Week-2: Code-along

NM2207: Computational Media Literacy 2023-08-16

```
Welcome! Go through the steps described below, carefully. It is totally fine to get stuck - ASK FOR HELP; reach out to your friends, TAs, or
the discussion forum on Canvas.
Here is what you have to do,
   1. Listen to the video lectures, and while doing so,
   2. Follow the instructions in this file
```

week-2-Data&Visualization →

■ week-2-Data&Visualization -

I. Preliminaries

```
2. Open R Studio
```

1. Create a new folder, "Week-2", inside "NM2207" folder you created last week

3. Go to the Files tab and open the folder, "Week-2", you just created

week-2-Data&Visualization - main - RStudio

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Environment History Connections Git Tutorial
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   54 2. Open R Studio
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                                                                                    week-2-Data&Visualization/Code-along.html
   3. Go to the Files tab and open the folder, "Week-2", you just created
                                                                                    week-2-Data&Visualization/Final.Rmd
   60 <br>
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   62 4. Set it as your working directory (shown in the Figure below)
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   67 knitr::include_graphics("images/saw.png")
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Navigating folders
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4. Set it as your working directory (shown in the Figure below)

• Go to file/function 🗦 🗝 🔡 - Addins -

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Environment History Connections Git Tutorial

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Set as working directory
```

week-2-Data&Visualization - main - RStudio

5. Create a new project, "Week-2" 6. Install some packages that will be used in today's session;

You will have to invoke the command every time you need to install a package,

• These are the packages, tidyverse, ggplot2, shiny o install.packages("tidyverse")

o install.packages("ggplot2")

• Use install.packges("insert_name_of_package_here") command to do so

- o install.packages("shiny")
- 7. Once you complete the installation of packages, load them;

• Use library(insert name here) command to do so

o library(ggplot2) o library(shiny)

o library(tidyverse)

What are packages?

datasets

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123:1 # I. Preliminaries ‡

10,000+ user contributed packages and growing. There are a set of standard (or base) packages which are considered part of the R source code and automatically available as part of your R installation. Base packages contain the basic functions that allow to work, and enable standard statistical and graphical functions on

116 knitr::include_graphics("images/fol.png")

123 | 124 - # II. Code from slides to be executed

8. Type in the commands mentioned below in the **Q** console; week-2-Data&Visualization - main - RStudio Environment History Connections Git Tutorial Code-along.Rmd* × Teaching.Rmd ×
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R: Coerce to a Data Frame - Find in Topic

as.data.frame {base}

week-2-Data&Visualization/Final.Rmd

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Plots appear here

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R Documentation

Packages are collections of **Q** functions, data, and compiled code in a well-defined format, created to add specific functionality. There are

✓ ggplot2 3.4.2 ✓ tibble 3.2.1 ✓ tidyr 1.3.0

121 10. Plots will appear under the "Plots" tab in the "Files" pane

112 8. Type in the commands mentioned below in the `r icons::fontawesome("r-project")` console;

115 - ```{r, out.height= "400px",out.width= "800px",echo=FALSE,fig.cap="Navigating folders"}

9. In some cases the output can also be observed in the `r icons::fontawesome("r-project")` console

```
Coerce to a Data Frame
       123:1 # I. Preliminaries $
                                                                                               R Markdown $
       Console Terminal × Render × Background Jobs
       R 4.2.1 · ~/Downloads/NVGit/CourseMaterial/week-2-Data&Visualization/
       The downloaded binary packages are in
                                                                                                           Functions to check if an object is a data frame, or coerce it if possible.
             /var/folders/21/g7cpfl457z13mg0d8jtzsbzc0000gn/T//RtmpGEYZGm/downloaded_packages
       > library("tidyverse")
                                                                                 – tidyverse 2.0.0 —
       — Attaching core tidyverse packages -
      ✓ dplyr 1.1.2 ✓ readr 2.1.4
✓ forcats 1.0.0 ✓ stringr 1.5.0
                                                                                                           as.data.frame(x, row.names = NULL, optional = FALSE, ...)
                                                                                                           ## S3 method for class 'character
      ✓ lubridate 1.9.2
✓ purrr 1.0.1
                                                                                                           as.data.frame(x, ...,
       — Conflicts —
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       * dplyr::filter() masks stats::filter()
       * dplyr::lag() masks stats::lag()
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       i Use the conflicted package to force all conflicts to become errors
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     R Console
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               r icons::fontawesome("r-project") to work, and enable standard statistical and graphical
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116 knitr::include_graphics("images/fol.png") 9. In some cases the output can also be observed in the `r icons::fontawesome("r-project")` console 121 10. Plots will appear under the "Plots" tab in the "Files" pane

124 - # II. Code from slides to be executed

Console Terminal × Render × Background Jobs ×

112 8. Type in the commands mentioned below in the `r icons::fontawesome("r-project")` console;

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             /var/folders/21/g7cpfl457z13mg0d8jtzsbzc0000gn/T//RtmpGEYZGm/downloaded_packages
       > library("tidyverse")

    Attaching core tidyverse packages -

✓ dplyr 1.1.2 ✓ readr 2.1.4

       ✓ forcats 1.0.0 ✓ stringr 1.5.0
       ✓ lubridate 1.9.2 ✓ tidyr 1.3.0
       ✓ purrr 1.0.1
       — Conflicts —
                                                              - tidyverse_conflicts() —
       * dplyr::filter() masks stats::filter()
       * dplyr::lag() masks stats::lag()
        i Use the <u>conflicted package</u> to force all conflicts to become errors
      Plots tab in the Files pane
  11. Now, open the file "Code-along.R" and execute the commands in the console as and when they are discussed in the video lecture
II. Code from slides to be executed
Slide Number 5
 # Load R packages for data science
 library(tidyverse)
  # Data in starwars data-set
 starwars
Slide Number 7
```

R Markdown a

```
Slide Number 8
```

```
Slide Number 10
 # Access column "height"
 starwars$height
```

Salient features of the data-set

Catch a glimpse starwars data-set

?starwars

glimpse(starwars)

Slide Number 11

Slide Number 13

starwars\$films[1:3]

Slide Number 14

Rows of interest

Rows of interest

Slide Number 16

Rows of interest

Slide Number 17

Slide Number 23

nrow(starwars)

ncol(starwars)

dim(starwars)

Number of rows in the data-set

filter_rows <- c("Luke Skywalker","R2-D2")</pre>

Extract row corresponding to Luke Skywalker

Access column "gender"

starwars\$mass

Access column "mass"

```
Slide Number 12
 # Access column "gender"
 starwars$gender
```

```
filter rows <- c("Luke Skywalker", "R2-D2", "Darth Vader") # Extract row corresponding to Luke Skywalker
 starwars %>% filter(name%in%filter rows)
Slide Number 15
```

starwars %>% filter(name%in%filter_rows) %>% select(name,height,mass,homeworld,films)

```
filter_rows <- c("Luke Skywalker","R2-D2")</pre>
# Extract rows in 'rows'
starwars %>% filter(name%in%filter_rows) %>% pull(films)
```

```
# Invoke the library
library(Tmisc)
# Filter data-set I in quartet
quartet %>% filter(set=="I")
```

Invoke the library

Filter data-set I in quartet

Filter data-set I in quartet

quartet %>% filter(set=="IV")

Obtain the needed statistics

quartet %>% filter(set=="II")

library(Tmisc)

library(Tmisc)

Slide Number 25

grouped_quartet %>%

 $mean_x = mean(x)$,

summarise(

Plot the data

ggplot(data=starwars)

Slide Number 30

```
Slide Number 24
 # Invoke the library
 library(Tmisc)
 # Filter data-set I in quartet
 quartet %>% filter(set=="III")
 # Invoke the library
```

```
mean_y = mean(y),
    sd_x = sd(x),
    sd_y = sd(y),
 r = cor(x, y)
Slide Number 29
```

```
Slide Number 31
 # Plot mass along y-axis
 ggplot(data=starwars, mapping=aes(x=height, y=mass))
```

Slide Number 32

geom_point()

Plot height along x-axis

ggplot(data=starwars,mapping=aes(x=height))

ggplot(data=starwars,mapping=aes(x=height,y=mass)) +

```
Slide Number 33
 ggplot(data=starwars,mapping=aes(x=height,y=mass)) + geom_point() +
 labs(x="Height (cm)",y="Weight (Kg)")
```

```
ggplot(data=starwars,mapping=aes(x=height,y=mass)) +
  geom_point() +
 labs(x="Height (cm)",y="Weight (Kg)",
title="Mass versus Height")
```

title="Mass versus Height",

Run an example from the library

Run an example from the library

runExample("06 tabsets")

caption="Source: tidyverse/ starwars dataset")

Slide Number 34

```
Slide Number 35
 ggplot(data=starwars,mapping=aes(x=height,y=mass)) +
   geom point() +
   labs(x="Height (cm)",y="Weight (Kg)",
```

```
Slide Number 40
 # Install package
 install.packages("shiny") # Invoke the package
 library(shiny)
```

```
runExample("01 hello")
Slide Number 42
 # Install package
 install.packages("shiny") # Invoke the package
 library(shiny)
```