,

11/25/2020

# Contents

# Chapter 1

## :

title:          ,    ,
more realistic title:
c1:
c2:
c3:       (    ,     ,       )
c4:          :
c5:       /     (Rmd)
c6:       (git / GitHub)
c7:       Mac,         `R`? Docker.
c8:
c9:

# Chapter 2

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## 2.1

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## 2.2

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3:                      … ???).                                                    ,                                                    :
)
(          4:                                                              :
(          5:                              /            (Rmd)).

( 6: git
(git / GitHub))

( 7: Mac, R? Docker.).

# Chapter 3

## 3.1 : R

, , Python (
: pandas, numpy, matplotlib) ( : 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 .

R Rstudio ( Rmarkdown)
Jypiter
(VScode). ,
( ) , Rstudio
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## 3.2                    : `git`

,              `git` (      **??**),

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e      `undo/redo`      ,                                      ( ),

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`git` (                                      ).              , `git`

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. `git`

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## 3.3                          : `docker`

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(big data)                                    .

(    ,    ),      (          ,    ),

(    ,  )

.                                        `docker` (      **??**). `docker`

( )                    (`R`    )        (      `R`    )

`Rstudio`                  .

,                                `R`

,

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## 3.4

2.1):

Table 3.1:                                                            .

|  |  |  |
|---|---|---|
|  |  | csv, MySQL |
|  |  | R, git |
|  |  | dplyr, ggplot2 |
|  |  | docker |

# Chapter 4

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## 4.1 ( , , )

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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")
```

,                                      .

.     .          .

-                                                              .

.                                  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")
```

,              ,                   .                       : "
   ?!?"     ?                 :

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`,
            .

5.      ,             `Downloads`       /
             .           ,
            .

6.                  ,                `summarise_at`
                .  ,            R  `dplyr`,
  `summarise_at`            .
  `dplyr`,     `summarise_at`               ,
   `dplyr`,         `summarise_at`
    .            ,               .

7.                    ,            
        ,              .
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     .     ,
     .

## 4.2 -

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- . C:/Data
  C:/Analizi

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- ( #) README ,
  ,

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- randomness
  (set.seed R).
  .

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# Chapter 5

## 5.1

,                                    .                              (     )
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
```

## 5.2

(                                                                          (
                           ),                   .                    ,             :

   1.              R

   2.

   3.

                    ,                         .
                              .                    :

```
#
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")
```

              ,              .
                    .                              ,

, , , ,
:

```
#
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)
```

## 5.3

,
:

```
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`

#
```

```r
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)
}
```

                  ?                      .               ,    ,

                  .

             .

## 5.4   Rscript                         `R`

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

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

                                .                       Rscript,
                                (                   ),
(               ):

```
# (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 = "c

#
suppressPackageStartupMessages({
  library(dplyr)
  library(readr)
  library(assertthat)
})

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

#
#        `trosoci_tabela`

sumiraj_trosoci <- function(trosoci_tabela) {
```

```r
  #
  trosoci <- read_csv(trosoci_tabela, col_types = "ccn")

  assertthat::assert_that(
    inherits(trosoci, "data.frame"),
    msg = "                        `data.frame`.")

  assertthat::assert_that(all(c("vraboten", "tip_na_trosok", "cena") %in% names(trosoci)),
    msg = "                         : 'vraboten', 'tip_na_trosok', 'cena'.")

  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)
```

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

                        ,                                   ,
                              ,                         .

                  ,                docopt            docstring,

    . docopt/docstring                          ,

Python   Perl                          .


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

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

## 5.5

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      R       10                      `~/Downloads`   `Linux`

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  ,            `R` `Rscript`             ,

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# Chapter 6

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README                                                .              README

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,                                                                            tabela_1

tabela_2.

,                                                            ,                                                    :

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

1   2                                          1   2,                                            ,

:

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

         ,                                    ,                       .
      ,                          ,                               ,
                                       .        ,     code_tabela_3.py
`sumiraj-po-grupi()`                      zaednicki-kod.py
            `grafik_2`,                                        .
                                        ,
      .

## 6.2        2: