RStudio, R packages, and R project

A typical data science workflow in R

September 28, 2019

About Me

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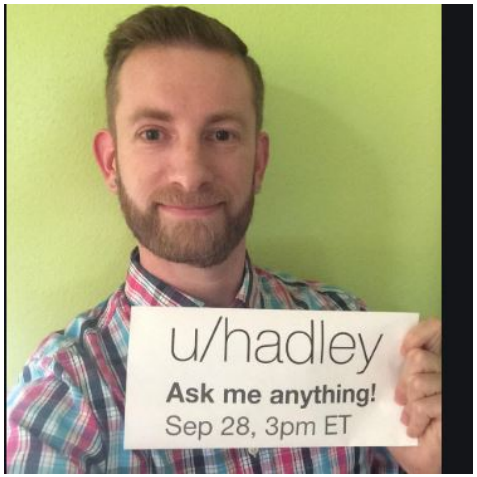

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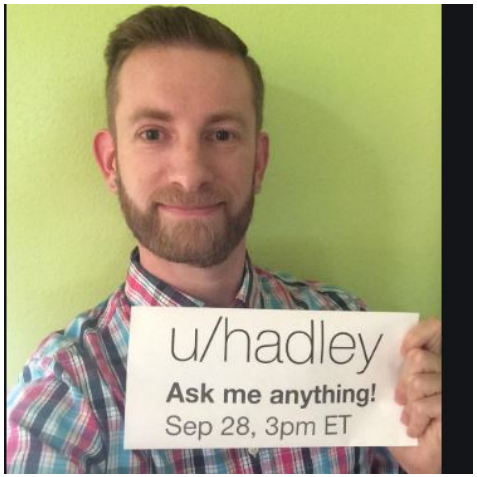

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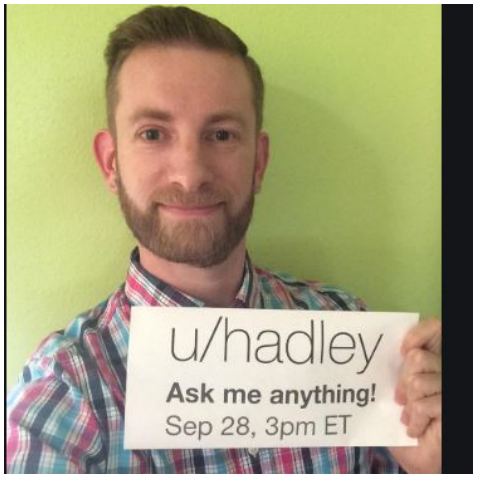

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Adeyinka Oresanya:

Section 1

R and RStudio

What is R programming?

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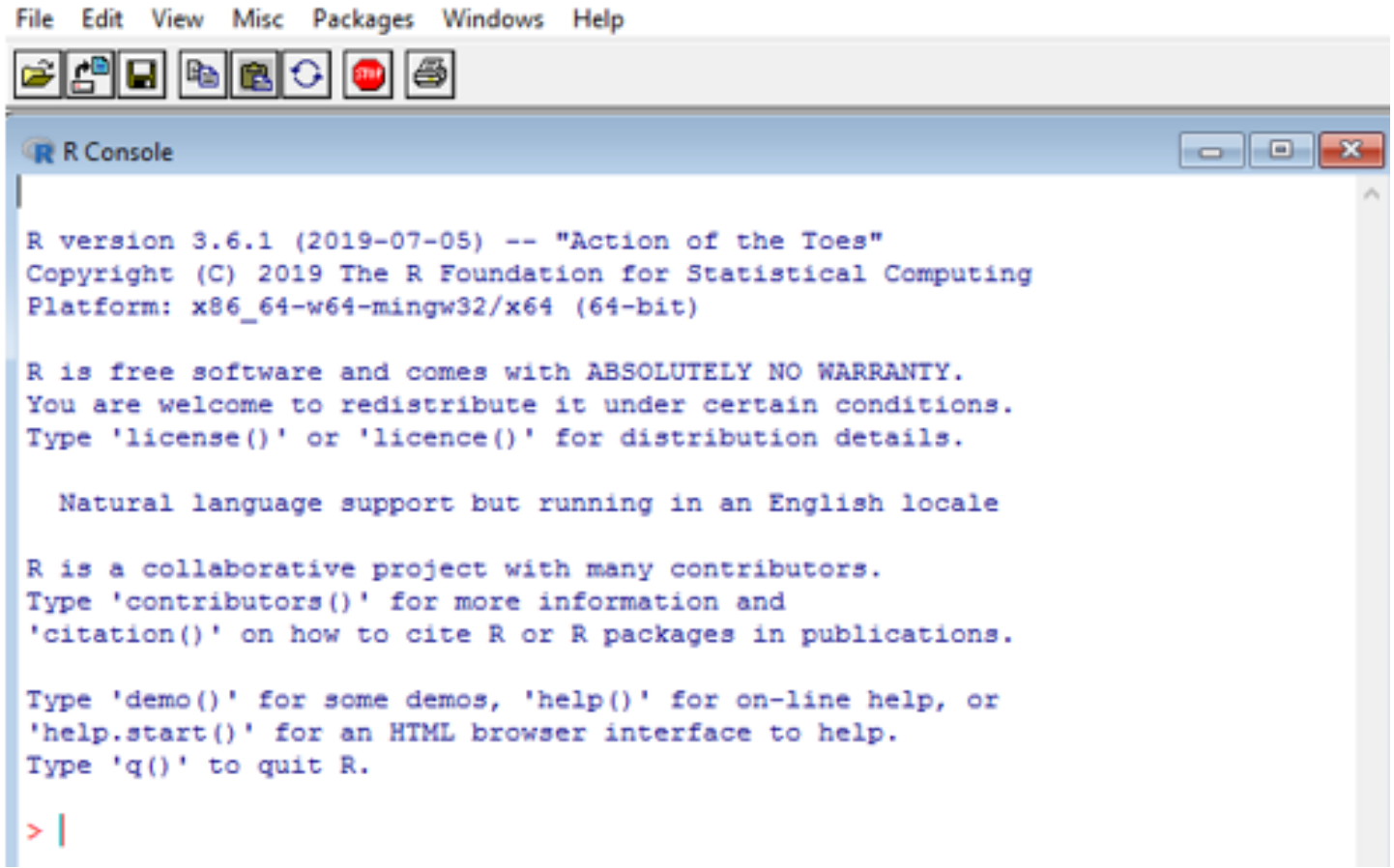

Figure 1: R programming

What about RStudio?

What about RStudio?

R Studio is an integrated development environment (IDE) for R programming. R Studio makes programming easier and friendly in R.

R studio

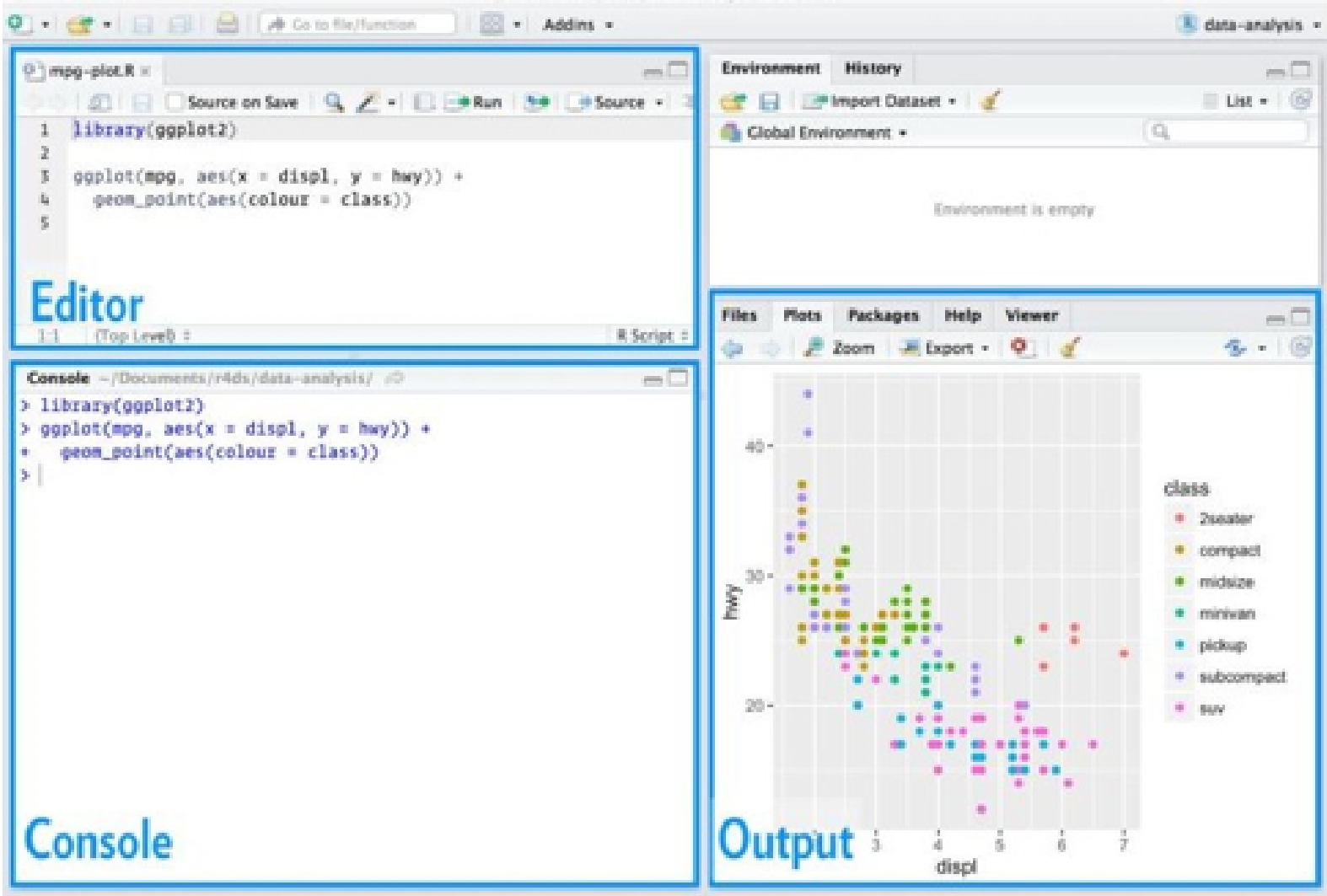

Figure 2: R studio

R packages and library

A package is a collection of R functions that extends basic R functionality (base::functions).

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The location where the packages are stored is called the library. If there is a particular package that you need, you can install the package from the Comprehensive R Achieve Network (CRAN) by using:

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```
install.packages("pkg_name")
```

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```
library(devtools)
install_github("ThinkR-open/fakir")
```

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which makes that package functions available to you at the R session.

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To see which libraries are available (which paths are searched for packages):

```
.libPaths()
```

```
## [1] "C:/Users/OGUNDEPO EZEKIEL .A/Documents/R/win-library/3
## [2] "C:/Program Files/R/R-3.6.1/library"
```

And to see which packages are there:

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```
lapply(.libPaths(), dir)
```

```
## [[1]]
##   [1] "abind"          "acepack"          "ada"
##   [4] "askpass"        "assertthat"       "attempt"
##   [7] "AUC"            "babynames"        "backports"
##  [10] "bartMachine"    "bartMachineJARs"  "base64enc"
##  [13] "BBmisc"         "BH"               "bibtex"
##  [16] "bit"            "bit64"            "bitops"
##  [19] "blob"           "blogdown"         "bookdown"
##  [22] "brew"           "broom"            "BSDA"
##  [25] "bst"            "C50"              "callr"
##  [28] "car"            "carData"          "caret"
##  [31] "catboost"       "caTools"          "cellranger"
##  [34] "charlatan"      "checkmate"        "citr"
##  [37] "classInt"       "cli"              "clipr"
##  [40] "clisymbols"     "coin"             "colorspace"
```

`library(x)` or `require(x)`?

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`library(package)` and `require(package)` both load the namespace of the package with name package and attach it on the search list. require is designed for use inside other functions; it returns FALSE and gives a warning (rather than an error as `library()` does by default) if the package does not exist.

Remove installed packages

Remove installed packages

Removes installed packages/bundles and updates index information as necessary.

```
remove.packages("pkg_name")
```

Using functions in other packages with Double Colon operator

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There are many ways to make use of functions in other packages. You can load the package with `library(pkg_name)` and then just use the functions. Or you can use the :: operator, for example writing `janitor::clean_name()` rather than `library(janitor)` and then `clean_name()`.

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The move is towards the latter, where only the necessary functions will be loaded, rather than attaching the whole package. So to carry the reader of your article on which function belongs to a particular package, it is better to use `package_name::function()`

Section 3

RStudio project

Where Does Your Analysis Live?

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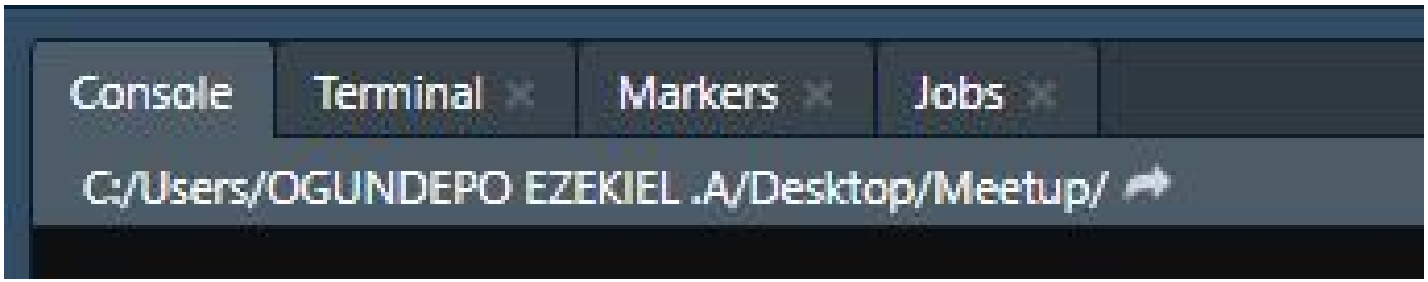
RStudio shows your current working directory at the top of the console:



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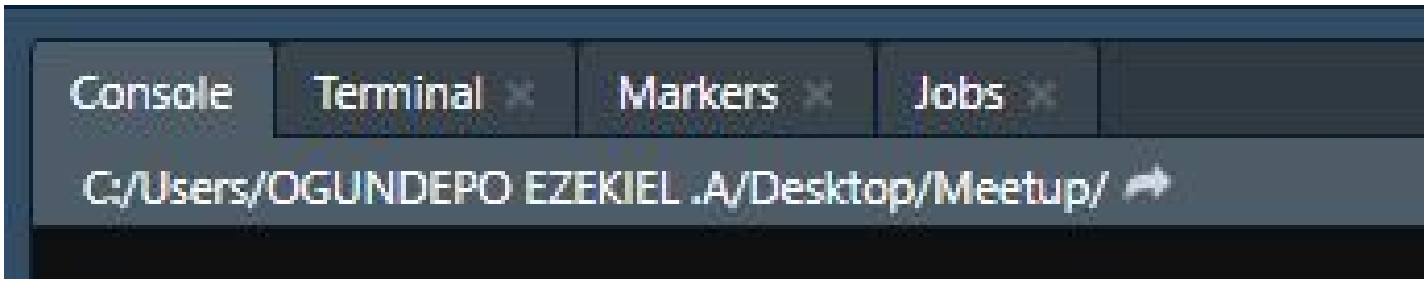

And you can also print this out by using:

```
getwd()
```

```
## [1] "C:/Users/OGUNDEPO EZEKIEL .A/Desktop/Meetup"
```

If you have specific directory and you want to use that as your working directory, in R you can do that with the command `setwd()` e.g.

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```
setwd("/path/to/my/data_analysis")
```

or by using the keyboard shortcut with `Ctrl+Shift+H` and choose that specific directory (Folder).

Paths and Directories

Paths and Directories

- Absolute paths: This looks different in every computer. In Windows they start with a drive letter (e.g., C:). In my R working directory I have `"C:/Users/OGUNDEPO EZEKIEL.A/Desktop/Meetup"` as absolute path.

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You should never use absolute paths in your scripts, because they hinder sharing and no one else will have exactly the same directory configuration as you.

- Relative paths: With the help of library `here::here()` or `R project` we can have a relative path like `data/submission_format.csv` that allow for file sharing and collaboration.

RStudio Projects

RStudio Projects

For a typical data science workflow, you should use Rstudio project.

R experts keep all the files associated with a project together—like data folder, R scripts folder, analytical results folder, figures folder. This is such a wise and common practice.

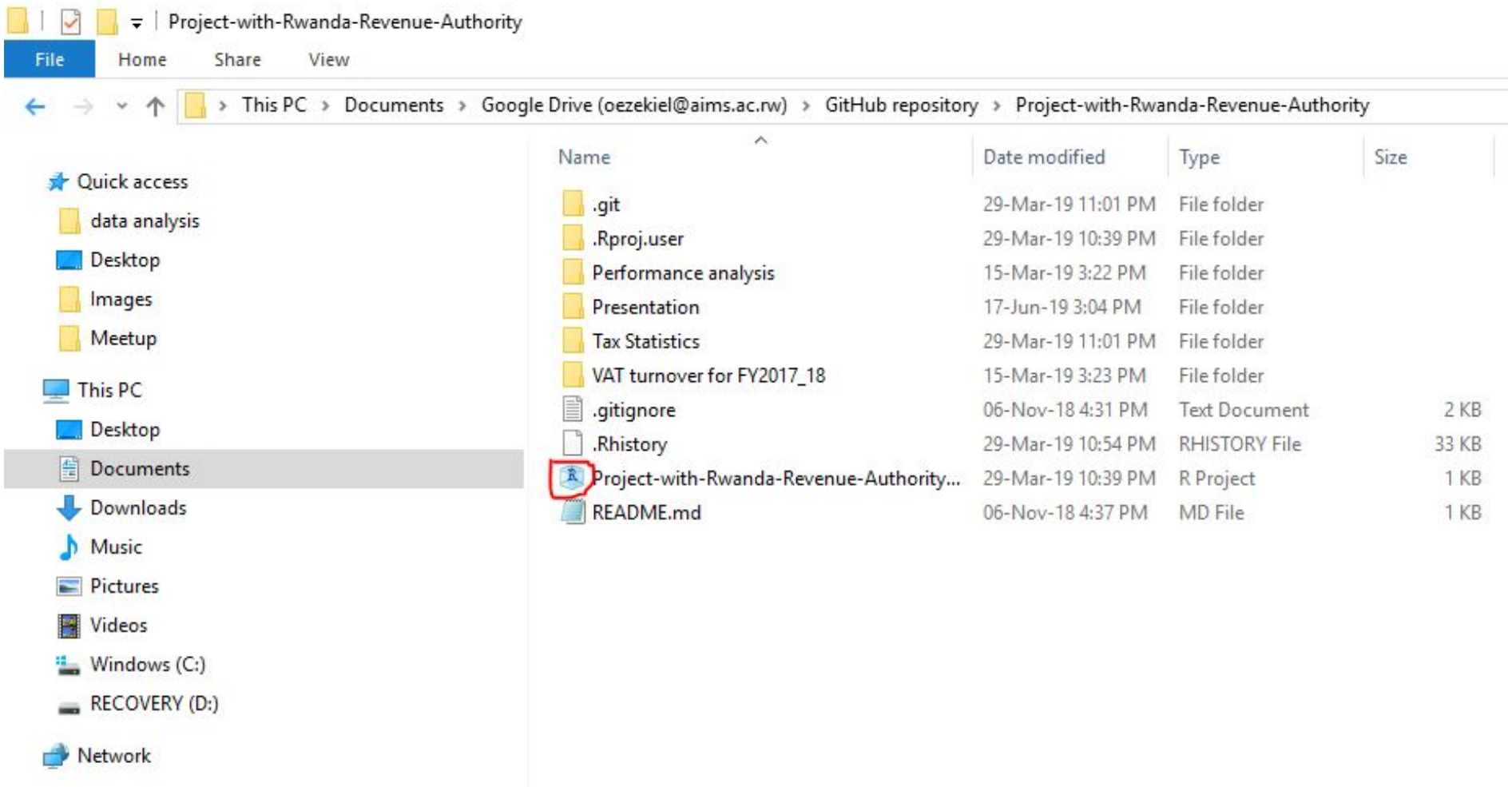
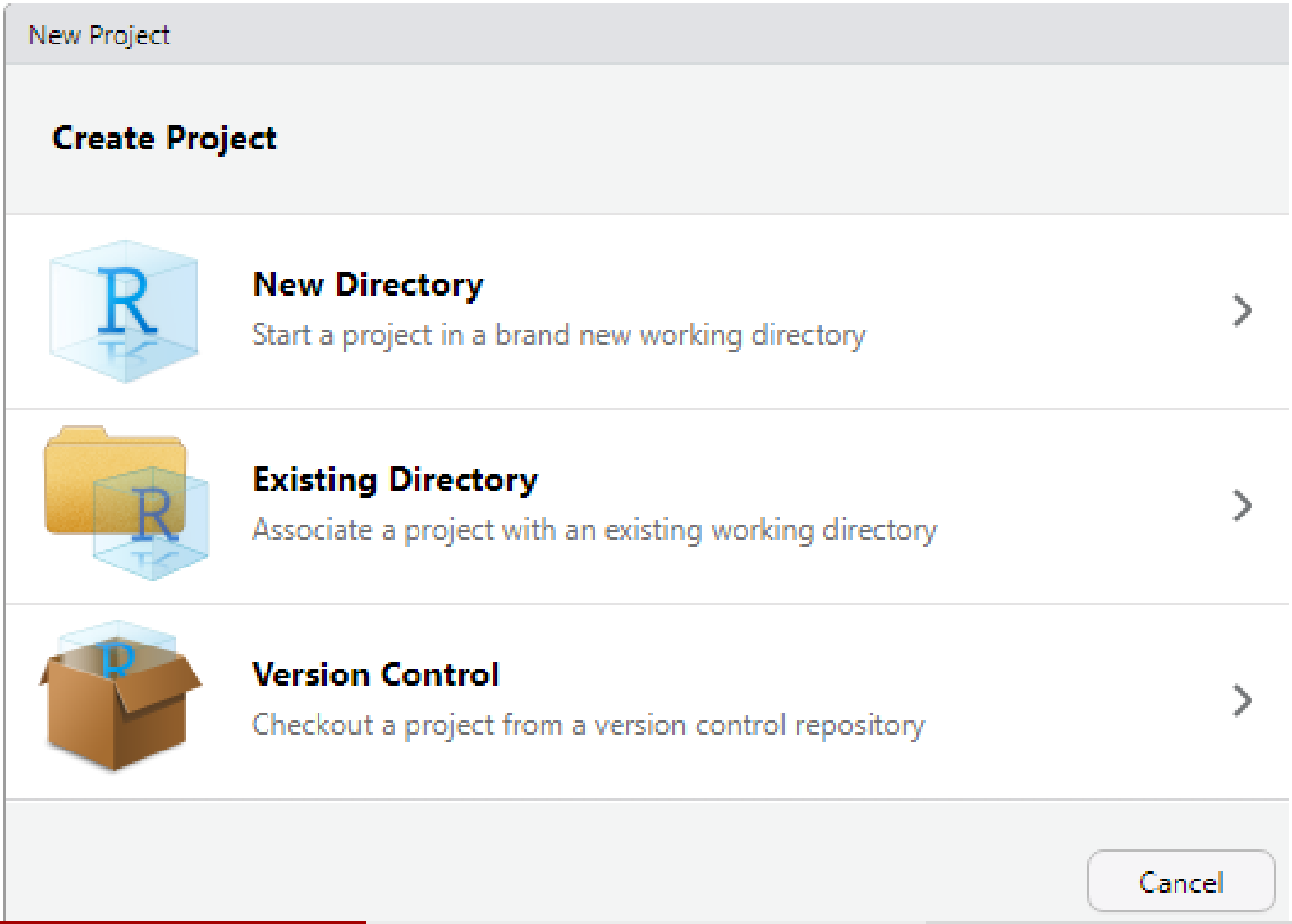


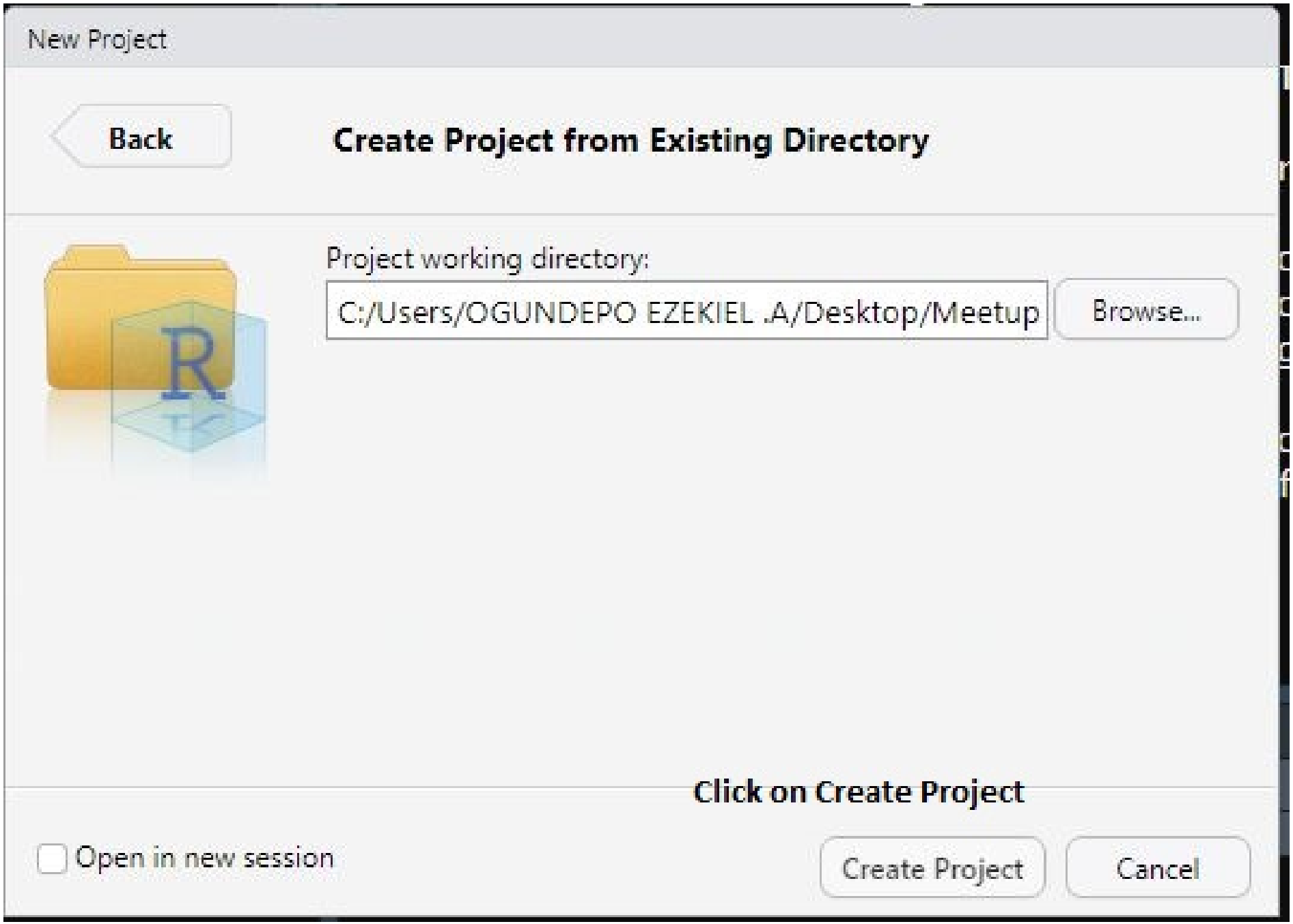
Figure 3: Example of Rstudio project

Creating a new R project

Creating a new R project

Click File → New Project, then choose Existing Directory:




New Project
Back
Create Project from Existing Directory
Project working directory:
C:/Users/OGUNDEPO EZEKIEL .A/Desktop/Meetup
Browse...
Click on Create Project
Open in new session
Create Project
Cancel

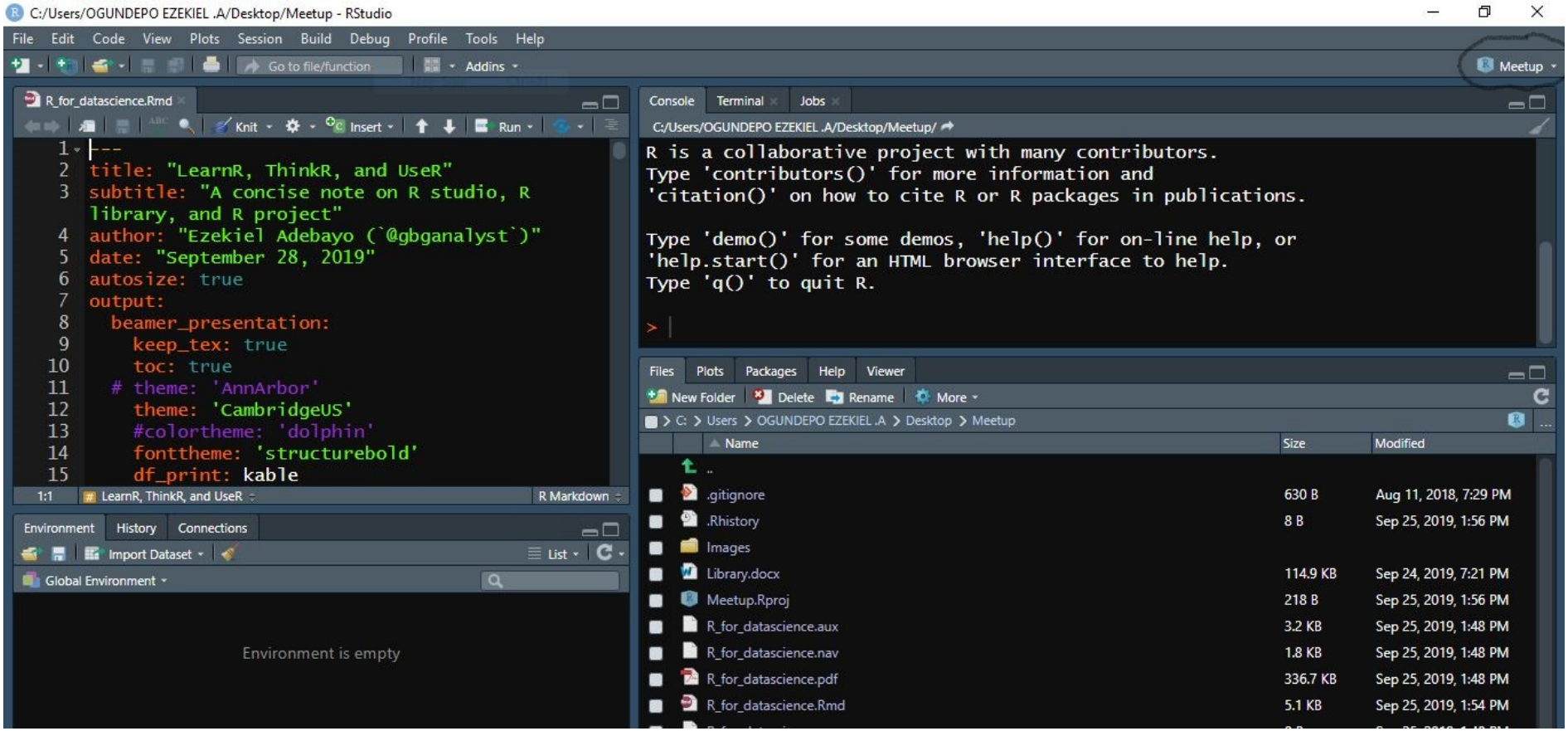


Figure 4: RStudio project

Hurray! We are in the RStudio project.

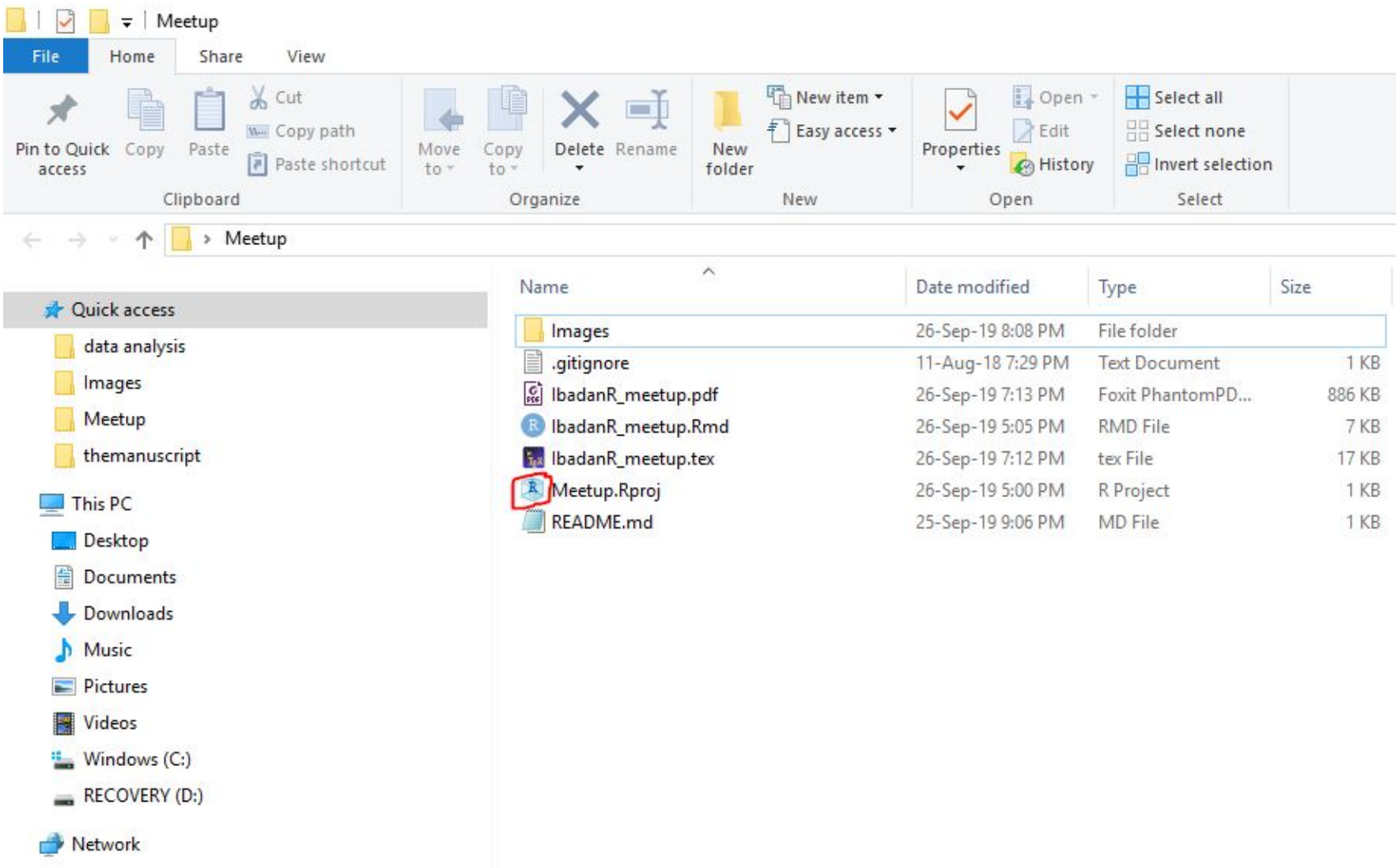


Figure 5: Meetup R project directory

From now henceforth, you will click **.Rproj** to open RStudio project.

Section 4

Summary

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We also learnt about Rstudio project that enables us to organize our files i.e. keep data files, the script, save the outputs and by using only relative path.

Summary

Data science workflow can be done in Rstudio, and we talked about R packages, how to install them and how to load them.

We also learnt about Rstudio project that enables us to organize our files i.e. keep data files, the script, save the outputs and by using only relative path.

Everything you need is in one place, and cleanly separated from all the other projects that you are working on.

Thank you!

References

Wickham, H., & Grolemund, G. (2016). R for data science: import, tidy, transform, visualize, and model data. " O'Reilly Media, Inc.".