



R Studio

R Basics

Packages

Workshop Preliminaries

Introduction to R

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*use***R!**



R is a **free** software for statistical analysis, text mining and graphics.

To install R on Window:

- 1 Download the binary file for R <https://cran.r-project.org/bin/windows/base/R-3.3.1-win.exe>
- 2 Open the downloaded **.exe** file and Install R

To install R on Mac:

- 1 Download the appropriate version of **.pkg** file <https://cran.r-project.org/bin/macosx/>
- 2 Open the downloaded **.pkg** file and Install R



RStudio is a free user interface for R.

- 1 Install the appropriate RStudio version <https://www.rstudio.com/products/rstudio/download/>
- 2 Run it to install R-studio



R Studio Structure

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RStudio screen

The **console** is where you can type commands and see output

```
R version 3.5.0 (2018-04-03) -- "Mashed Marvell"
Copyright (C) 2018 The R Foundation for Statistical Computing
Platform: x86_64-w64-mingw32/x64 (64-bit)

R is free software and comes with ABSOLUTELY NO WARRANTY.
You are welcome to redistribute it under certain conditions.
Type "license()" or "license()" for distribution details.

R is a collaborative project with many contributors.
Type "contributors()" for more information and
"citation()" on how to cite R or R packages in publications.

Type "demo()" for some demos, "help()" for on-line help, or
"help.start()" for an HTML browser interface to help.
Type "q()" to quit R.

> getwd()
[1] "C:/Users/afrederi/Desktop"
> list.files("C:/Users/afrederi/Desktop")
[1] "25"
> A <- matrix(c(1,2,3,4,5,6,7,8), nrow=4, ncol=2)
> A
     [,1] [,2]
     [1,] 1  2
     [2,] 2  5
     [3,] 3  7
     [4,] 4  8
> B <- matrix(c(1,2,3,4,5,6,7,8), nrow=4, ncol=2, byrow=TRUE)
> B
     [,1] [,2]
     [1,] 1  2
     [2,] 3  4
     [3,] 5  6
     [4,] 7  8
```

The **workspace** tab shows all the active objects (see next slide). The **history** tab shows a list of commands used so far.

The **files** tab shows all the files and folders in your default workspace as if you were on a PC/Mac window. The **plots** tab will show all your graphs. The **packages** tab will list a series of packages or add-ons needed to run certain processes. For additional info see the **help** tab

For more details - see handout **RStudio101** (by Oscar Torres-Reyna)



Creating Scripts

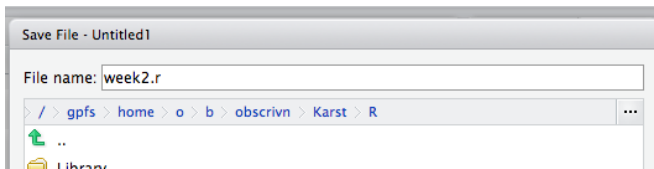
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Create R File: **File** → **New File** → **R Script**

Save R File: **File** → **Save** - name it (ex. **myscript1.r**)



Close R File: **File** → **Close**

Open R File: **File** → **Open**

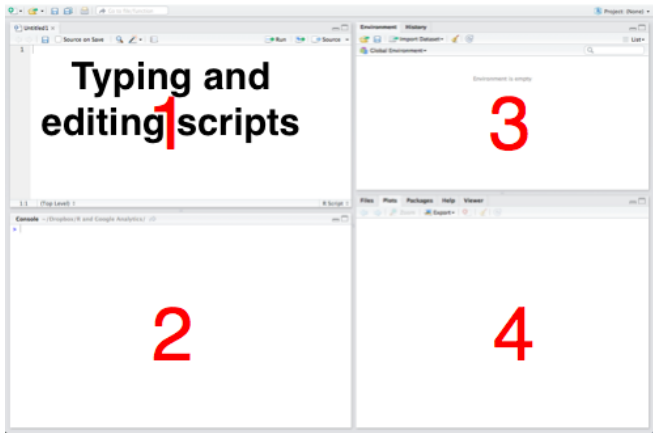


Creating Files

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Learning R Syntax

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Assignment of a **value** to a **variable** is done with `<-` (no space).

variable `<-` **value**



Learning R Syntax

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Assignment of a **value** to a **variable** is done with `<-` (no space).

variable `<-` **value**

NB: Compare this structure to a factor and its values: factor (**variable**) is a fixed name, while factor values can change.

gender `<-` "m"

gender `<-` "f"



Strings

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Strings (characters) are enclosed in quotation marks:

```
mystring <- "This is my string"
```

Numbers are without quotation marks:

```
mynumber <- 5
```



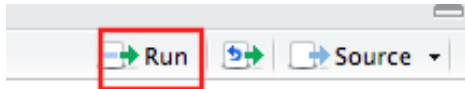
Run - Practice

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To execute your commands you need to click **run**



- Open your R file
- Type **mystring** <- "This is my string"
- Keep your cursor on the same line and click **run**
- Type **print(mystring)**
- Look at your console (bottom left)



Vector

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Vector is a sequence of strings (or numbers)

```
vector <- c("string1", "string2", "string3")
```

```
vector <- c(1,2,3,4)
```

Practice:

- Type **mywords** <-c("These", "are", "my", "words")
- Keep your cursor on the same line and click **run**
- Type **print(mywords)**



Length

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Length of string vector - how many elements (words) are in the vector

```
mywords <-c("These", "are", "my", "words")
```

- 1 How many words in **mywords**?
 - Type **length(mywords)** and **Run**
- 2 What is the first word in **mywords**?
 - Type **mywords[1]** and **Run**
- 3 What are the second and third words in **mywords**?
 - Type **mywords[2:3]** and **Run**



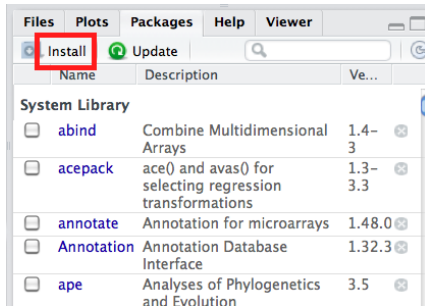
Installing Packages

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Packages

In your bottom left window - go to **Packages**





Selecting Packages - Practice

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Install Packages

Install from: [? Configuring Repositories](#)

Repository (CRAN)

Packages (separate multiple with space or comma):

languageR

languageR

Library/Frameworks/R.framework/Versions/3.2/Resources/l

Install dependencies

Install Cancel



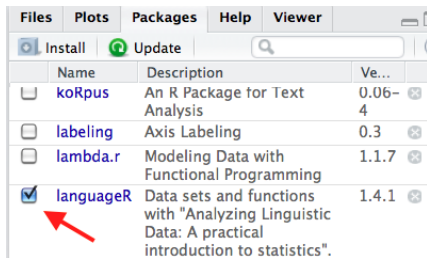
Package = Library

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In your **Packages** window scroll down until you see **languageR** and click inside the box:





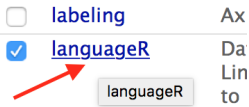
Package Content

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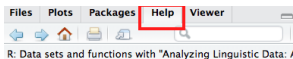
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To access package description and its content, click on the package name.



New window **Help** will open up:



**Data sets and functions
with "Analyzing Linguistic
Data: A practical
introduction to statistics".**



Documentation for package





Accessing Info from Packages

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Scroll down and select **languageR-package**

Help Pages

[A](#) [B](#) [C](#) [D](#) [E](#) [F](#) [G](#) [H](#) [I](#) [L](#) [M](#) [N](#) [O](#) [P](#) [Q](#) [R](#) [S](#) [T](#) [V](#) [W](#) [X](#) [Y](#) [Z](#)

[languageR-package](#)

Data sets and functions for 'Analyzing Linguistic Data'

You will see the list of available functions from this package

The main function of this package is to make available the data sets discussed and analyzed in 'Analyzing Linguistic Data: A practical introduction to statistics using R', to appear with Cambridge University Press. The following packages should be installed, as ancillary functions in this package depend on them.

`zipfR`

for word frequency distributions

`lme4`

for mixed-effects models

`coda`



Quick Help



R Studio

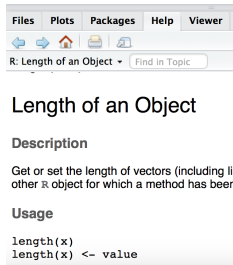
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Type in the console (bottom left):

- **?length**
- Instead of **Run** - click **enter-key**

```
Console ~/   
> k <- c("ab", "ac", "ad")  
> print(k)  
[1] "ab" "ac" "ad"  
> library("languageR", lib.1  
/library")  
>  
>  
> ?length  Enter
```



The screenshot shows the R help window for the 'Length of an Object' topic. The window has a menu bar with 'Files', 'Plots', 'Packages', 'Help', and 'Viewer'. Below the menu bar are navigation icons and a search box containing 'R: Length of an Object' and a 'Find in Topic' button. The main content area displays the title 'Length of an Object', a 'Description' section with the text 'Get or set the length of vectors (including lists) other R object for which a method has been', a 'Usage' section with the text 'length(x)' and 'length(x) <- value', and a 'Description' section with the text 'Get or set the length of vectors (including lists) other R object for which a method has been'.