,

2020-12-15

Contents

Chapter 1

1.1

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** REMOVE DOCKER SENTENCE DEPENDENT ON WHETHER OR NOT WE GET THERE BY DEADLINE**

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(@ref(#rmd): /). **??**
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`git` (**??**:
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(**??**:
Mac, `R`? Docker.).

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, (SDC)
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Chapter 2

2.1 : R

, , Python (
: pandas, numpy, matplotlib) R (: dplyr (?), data.table
(?), ggplot2 (?)). ,
c# , , c# e
, , . , Julia Scala
Python ili R
c c#. ,
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R . R
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. R
R Rstudio
, (Rmarkdown (?)), (bookdown (?)),
(shiny (?)), (blogdown (?)), . e bookdown,
( ) , ,
Rstudio.

R.
R . ,
R
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R Rstudio (Rmarkdown)
Jypiter
(VScode). ,
( ) , Rstudio
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2.2 : git

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e undo/redo , ( ),
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git ( ). , git
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. git
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2.3 : docker

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(big data) .
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(,)
. docker (??). docker
( ) (R) (R)
Rstudio .
, R
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2.4

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Table 2.1: .

		csv, MySQL
		R, git
		dplyr, ggplot2
		docker

Chapter 3

3.1 (, ,)

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10 R ( ).

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. , , , Downloads :

```
trosoci <- read_csv("~/Downloads/trosoci-moja-firma.csv")

trosoci_sumirani <- trosoci %>%
  group_by(vraboten, tip_na_trosok) %>%
  summarise_at("cena", "sum") %>%
  arrange(vraboten, tip_na_trosok)

write_csv(trosoci_sumirani,
          path = "~/Download/trosoci-moja-firma-sumirani.csv")
```

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. Rstudio :

```
trosoci <- read_csv("~/Downloads/trosoci-moja-firma.csv")

trosoci_sumirani <- trosoci %>%
  group_by(vraboten, tip_na_trosok) %>%
  summarise_at("cena", "sum") %>%
```

```
  arrange(vraboten, tip_na_trosok)

write_csv(trosoci_sumirani,
          path = "~/Download/trosoci-moja-firma-sumirani.csv")
```

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?!?“ ? :

1. ~/Downloads/trosoci-moja-firma.csv.
? ( )

2. ~/Downloads/trosoci-moja-firma.csv.
Linux Windows ,
Downloads (. C:\Downloads)
~/Downloads)? ( ) ( )

3. , , R:
readr dplyr.
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4. ~/Downloads/trosoci-moja-firma.csv
. Downloads,
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5. , Downloads /
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6. , summarise_at
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summarise_at .
dplyr, summarise_at ,
dplyr, summarise_at
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3.2 -

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- . C:/Data, C:/Analizi.
- (: C:/Data/ 2020/ /). .
- (#) README , .
- ( ) .
- ( ).
- (randomness) (set.seed R). .

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Chapter 4

4.1

. ( )
vraboten, tip_na_trosok cena. :

```
trosoci
```

```
## # A tibble: 30 x 3
##    vraboten    tip_na_trosok            cena
##    <chr>       <chr>                   <dbl>
##  1    .                               75
##  2     .                             81
##  3    .                               13
##  4      .                   40
##  5       .                        89
##  6     .                             48
##  7      .                   96
##  8     .                     23
##  9     .                             84
## 10    .                               29
## # ... with 20 more rows
```

, , :

```
trosoci %>%
  group_by(vraboten, tip_na_trosok) %>%
  summarise_at("cena", "sum") %>%
  arrange(vraboten, tip_na_trosok)
```

```
## # A tibble: 12 x 3
## # Groups:   vraboten [5]
```

```
##    vraboten    tip_na_trosok            cena
##    <chr>       <chr>                   <dbl>
##  1    .                          31
##  2    .                               177
##  3    .                                51
##  4       .                           324
##  5       .                          111
##  6       .                   196
##  7       .                           218
##  8       .                            54
##  9      .                          23
## 10      .                                48
## 11      .                               127
## 12      .                               116
```

4.2

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1. R
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```
#
library(dplyr)
library(readr)

#              ,        :
# install.packages("dplyr")
# install.packages("readr")

trosoci <- read_csv("data/trosoci-moja-firma.csv")
trosoci_sumirani <- trosoci %>%
  group_by(vraboten, tip_na_trosok) %>%
  summarise_at("cena", "sum")%>%
  arrange(vraboten, tip_na_trosok)
write_csv(trosoci_sumirani,
          path = "data/trosoci-moja-firma-sumirani.csv")
```

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```
#
library(dplyr)
library(readr)

#              ,         :
# install.packages("dplyr")
# install.packages("readr")

#     :
#
#
pateka_do_input <- NULL # "data/trosoci-moja-firma.csv"
pateka_za_output <- NULL # "data/trosoci-moja-firma-sumirani.csv"

#      :
# pateka_do_input <- "~/Downloads/trosoci-moja-firma.csv"
# pateka_do_output <- "~/Downloads/trosoci-moja-firma-sumirani.csv"

#   :
# pateka_do_input <- "C:\rabota\podatoci\trosoci\trosoci-moja-firma.csv"
# pateka_do_output <- "C:\rabota\podatoci\trosoci\trosoci-moja-firma-sumirani.csv"

#
trosoci <- read_csv(pateka_do_input)

#
trosoci_sumirani <- trosoci %>%
  group_by(vraboten, tip_na_trosok) %>%
  summarise_at("cena", "sum") %>%
  arrange(vraboten, tip_na_trosok)

#
write_csv(trosoci_sumirani,
          path = pateka_za_output)
```

4.3

,
:

```
sumiraj_trosoci <- function(trosoci, destinacija) {

  #
```

```
  trosoci <- read_csv(trosoci)

  #
  trosoci_sumirani <- trosoci %>%
    group_by(vraboten, tip_na_trosok) %>%
    summarise_at("cena", "sum") %>%
  arrange(vraboten, tip_na_trosok)

  #
  write_csv(trosoci_sumirani,
            path = destinacija)
}
```

, (
moja-tabela.csv moja-tabela-medijani.csv) .
R (Python) :

```
#
#       `trosoci`

sumiraj_trosoci <- function(trosoci_tabela) {

  #
  trosoci <- read_csv(trosoci_tabela)

  #
  trosoci_sumirani <- trosoci %>%
    group_by(vraboten, tip_na_trosok) %>%
    summarise_at("cena", "sum") %>%
  arrange(vraboten, tip_na_trosok)

  #
  folder_name <- dirname(trosoci_tabela)
  base_name <- tools::file_path_sans_ext(basename(trosoci_tabela))
  new_name <- paste(base_name, "sumirani.csv", sep="-")
  destinacija <- file.path(folder_name, new_name)

  #
  write_csv(trosoci_sumirani, path = destinacija)
}
```

:

```
#     :
#                R                    `sumiraj_trosoci`

#
```

```
library(dplyr)
library(readr)

#              ,        :
# install.packages("dplyr")
# install.packages("readr")

#
#       `trosoci`

sumiraj_trosoci <- function(trosoci_tabela) {

  #
  trosoci <- read_csv(trosoci_tabela)

  #
  trosoci_sumirani <- trosoci %>%
    group_by(vraboten, tip_na_trosok) %>%
    summarise_at("cena", "sum") %>%
  arrange(vraboten, tip_na_trosok)

  #
  folder_name <- dirname(trosoci_tabela)
  base_name <- tools::file_path_sans_ext(basename(trosoci_tabela))
  new_name <- paste(base_name, "sumirani.csv", sep="-")
  destinacija <- file.path(folder_name, new_name)

  #
  write_csv(trosoci_sumirani, path = destinacija)
}
```

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4.4 Rscript R

TODO: (for windows see: https://stackoverflow.com/questions/3506007/running-r-code-from-command-line-windows)

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R, R
R . :

```
Rscript sumiraj_trosoci.R trosoci_dekemvri_2020.csv
```

. Rscript,
( ),
( ):

```
# (data/sumiraj-trosoci-1.R)

#     :
#                R                    `sumiraj_trosoci`

#
library(dplyr)
library(readr)

#              ,        :
# install.packages("dplyr")
# install.packages("readr")

#
#       `trosoci`

sumiraj_trosoci <- function(trosoci_tabela) {

  #
  trosoci <- read_csv(trosoci_tabela)

  #
  trosoci_sumirani <- trosoci %>%
    group_by(vraboten, tip_na_trosok) %>%
    summarise_at("cena", "sum") %>%
  arrange(vraboten, tip_na_trosok)

  #
  folder_name <- dirname(trosoci_tabela)
  base_name <- tools::file_path_sans_ext(basename(trosoci_tabela))
  new_name <- paste(base_name, "sumirani.csv", sep="-")
  destinacija <- file.path(folder_name, new_name)

  #
  write_csv(trosoci_sumirani, path = destinacija)
}

#
dadeni_trosoci <- commandArgs(trailingOnly=TRUE)[[1]]
```

```
#
sumiraj_trosoci(trosoci = dadeni_trosoci)
```

,
data sumiraj-trosoci-1.R trosoci-moja-firma.csv.

, ,
, .

, docopt docstring,

. docopt/docstring ,
Python Perl .

, assertthat,
. , docopt assertthat
, commandArgs() stopifnot()
R. .

```
# (data/sumiraj-trosoci-2.R)

'                                .
    ta                        : `vraboten`, `tip_na_trosok`,   `cena`.

 Usage:
    sumiraj-trosoci-2.R <tabela_so_trosoci>
    sumiraj-trosoci-2.R --help
    sumiraj-trosoci-2.R --version

 Options:
    --help
    --version

' -> doc

#
library(docopt)
arguments <- docopt(doc, version = "          2.0\n")

#               csv
assertthat::assert_that(
  assertthat::has_extension(arguments$tabela_so_trosoci, ext = "csv"))

#
suppressPackageStartupMessages({
  library(dplyr)
  library(readr)
```

```
  library(assertthat)
})

#              ,        :
# install.packages("dplyr")
# install.packages("readr")
# install.packages(assertthat)

#
#       `trosoci_tabela`

sumiraj_trosoci <- function(trosoci_tabela) {

  #
  trosoci <- read_csv(trosoci_tabela)

  assertthat::assert_that(inherits(trosoci, "data.frame"), msg = "                    `d
  assertthat::assert_that(all(c("vraboten", "tip_na_trosok", "cena") %in% names(trosoci
                          msg = "                          : 'vraboten', 'tip_na_trosok'
  assertthat::assert_that(is.numeric(trosoci$cena), msg = "     `cena`               ."


  #
  trosoci_sumirani <- trosoci %>%
    group_by(vraboten, tip_na_trosok) %>%
    summarise_at("cena", "sum") %>%
    arrange(vraboten, tip_na_trosok)

  #
  folder_name <- dirname(trosoci_tabela)
  base_name <- tools::file_path_sans_ext(basename(trosoci_tabela))
  new_name <- paste(base_name, "sumirani.csv", sep="-")
  destinacija <- file.path(folder_name, new_name)

  #
  write_csv(trosoci_sumirani, path = destinacija)
}

#               (    )
dadeni_trosoci <- arguments$tabela_so_trosoci

#
sumiraj_trosoci(trosoci = dadeni_trosoci)
```

, .

- , . ,
:

```
$ Rscript sumiraj-trosoci-2.R
Error:                                  .
    ta                        : `vraboten`, `tip_na_trosok`,   `cena`.

 Usage:
    sumiraj-trosoci-2.R <tabela_so_trosoci>

Execution halted
```

:

```
$ Rscript sumiraj-trosoci-2.R trosoci-moja-firma.csv
[1] TRUE
Parsed with column specification:
cols(
  vraboten = col_character(),
  tip_na_trosok = col_character(),
  cena = col_double()
)
```

, :

```
Rscript sumiraj-trosoci-2.R trosoci-moja-firma.xls
Error: File 'trosoci-moja-firma.xls' does not have extension csv
Execution halted
```

cena eur:

```
Rscript sumiraj-trosoci-2.R trosoci-moja-firma-eur.csv
[1] TRUE
Parsed with column specification:
cols(
  vraboten = col_character(),
  tip_na_trosok = col_character(),
  eur = col_double()
)
Error:                          : 'vraboten', 'tip_na_trosok', 'cena'.
Execution halted
```

4.5

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R 10 ~/Downloads Linux

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Chapter 5

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(R + markdown)

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p- ,),
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, , , R Rmarkdown.
Rmarkdown .
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5.1 markdown

Markdown, *markup* HTML LaTeX
. markdown,
a . R
Rstudio Rmarkdown R for Data Science
( ) R ,
Rmarkdown („ “ ‘literal programming’).

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_ _ **markdown** .
[ ](https://kbroman.org/knitr_knutshell/pages/Rmarkdown.html)
[ ](https://rmarkdown.rstudio.com/authoring_quick_tour.html)
`Rmarkdown`.

, ja : ` 3.14 * 2`.
K (chunk) .
** `R` `r`**. (- , ``
)

, : $P = r^2 * \pi$

:

markdown .
Rmarkdown.

, ja : 6.28. K
(chunk) . R r. (
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.)

, : $P = r^2 * \pi$

HTML, PDF, Word
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5.2 , , knitr

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( ) . Rmarkdown
. ```{r}
```. R knitr
R #. ,
knitr .

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rmarkdown knitr.
HTML, LaTex, MS Word,
markup Rmd. ,
, , , , ,
HTML LaTeX.

## 5.3

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. ? j
, Rmd
. , yaml
---
```

````
---
title: "Проба"
author: "Душко долгоушко"
date: "12/14/2020"
output: html_document
---

```{r setup, include=FALSE}
knitr::opts_chunk$set(echo = TRUE)
```

## R Markdown

Ова е R Markdown документ

Кога ќе го кликнете копчето **Knit** во `Rstudio`,
или извршите `rmarkdown::render()` во `R` конзола
ќе се генерира документ што ја вклучува содржината
и резултатит од интегрираниот R код. На пример:

```{r cars}
summary(cars)
```

## Вклучување графици

```{r pressure, echo=FALSE}
plot(pressure)
```

Параметарот `echo = FALSE` го додадовме за да го _скриеме_
прикажеме `R` кодот што го прави графикот
````

Figure 5.1: Rmd , ,

Проба

Душко долгоушко

12/14/2020

R Markdown

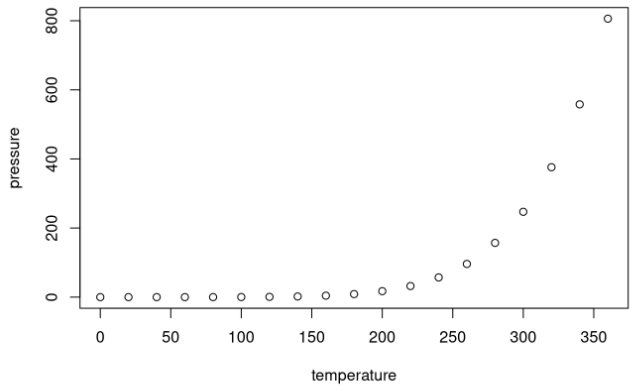
Ова е R Markdown документ

Кога ќе го кликнете копчето **Knit** во `Rstudio`, или извршите `rmarkdown::render()` во `R` конзола ќе се генерира документ што ја вклучува содржината и резултатит од интегрираниот R код. На пример:

```
summary(cars)
```

```
##      speed           dist
##  Min.   : 4.0   Min.   :  2.00
##  1st Qu.:12.0   1st Qu.: 26.00
##  Median :15.0   Median : 36.00
##  Mean   :15.4   Mean   : 42.98
##  3rd Qu.:19.0   3rd Qu.: 56.00
##  Max.   :25.0   Max.   :120.00
```

Вклучување графици



Параметарот `echo = FALSE` го додадовме за да го *скриеме* прикажеме `R` кодот што го прави графикот

Figure 5.2: HTML Rmd

```
title:
output: html_document
params:
  grad: Tetovo
---
```

params R ,
:

```
params$grad
```

:

```
library(dplyr)
filtriraj_gradovi <- function(podatoci, potreben_grad) {
  podatoci %>% dplyr::filter(grad == potreben_grad)
}
```

,
:

```
#
filtriraj_gradovi(podatoci = moi_podatoci, potreben_grad = params$grad)
#
```

, R :

```
rmarkdown::render(input = "mojizvestaj.Rmd", params = list("Tetovo"))
```

, R for
HTML, PDF MS Word :

```
gradovi <- c("Tetovo", "Gostivar", "Debar", "Berovo", "Dojran") # ...
for ( i in gradovi) {
  message("              : ", i)
  rmarkdown::render(input = "pateka/do/mojizvestaj.Rmd", params = list(i))
}
```

?
. , izvestaj.Rmd
, :

```
izvestaj.Rmd
tetovo-izvestaj.Rmd
debar-izvestaj.Rmd
skopje-izvestaj.Rmd
skopje-izvestaj-juni.Rmd
skopje-izvestaj-juni-specijalen-so-logo.Rmd
kichevo-izvestaj-avgust-2019.Rmd
kicevo-izvestaj-avgust.Rmd
```

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, `kopje-izvestaj-juni-specijalen-so-logo.Rmd`
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5.4

`rmarkdown` `knitr`
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- (: , ,)
- `Rmd` `Shiny server` ( )
- HTML prettyprint ( )
- bookdown ( )
- `Rmarkdown` `rmarkdown::render_site` (https://rmarkdown.rstudio.com/lesson-13.html)
- `flexdashboard`

Chapter 6

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Rmd (??). ,
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6.1 1:

6.1.1

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(?) README . README
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tabela_1 tabela_2.

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```
strategija_1/
  grafik_1
      code_grafik_1.R
      data_grafik_1.csv
  grafik_2
      code_grafik_2.R
      data_grafik_2.csv
  README
  tabela_1
      code_tabela_1.R
      data_tabela_1.csv
  tabela_2
      code_tabela_2.R
      data_tabela_2.csv
  tabela_3
       code_tabela_3.R
       data_tabela_3.csv
```

1 2 1 2, ,
:

```
strategija_1/
  grafik_1
      code_grafik_1.R
      code_tabela_1.R
      data_grafik_1.csv
  grafik_2
      code_grafik_2.R
      code_tabela_2.R
      data_grafik_2.csv
  README
  tabela_3
       code_tabela_3.R
       data_tabela_3.csv
```

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6.1.2

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6.1.3

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```
strategija_1/
   README
   zaednicki-kod.R
   grafik_1
       code_grafik_1.R
```

```
      code_tabela_1.R
      data_grafik_1.csv
   grafik_2
      code_grafik_2.R
      code_tabela_2.R
      data_grafik_2.csv
   tabela_3
       code_tabela_3.R
       data_tabela_3.csv
```

, , .
, , ,
. , code_tabela_3.R
sumiraj-po-grupi() zaednicki-kod.R
grafik_2, .
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6.2 2: R

6.2.1

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```
strategija_2/
   izvestai
   podatoci
   README
   skripti
```

R („ „
library(mojpaket)), :

(skripti R),
(podatoci data data-raw), README
, .

? , ,
:

1. R (global environment, .GlobalEnv),

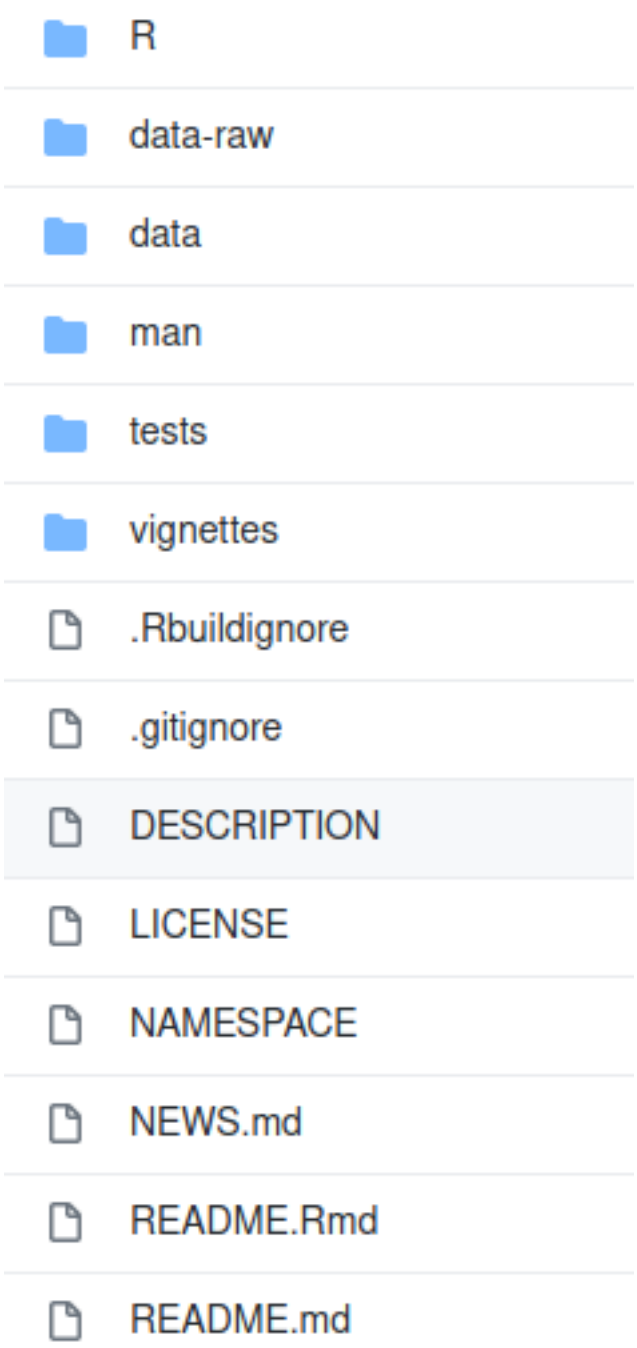
R
data-raw
data
man
tests
vignettes
.Rbuildignore
.gitignore
DESCRIPTION
LICENSE
NAMESPACE
NEWS.md
README.Rmd
README.md

Figure 6.1: R ( )

2. podatoci

3. (, , HTML/PDF) izvestai

, , ,
, .

6.2.2

, , ,
. .
, . ,
R , . :

```
library(devtools)
library(usethis)
devtoos::create(path = "mojpaket")

podatoci1 <- read.csv("~/Desktop/moi-podatoci.csv")
usethis::use_data("podatoci1")
```

:

```
mojpaket/
   DESCRIPTION
   NAMESPACE
   data
   R
```

, , , , - .
, R ((?)).

:
/ /
. : prodigenr, makeProject, ProjectTemplate,
fertile, goodpractice, (,
,). , , prodigenr
R ( )
R .

```
library(prodigenr)
setup_project("data/mojproekt2")
```

, :

```
mojproekt2/
   data
       README.md
   DESCRIPTION
```

```
doc
    README.md
mojproekt2.Rproj
R
    fetch_data.R
    README.md
    setup.R
README.md
TODO.md
```

, setup.R /
. fetch_data.R
data/ .
, DESCRIPTION (- R). ,
(library(help="prodigenr"))
.

6.2.3

R . R
,
, , (unit
tests) .

6.2.4

, ,
.
, , ,
, .

6.3

Chapter 7

(git / GitHub)

( )
Git. Git Github Gitlab.

. , Git
, , . track
changes MS Word.

, Git .
. . https://git-scm.com/book/en/v2

Github HMTL
, Rmarkdown HTML
(??).

Git branches ( ).
. (main) , .
, , , .
izvestaj-posledna-verzija-final-za-prin-2.doc. :)

Github .
. gh-pages.

gh-pages HTML .
Rmarkdown, HTML.

7.0.1

git rstudio git https://git-scm.com/download/win.
github.com.

7.0.2

1. . ( )
2.
3.
4.
5. -
6. .
7. -

Chapter 8

not too much about git (of course that is not the point anyway)

Chapter 9

just about creating a github repo where you can push rmd in main and html in gh-pages thus making your reserarch public on the web mostly working thourgh r studio exept for creating the account on gh.

9.0.1 : https://git-scm.com/book/en/v2