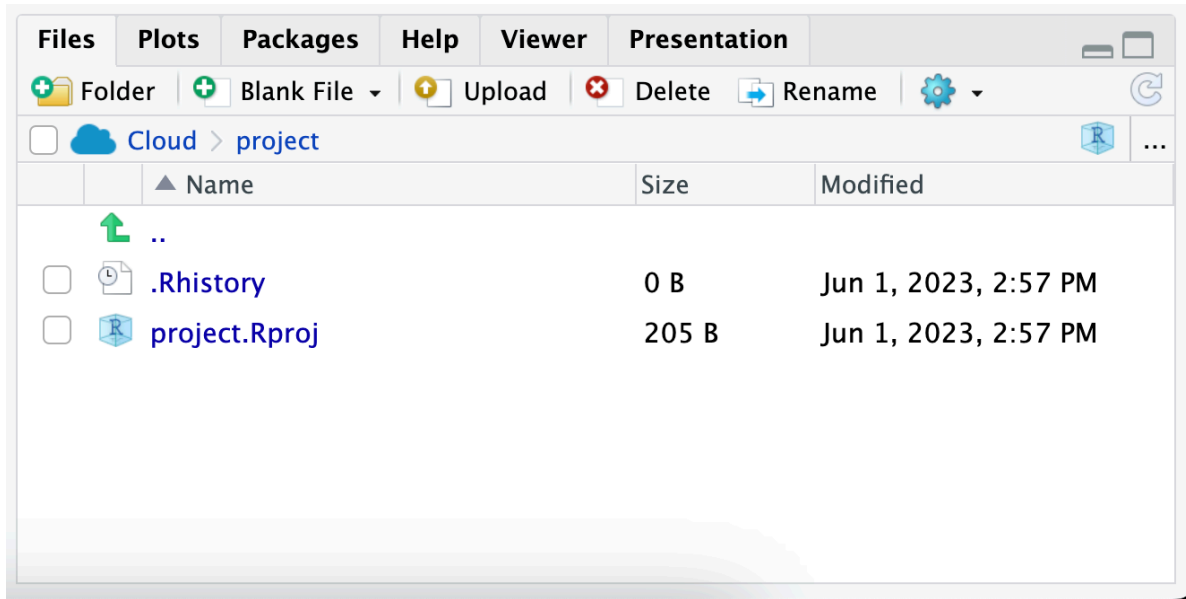   - **Help Tab**: Access R documentation and RStudio help resources.

Figure 5: Files/Plots/Packages/Help Panel

3. Writing and Running R Code in RStudio

- **Creating an R Script**:
  - To create a new R script, go to `File -> New File -> R Script`.
  - This opens a new tab in the **Source Panel**, where you can write your code.

- **Running Code in RStudio**:
  - You can **run individual lines** or **sections** of your code using `Ctrl + Enter` (Windows) or `Cmd + Enter` (Mac).
  - Alternatively, click the **Run** button in the toolbar.
  - If you want to run the entire script, click on the **Source** button in the toolbar.
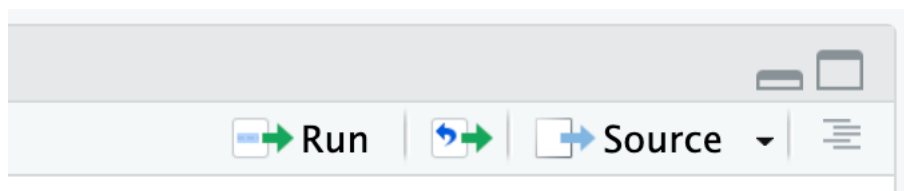

Figure 6: Writing and Running R Code

- **Console Commands**:

    – You can also execute commands directly in the **Console Panel**.

    – The results are immediately displayed in the console after pressing **Enter**.

4. Getting Help in RStudio

- **Built-in Help System**:

    – RStudio offers comprehensive **help documentation** for R functions and packages.

    – You can access help by typing `?function_name` or `help(function_name)` in the **Console**. For example:

```
?mean
```

- **Help Tab**:

    – Use the **Help Tab** in the bottom-right panel to search for specific topics, packages, or functions.

- **Code Completion**:

    – RStudio provides **code completion** suggestions while typing, which helps in speeding up your workflow.

    – Simply start typing a function or variable name and press **Tab** to see available options.

Key Takeaways

- You've learned about the main panels in RStudio and how they function.
- You now know how to write and execute R scripts and commands.
- RStudio's built-in help system can assist you in finding documentation for functions and packages.

Looking Forward

- In the next lecture, we'll dive into **commands and calculations in R**, starting with basic operations like arithmetic and variable assignment.