R - -

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Contents

Python Python Python R ( ) R
R

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1 R

R

1.1

OS Windows Download R-4.x.x for Windows (x)
https://cran.r-project.org/bin/windows/base/

1.2

... ?

-
-
- OK
- Message translation R

```
# https://cell-innovation.nig.ac.jp/SurfWiki/R_errormes_lang.html
Sys.getenv("LANGUAGE") #
#
Sys.setenv(LANGUAGE="en") #
Sys.setenv(LANGUAGE="jp") #
```

- Yes
- (MDI / SDI)
  SDI MDI( ) 1 Window ( ) SDI( ) Window
- (Plain text / HTML help)
  Plain text Plain text HTML help (GoogleChrome)
- ( ) OK

1.3

R

2

R R

2.1 CRAN

CRAN R

https://cran.r-project.org/

R

https://cran.r-project.org/web/packages/available_packages_by_name.html

CRAN

```
  #    (    )
options(repos = "https://cran.ism.ac.jp/")
  # 1
install.packages("tidyverse")
  #
pkg <- c("xlsx", "magrittr", "devtools")
install.packages(pkg)
```

( )

2.2 GitHub

CRAN GitHub

```
install.packages("devtools")
devtools::install_github("matutosi/ecan")
```

3 sf

3.1

Windows (dos) Mac Terminal Linux
Windows [Win] + [R] cmd

( ) dos (?) R (shell() system()) dos
dos shell()

R base list.files() file.rename() base
R

sf base

OS fs OS

fs base shell URL
https://cran.r-project.org/web/packages/fs/vignettes/function-comparisons.html

3.2 shell base , fs

a.pdf, b.pdf, ..., j.pdf 01.pdf, 02.pdf, ..., 10.pdf 10

3.2.1 shell

shell dos

```
rename a.pdf 01.pdf
rename b.pdf 02.pdf
rename c.pdf 03.pdf
...
rename j.pdf 10.pdf
```

3.2.2 base

tidyverse R sprintf()

```
old <- paste0(letters[1:10], ".pdf")
new <- paste0(sprintf("%02.f", 1:10), ".pdf")
file.rename(old, new)
```

3.2.3 fs

fs stringr stringr stringr str_ *fs* *path_* dir_ *file_*

```
library(stringr)
old <- str_c(letters[1:10], ".pdf")
new <- str_c(str_pad(1:10, width = 2, side = "left", pad = "0"), ".pdf")
file_move(old, new)
```

3.3

```
install.packages("sf")
```

```
## package 'sf' successfully unpacked and MD5 sums checked
##
## The downloaded binary packages are in
##  C:\Users\matutosi\AppData\Local\Temp\RtmpCADyDj\downloaded_packages
```

```
library(sf)
```

```
## Linking to GEOS 3.11.1, GDAL 3.6.2, PROJ 9.1.1; sf_use_s2() is TRUE
```

3.4 sf

(path_) *(dir_)* (file_*) base shell (fs)

fs base shell URL

https://cran.r-project.org/web/packages/fs/vignettes/function-comparisons.html

3.4.1

stringr ( )
fs

```
path("top_dir", "nested_dir", "file", ext = "ext") #
path_temp(), path_temp("path") #
path_expand("~/path") # "~"
path_dir("path") #
path_file("path") #
path_ext("path") #
path_ext_remove("path") #
path_home() #
path_package("pkgname", "dir", "file") #
path_norm("path") #   ".."
path_real("path") #   (        )
path_abs("path") #
path_rel("path/foo", "path/bar") #
path_common(c("path/foo", "path/bar", "path/baz")) #
path_ext_set("path", "new_ext") #
path_sanitize("path") #
path_join("path") #
path_split("path") #
```

3.4.2

shell base dir_map() dir_tree()

```
dir_ls("path") #
dir_info("path") #
dir_copy("path", "new-path") #
dir_create("path") #
dir_delete("path") #
dir_exists("path") #
dir_move() (see file_move) #
dir_map("path", fun) #
dir_tree("path") #
```

3.4.3

shell base

```
file_chmod("path", "mode") #
file_chown("path", "user_id", "group_id") #
file_copy("path", "new-path") #
file_create("new-path") #
file_delete("path") #
file_exists("path") #
file_info("path") #
file_move("path", "new-path") #
file_show("path") #
file_touch() #
file_temp() #
```

3.5 sf

R Rconsole RProfile.site R
R R sf

```
  # Script to copy Rconsole for updating R
  # R       Rconsole
  #   https://gist.github.com/matutosi/6dab3918402662f081be5c17cc7f9ce2
library(fs)
library(magrittr)
wd <-
  path_package("base") %>%
  path_split() %>%
  unlist() %>%
  .[-c((length(.) - 2):length(.))] %>%
  path_join()
setwd(wd)
dir <- dir_ls()
d_old <- dir[length(dir)-1]
d_new <- dir[length(dir)]
files <- c("Rconsole", "Rprofile.site")
f_old <- path(d_old, "etc", files)
f_new <- path(d_new, "etc")
file_copy(f_old, f_new, overwrite = TRUE)
```

fs fs stringr

4 stringr

4.1

stringr stringi stringi stringr stringi

stringr

4.2 stringr base

4.2.1 base

4.2.2 stringr

4.3

```
install.packages("stringr")
```

```
## package 'stringr' successfully unpacked and MD5 sums checked
##
## The downloaded binary packages are in
##  C:\Users\matutosi\AppData\Local\Temp\RtmpIT70hi\downloaded_packages
```

```
library(stringr)
```

4.4 stringr

4.5 stringr

stringr stringr(dplyr) stringr base

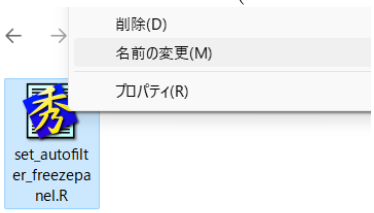
( )

5

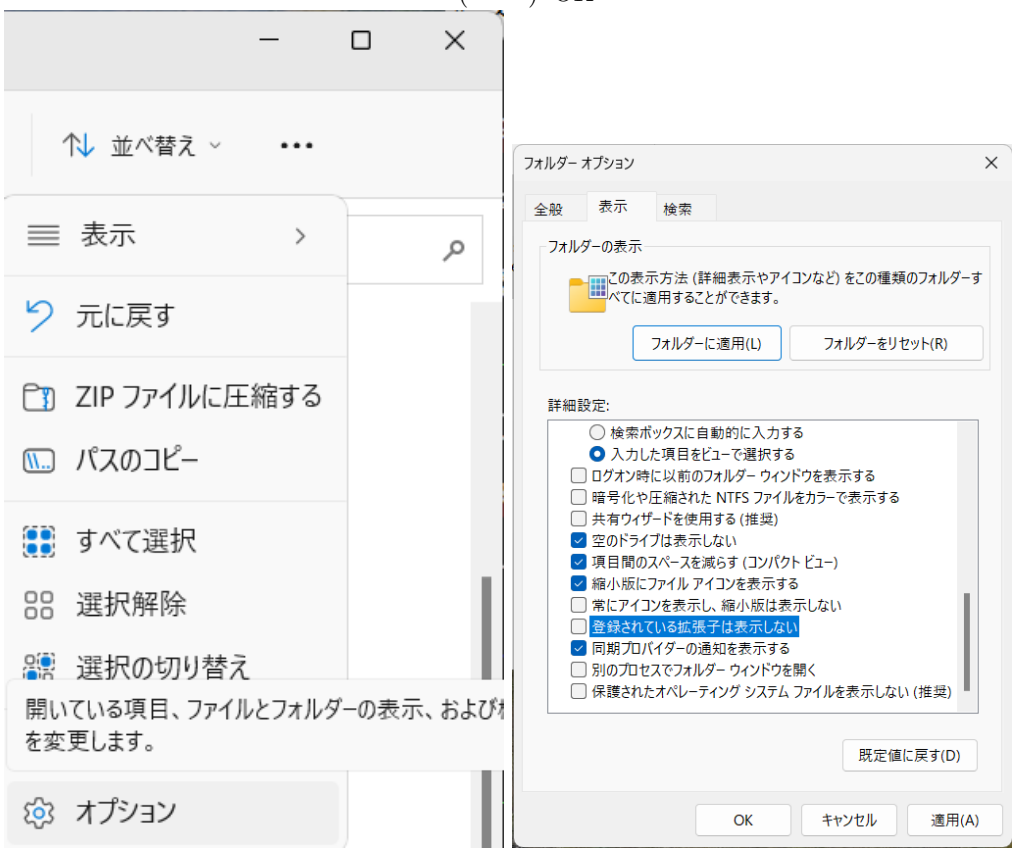
R script.R R *.docx* .xlsx * R R

R

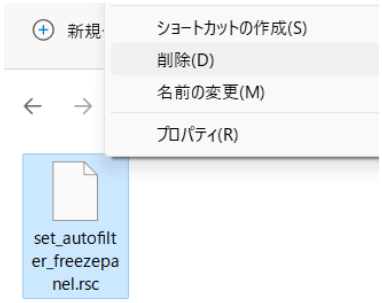
1. *.R* .scr (scr Rsc RSC OK)



2. ( ) OK

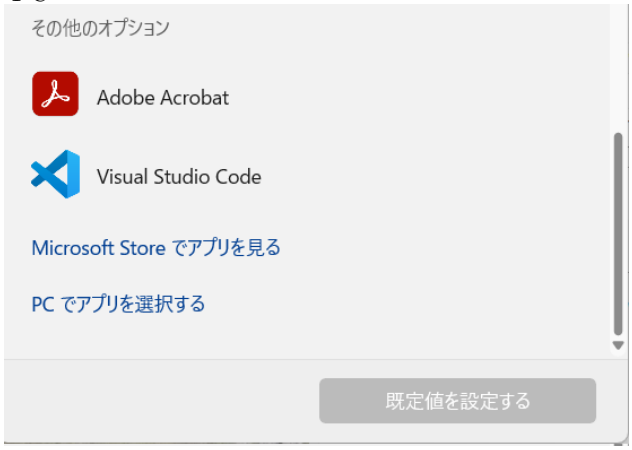


3.

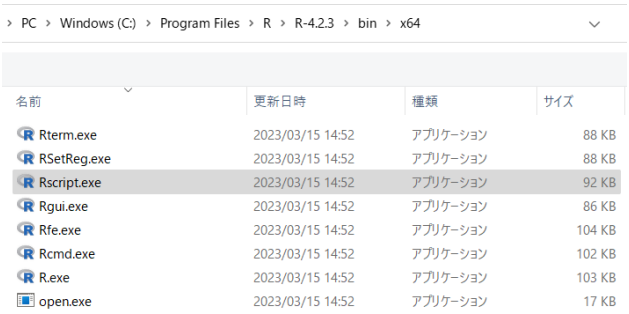


4.

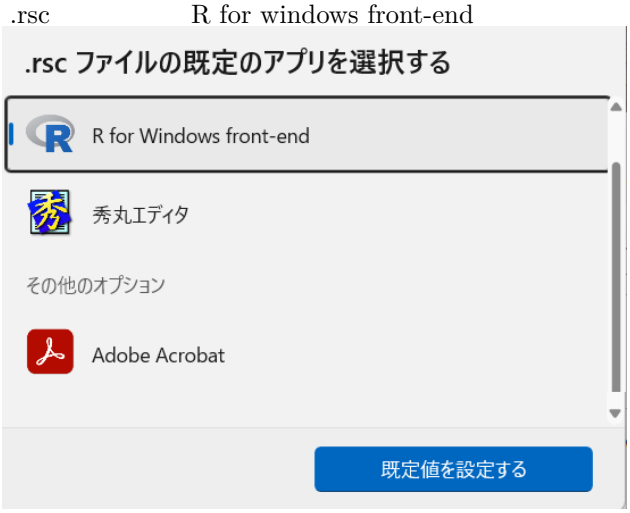
5. PC



6. R (c:\Program files\R\R-4.2.3\bin\x64) Rscript.exe



7. .rsc R for windows front-end



8. R for windows front-end OK

9. R OK

( )

6 ggplot2

6.1 R

- base(graphics)
- lattice

- grid
- ggplot2

6.2 ggplot2

ggplot2 tidy data

6.3 ggplot2

1 plot facet

magrittr %$% %T%

ggplot2

ggpubr

6.4 ggplot2

iris vegan dave tidy data

gather() spread() pivot_longer() pivot_wider() Hadley

aesthetics

geom_point() geom_bar() aes() colour group size

6.5 facet

for subset dplyr::filter

group VS facet

6.6 ggsave

- png PDF
  PDF png
-

6.7 (windows)

-cario?

6.8 theme

-

- theme_bw()

6.9 shiny

R reactive

6.10

- ggplot2
- ggplot2
- unwin GDA
-

7 magrritr

7.1 tidyverse magrittr

tidyverse R R tidyverse tidyverse 1

```
library(tidyverse)
```

(forcats tibble stringr dplyr tidyr purrr) %>% ( ) %>% tidyverse %>% magrittr tidyverse %>% R

tidyverse 1 tibble

7.2 %>%

%>%

- %<>%
- %T>%
- %$%

tidyverse magrittr

```
library(magrittr)
```

```
##
## Attaching package: 'magrittr'
```

```
## The following object is masked from 'package:purrr':
##
##     set_names
```

```
## The following object is masked from 'package:tidyr':
##
##     extract
```

7.3 %<>%

7.3.1

%<>%

```
mpg #
```

```
## # A tibble: 234 x 11
##    manufacturer model      displ  year   cyl trans drv     cty   hwy fl    class
##    <chr>        <chr>      <dbl> <int> <int> <chr> <chr> <int> <int> <chr> <chr>
##  1 audi         a4           1.8  1999     4 auto~ f        18    29 p     comp~
##  2 audi         a4           1.8  1999     4 manu~ f        21    29 p     comp~
##  3 audi         a4           2    2008     4 manu~ f        20    31 p     comp~
##  4 audi         a4           2    2008     4 auto~ f        21    30 p     comp~
##  5 audi         a4           2.8  1999     6 auto~ f        16    26 p     comp~
##  6 audi         a4           2.8  1999     6 manu~ f        18    26 p     comp~
##  7 audi         a4           3.1  2008     6 auto~ f        18    27 p     comp~
##  8 audi         a4 quattro   1.8  1999     4 manu~ 4        18    26 p     comp~
##  9 audi         a4 quattro   1.8  1999     4 auto~ 4        16    25 p     comp~
## 10 audi         a4 quattro   2    2008     4 manu~ 4        20    28 p     comp~
## # i 224 more rows
```

```
tmp <- mpg
tmp <-
  tmp %>%
  dplyr::filter(year==1999) %>%
  tidyr::separate(trans, into=c("trans1", "trans2", NA)) %>%
  print()
```

```
## # A tibble: 117 x 12
##    manufacturer model    displ  year   cyl trans1 trans2 drv     cty   hwy fl
##    <chr>        <chr>    <dbl> <int> <int> <chr>  <chr>  <chr> <int> <int> <chr>
##  1 audi         a4         1.8  1999     4 auto   l5     f        18    29 p
##  2 audi         a4         1.8  1999     4 manual m5     f        21    29 p
##  3 audi         a4         2.8  1999     6 auto   l5     f        16    26 p
##  4 audi         a4         2.8  1999     6 manual m5     f        18    26 p
##  5 audi         a4 quat~   1.8  1999     4 manual m5     4        18    26 p
##  6 audi         a4 quat~   1.8  1999     4 auto   l5     4        16    25 p
##  7 audi         a4 quat~   2.8  1999     6 auto   l5     4        15    25 p
##  8 audi         a4 quat~   2.8  1999     6 manual m5     4        17    25 p
##  9 audi         a6 quat~   2.8  1999     6 auto   l5     4        15    24 p
## 10 chevrolet    c1500 s~   5.7  1999     8 auto   l4     r        13    17 r
## # i 107 more rows
## # i 1 more variable: class <chr>
```

```
tmp <- mpg
tmp %<>%
  dplyr::filter(year==1999) %>%
  tidyr::separate(trans, into=c("trans1", "trans2", NA)) %>%
  print()
```

```
## # A tibble: 117 x 12
##    manufacturer model    displ  year   cyl trans1 trans2 drv     cty   hwy fl
##    <chr>        <chr>    <dbl> <int> <int> <chr>  <chr>  <chr> <int> <int> <chr>
##  1 audi         a4         1.8  1999     4 auto   l5     f        18    29 p
##  2 audi         a4         1.8  1999     4 manual m5     f        21    29 p
##  3 audi         a4         2.8  1999     6 auto   l5     f        16    26 p
##  4 audi         a4         2.8  1999     6 manual m5     f        18    26 p
##  5 audi         a4 quat~   1.8  1999     4 manual m5     4        18    26 p
##  6 audi         a4 quat~   1.8  1999     4 auto   l5     4        16    25 p
##  7 audi         a4 quat~   2.8  1999     6 auto   l5     4        15    25 p
##  8 audi         a4 quat~   2.8  1999     6 manual m5     4        17    25 p
##  9 audi         a6 quat~   2.8  1999     6 auto   l5     4        15    24 p
## 10 chevrolet    c1500 s~   5.7  1999     8 auto   l4     r        13    17 r
## # i 107 more rows
## # i 1 more variable: class <chr>
```

7.3.2

7.4 %T>%

7.4.1

imap

```
mpg #
```

```
## # A tibble: 234 x 11
##    manufacturer model      displ  year   cyl trans drv     cty   hwy fl    class
##    <chr>        <chr>      <dbl> <int> <int> <chr> <chr> <int> <int> <chr> <chr>
##  1 audi         a4           1.8  1999     4 auto~ f        18    29 p     comp~
##  2 audi         a4           1.8  1999     4 manu~ f        21    29 p     comp~
##  3 audi         a4           2    2008     4 manu~ f        20    31 p     comp~
##  4 audi         a4           2    2008     4 auto~ f        21    30 p     comp~
##  5 audi         a4           2.8  1999     6 auto~ f        16    26 p     comp~
##  6 audi         a4           2.8  1999     6 manu~ f        18    26 p     comp~
##  7 audi         a4           3.1  2008     6 auto~ f        18    27 p     comp~
##  8 audi         a4 quattro   1.8  1999     4 manu~ 4        18    26 p     comp~
##  9 audi         a4 quattro   1.8  1999     4 auto~ 4        16    25 p     comp~
## 10 audi         a4 quattro   2    2008     4 manu~ 4        20    28 p     comp~
## # i 224 more rows
```

7.4.2

<- <<- . {} %>%

```
#  mpg %T>%
#    {
#      tmp <<- dplyr::select(., )
#    } %>%
```

7.5 %$%

7.5.1

```
mpg %>%
  .$manufacturer
```

```
##   [1] "audi"       "audi"       "audi"       "audi"       "audi"
##   [6] "audi"       "audi"       "audi"       "audi"       "audi"
##  [11] "audi"       "audi"       "audi"       "audi"       "audi"
##  [16] "audi"       "audi"       "audi"       "chevrolet"  "chevrolet"
##  [21] "chevrolet"  "chevrolet"  "chevrolet"  "chevrolet"  "chevrolet"
##  [26] "chevrolet"  "chevrolet"  "chevrolet"  "chevrolet"  "chevrolet"
##  [31] "chevrolet"  "chevrolet"  "chevrolet"  "chevrolet"  "chevrolet"
##  [36] "chevrolet"  "chevrolet"  "dodge"      "dodge"      "dodge"
##  [41] "dodge"      "dodge"      "dodge"      "dodge"      "dodge"
##  [46] "dodge"      "dodge"      "dodge"      "dodge"      "dodge"
##  [51] "dodge"      "dodge"      "dodge"      "dodge"      "dodge"
##  [56] "dodge"      "dodge"      "dodge"      "dodge"      "dodge"
##  [61] "dodge"      "dodge"      "dodge"      "dodge"      "dodge"
##  [66] "dodge"      "dodge"      "dodge"      "dodge"      "dodge"
##  [71] "dodge"      "dodge"      "dodge"      "dodge"      "ford"
##  [76] "ford"       "ford"       "ford"       "ford"       "ford"
##  [81] "ford"       "ford"       "ford"       "ford"       "ford"
##  [86] "ford"       "ford"       "ford"       "ford"       "ford"
##  [91] "ford"       "ford"       "ford"       "ford"       "ford"
##  [96] "ford"       "ford"       "ford"       "ford"       "honda"
## [101] "honda"      "honda"      "honda"      "honda"      "honda"
## [106] "honda"      "honda"      "honda"      "hyundai"    "hyundai"
```

```
## [111] "hyundai"    "hyundai"    "hyundai"    "hyundai"    "hyundai"
## [116] "hyundai"    "hyundai"    "hyundai"    "hyundai"    "hyundai"
## [121] "hyundai"    "hyundai"    "jeep"       "jeep"       "jeep"
## [126] "jeep"       "jeep"       "jeep"       "jeep"       "jeep"
## [131] "land rover" "land rover" "land rover" "land rover" "lincoln"
## [136] "lincoln"    "lincoln"    "mercury"    "mercury"    "mercury"
## [141] "mercury"    "nissan"     "nissan"     "nissan"     "nissan"
## [146] "nissan"     "nissan"     "nissan"     "nissan"     "nissan"
## [151] "nissan"     "nissan"     "nissan"     "nissan"     "pontiac"
## [156] "pontiac"    "pontiac"    "pontiac"    "pontiac"    "subaru"
## [161] "subaru"     "subaru"     "subaru"     "subaru"     "subaru"
## [166] "subaru"     "subaru"     "subaru"     "subaru"     "subaru"
## [171] "subaru"     "subaru"     "subaru"     "toyota"     "toyota"
## [176] "toyota"     "toyota"     "toyota"     "toyota"     "toyota"
## [181] "toyota"     "toyota"     "toyota"     "toyota"     "toyota"
## [186] "toyota"     "toyota"     "toyota"     "toyota"     "toyota"
## [191] "toyota"     "toyota"     "toyota"     "toyota"     "toyota"
## [196] "toyota"     "toyota"     "toyota"     "toyota"     "toyota"
## [201] "toyota"     "toyota"     "toyota"     "toyota"     "toyota"
## [206] "toyota"     "toyota"     "volkswagen" "volkswagen" "volkswagen"
## [211] "volkswagen" "volkswagen" "volkswagen" "volkswagen" "volkswagen"
## [216] "volkswagen" "volkswagen" "volkswagen" "volkswagen" "volkswagen"
## [221] "volkswagen" "volkswagen" "volkswagen" "volkswagen" "volkswagen"
## [226] "volkswagen" "volkswagen" "volkswagen" "volkswagen" "volkswagen"
## [231] "volkswagen" "volkswagen" "volkswagen" "volkswagen"
```

```
mpg %$%
  manufacturer
```

```
##   [1] "audi"       "audi"       "audi"       "audi"       "audi"
##   [6] "audi"       "audi"       "audi"       "audi"       "audi"
##  [11] "audi"       "audi"       "audi"       "audi"       "audi"
##  [16] "audi"       "audi"       "audi"       "chevrolet"  "chevrolet"
##  [21] "chevrolet"  "chevrolet"  "chevrolet"  "chevrolet"  "chevrolet"
##  [26] "chevrolet"  "chevrolet"  "chevrolet"  "chevrolet"  "chevrolet"
##  [31] "chevrolet"  "chevrolet"  "chevrolet"  "chevrolet"  "chevrolet"
##  [36] "chevrolet"  "chevrolet"  "dodge"      "dodge"      "dodge"
##  [41] "dodge"      "dodge"      "dodge"      "dodge"      "dodge"
##  [46] "dodge"      "dodge"      "dodge"      "dodge"      "dodge"
##  [51] "dodge"      "dodge"      "dodge"      "dodge"      "dodge"
##  [56] "dodge"      "dodge"      "dodge"      "dodge"      "dodge"
##  [61] "dodge"      "dodge"      "dodge"      "dodge"      "dodge"
##  [66] "dodge"      "dodge"      "dodge"      "dodge"      "dodge"
##  [71] "dodge"      "dodge"      "dodge"      "dodge"      "ford"
##  [76] "ford"       "ford"       "ford"       "ford"       "ford"
##  [81] "ford"       "ford"       "ford"       "ford"       "ford"
##  [86] "ford"       "ford"       "ford"       "ford"       "ford"
##  [91] "ford"       "ford"       "ford"       "ford"       "ford"
##  [96] "ford"       "ford"       "ford"       "ford"       "honda"
## [101] "honda"      "honda"      "honda"      "honda"      "honda"
## [106] "honda"      "honda"      "honda"      "hyundai"    "hyundai"
## [111] "hyundai"    "hyundai"    "hyundai"    "hyundai"    "hyundai"
## [116] "hyundai"    "hyundai"    "hyundai"    "hyundai"    "hyundai"
## [121] "hyundai"    "hyundai"    "jeep"       "jeep"       "jeep"
## [126] "jeep"       "jeep"       "jeep"       "jeep"       "jeep"
```

```
## [131] "land rover" "land rover" "land rover" "land rover" "lincoln"
## [136] "lincoln"    "lincoln"    "mercury"    "mercury"    "mercury"
## [141] "mercury"    "nissan"     "nissan"     "nissan"     "nissan"
## [146] "nissan"     "nissan"     "nissan"     "nissan"     "nissan"
## [151] "nissan"     "nissan"     "nissan"     "nissan"     "pontiac"
## [156] "pontiac"    "pontiac"    "pontiac"    "pontiac"    "subaru"
## [161] "subaru"     "subaru"     "subaru"     "subaru"     "subaru"
## [166] "subaru"     "subaru"     "subaru"     "subaru"     "subaru"
## [171] "subaru"     "subaru"     "subaru"     "toyota"     "toyota"
## [176] "toyota"     "toyota"     "toyota"     "toyota"     "toyota"
## [181] "toyota"     "toyota"     "toyota"     "toyota"     "toyota"
## [186] "toyota"     "toyota"     "toyota"     "toyota"     "toyota"
## [191] "toyota"     "toyota"     "toyota"     "toyota"     "toyota"
## [196] "toyota"     "toyota"     "toyota"     "toyota"     "toyota"
## [201] "toyota"     "toyota"     "toyota"     "toyota"     "toyota"
## [206] "toyota"     "toyota"     "volkswagen" "volkswagen" "volkswagen"
## [211] "volkswagen" "volkswagen" "volkswagen" "volkswagen" "volkswagen"
## [216] "volkswagen" "volkswagen" "volkswagen" "volkswagen" "volkswagen"
## [221] "volkswagen" "volkswagen" "volkswagen" "volkswagen" "volkswagen"
## [226] "volkswagen" "volkswagen" "volkswagen" "volkswagen" "volkswagen"
## [231] "volkswagen" "volkswagen" "volkswagen" "volkswagen"
```

7.5.2

8 rvest

8.1

R rvest rvest

R rvest

(CRAN) RStudio usethis, testthat, devtools

8.2 rvest RSelenium

R rvest RSelenium rvest URL
RSelenium Selenium Javascript
rvest polite

8.3 rvest

- HTML
- DOM : id, class, tagName
- table
  - HTML table table
-

- stringr
- stringi
- tidyverse magrittr
- Form radio moranajp::html_radio_set() radio radio polite

8.4

```
# install.packages("rvest")
# library(rvest)
```

8.5 HTML

8.5.1

8.5.2

8.6 DOM

8.6.1

8.6.2

9 Rselenium

Selenium

Javascript PHP URL rvest

9.1

- RSelenium: CRAN
- Selenium:
  - : ver3.xxx
    ver4.0 RSeleniumu (Python)
- ChromeDriver
  - : ( ) GoogleChrome update
  - Selenium

9.2

9.3

9.3.1

9.3.2

9.4

id document.getElementByID()

xpath document.selectQueryAll()[]

JavaScript script <- “ ” rem$excute(script)

BiSS

- 5

HTML

HTML

9.5

- R
  - png PDF
  -
  - Seleniumu
  - MeCab GINZA

10 reticulate

R Python Python logging(R futile.logger) R logger https://cran.r-project.org/web/packages/logger/index.html R ggplot2 dplyr Python

R reticulate Python reticulate R Python Pytho

10.1 Python

10.2 Python ( )

Rstudio python (reticulate) https://qiita.com/Wa___a/items/42129e529cfb6c38e046

py_install() conda_install() - pip
- pip python reticulate::use_python()

10.3

- Python
- pdf2docx

```
pip install pdf2docx
```

10.4

```
  # pdf2docx
  #   reticulate::use_python() python
  #   pip pdf2docx     python
library(reticulate)
  # reticulate::py_install("pdf2docx")
  # https://anaconda.org/conda-forge/python-docx
  # reticulate::conda_install(channel = "conda-forge", packages = "python-docx")  #    pdf2docx
reticulate::use_python("C:/Python/Python39/python.exe")
reticulate::py_run_string("from pdf2docx import parse")
reticulate::py_run_string("pdf_file = 'D:/a.pdf'")
reticulate::py_run_string("docx_file = 'D:/a.docx'")
reticulate::py_run_string("parse(pdf_file, docx_file)")
```

10.5 Pytho R

variable

```
  # R Python (Python   )
r.variable

  # Python R (R   )
py$variable
```

11 shell

- R
  -
  - PDF
  - png PDF

CUI R Linux Mac shell Windows shell (R) R

PDF 1 PDF

windows Linux Mac

dos ls, dir move, copy, remove, rename , cd

R shell(), system() setwd() cd paste0() stringr stringi stringr stringi purrr::map() for loop #

concatPDF PDF (win10 OK win11 NG) # ConcatPDF /outfile Merged.pdf File1.pdf File2.pdf File3.pdf

pdftk PDF (win11 OK) pdftk File1.pdf File2.pdf File3.pdf cat output Merged.pdf

ImageMagick

11.1

11.2 Python

```
wd <- "D:/matu/work/tmp"
setwd(wd)
system("c:/windows/py.exe pdf.py", intern = TRUE)
shell("pdf.py")
```

12 DBI

12.1

CRAN Task View: Databases with R https://cran.r-project.org/web/views/Databases.html

DBI https://cran.r-project.org/web/packages/DBI/index.html

12.2 DBI

-
- SQL

SQL SQL R R DBI dplyr tidyverse ggplot2

12.3

```
install.packages(c("DBI", "RSQLite"))
```

```
## package 'DBI' successfully unpacked and MD5 sums checked
## package 'RSQLite' successfully unpacked and MD5 sums checked
##
## The downloaded binary packages are in
##  C:\Users\matutosi\AppData\Local\Temp\RtmpwH5dsJ\downloaded_packages
```

```
library(DBI)
library(RSQLite)
library(tidyverse)
```

```
## -- Attaching core tidyverse packages ------------------------ tidyverse 2.0.0 --
## v dplyr     1.1.2     v readr     2.1.4
## v forcats   1.0.0     v stringr   1.5.0
## v ggplot2   3.4.2     v tibble    3.2.1
## v lubridate 1.9.2     v tidyr     1.3.0
## v purrr     1.0.1
## -- Conflicts ------------------------------------------ tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()
## i Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to become errors
```

```
  #
con <- dbConnect(RSQLite::SQLite(), dbname = ":memory:")
dbWriteTable(con, "mpg", mpg)
dbListTables(con)
```

```
## [1] "mpg"
```

12.4

```
  # SQL
res <- dbSendQuery(con, "SELECT year, model, displ, cyl FROM mpg WHERE cyl = 4")
df <- dbFetch(res)
dbClearResult(res)
tibble::tibble(df)
```

```
## # A tibble: 81 x 4
##     year model      displ   cyl
##    <int> <chr>      <dbl> <int>
##  1  1999 a4           1.8     4
##  2  1999 a4           1.8     4
##  3  2008 a4           2       4
##  4  2008 a4           2       4
```

```
##  5  1999 a4 quattro   1.8     4
##  6  1999 a4 quattro   1.8     4
##  7  2008 a4 quattro   2       4
##  8  2008 a4 quattro   2       4
##  9  1999 malibu       2.4     4
## 10  2008 malibu       2.4     4
## # i 71 more rows
```

```
  #         dplyr
res <- dbSendQuery(con, "SELECT * FROM mpg")
df <- dbFetch(res)
dbClearResult(res)
df %>%
  tibble::as_tibble() %>%
  print() %>%
  dplyr::select(year, model, displ, cyl) %>%
  dplyr::filter(cyl == 4)
```

```
## # A tibble: 234 x 11
##    manufacturer model      displ  year   cyl trans drv     cty   hwy fl    class
##    <chr>        <chr>      <dbl> <int> <int> <chr> <chr> <int> <int> <chr> <chr>
##  1 audi         a4           1.8  1999     4 auto~ f        18    29 p     comp~
##  2 audi         a4           1.8  1999     4 manu~ f        21    29 p     comp~
##  3 audi         a4           2    2008     4 manu~ f        20    31 p     comp~
##  4 audi         a4           2    2008     4 auto~ f        21    30 p     comp~
##  5 audi         a4           2.8  1999     6 auto~ f        16    26 p     comp~
##  6 audi         a4           2.8  1999     6 manu~ f        18    26 p     comp~
##  7 audi         a4           3.1  2008     6 auto~ f        18    27 p     comp~
##  8 audi         a4 quattro   1.8  1999     4 manu~ 4        18    26 p     comp~
##  9 audi         a4 quattro   1.8  1999     4 auto~ 4        16    25 p     comp~
## 10 audi         a4 quattro   2    2008     4 manu~ 4        20    28 p     comp~
## # i 224 more rows
```

```
## # A tibble: 81 x 4
##     year model      displ   cyl
##    <int> <chr>      <dbl> <int>
##  1  1999 a4           1.8     4
##  2  1999 a4           1.8     4
##  3  2008 a4           2       4
##  4  2008 a4           2       4
##  5  1999 a4 quattro   1.8     4
##  6  1999 a4 quattro   1.8     4
##  7  2008 a4 quattro   2       4
##  8  2008 a4 quattro   2       4
##  9  1999 malibu       2.4     4
## 10  2008 malibu       2.4     4
## # i 71 more rows
```

SQL SQL SQL R dplyr ggplot2 dplyr ggplot2 R https://r4ds.hadley.nz/

DBI

https://cran.r-project.org/web/packages/DBI/vignettes/DBI-1.html

13 xlsx

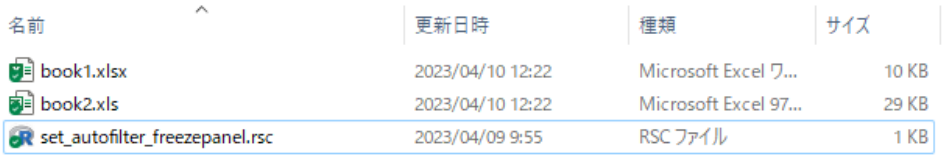
xlsx

13.1

xlsx

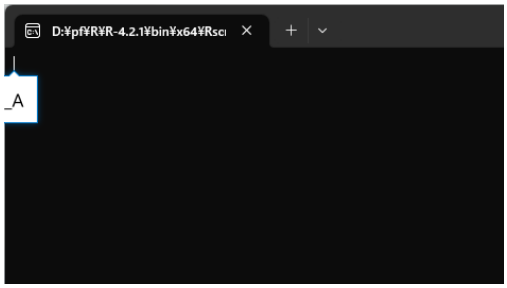
13.1.1

- R
- set_autofilter_freezepanel.rsc ( )
- .rsc Rscript.exe (Windows) Mac Mac -
- set_autofilter_freezepanel.rsc



-

- set_autofilter_freezepanel.rsc



1 A Z 1 1
xlsx 2

13.1.2

```
  # Package,
if(! "xlsx" %in% installed.packages()[,1]){  # xlsx
  #
  options(repos = "https://cran.ism.ac.jp/") #
  install.packages("xlsx")                   #
}

  # Functions,
  #    xlsx
  #                  ?
  #               ?
  #      R

  #
set_auto_filter <- function(sh){
  # A1 Z1
  #            "A1:Z1"
  xlsx::addAutoFilter(sh, "A1:Z1")
}
```

```
  #
set_freeze_panel <- function(sh){
  # 1  1
  #
  #     2         2  4  3
  #     3         3  5  4
  xlsx::createFreezePane(sh, 2, 2, 2, 2)
}

  #
set_af_fp <- function(file){
  wb <- xlsx::loadWorkbook(file)   #
  for(sh in xlsx::getSheets(wb)){  #
    set_auto_filter(sh)            #
    set_freeze_panel(sh)           #
  }
  xlsx::saveWorkbook(wb, file)     #
}

  # Main,
files <- list.files(pattern = "xls") # ".xls" "xlsx"
for(file in files){                  #
  set_af_fp(file)                    # set_af_fp()
}
```

13.2 ( )

14 qpdf PDF

14.1

```
library(qpdf)
  #     show the number of pages in a pdf
pdf_length(input, password = "")
  # 1     split a single pdf into separate files, one for each page
pdf_split(input, output = NULL, password = "")
  #      create a new pdf with a subset of the input pages
pdf_subset(input, pages = 1, output = NULL, password = "")
  #   join several pdf files into one
pdf_combine(input, output = NULL, password = "")
  #   compress or linearize a pdf file
pdf_compress(input, output = NULL, linearize = FALSE, password = "")
  #    rotate selected pages
pdf_rotate_pages(input, pages, angle = 90, relative = FALSE, output = NULL, password = "")
  #
pdf_overlay_stamp(input, stamp, output = NULL, password = "")
```

```
input <- ""
pdf_split(input, output = "d:/", password = "")
```

15 pdf docx

15.1 RDCOMClient

https://github.com/omegahat/RDCOMClient CRAN

15.1.1

```
install.packages("RDCOMClient",
  repos = "http://www.omegahat.net/R",
  type = "win.binary")
```

15.1.2

https://stackoverflow.com/questions/32846741/convert-pdf-file-to-docx/73720411#73720411

```
library(RDCOMClient)
wordApp <- COMCreate("Word.Application")
wordApp[["Visible"]] <- TRUE
wordApp[["DisplayAlerts"]] <- FALSE
path_To_PDF_File <- "xxx.pdf"
path_To_Word_File <- "xxx.docx"
doc <-
  wordApp[["Documents"]]$Open(normalizePath(path_To_PDF_File),
    ConfirmConversions = FALSE)
doc$SaveAs2(path_To_Word_File)
```

15.1.3

```
library(RDCOMClient)
pdf2docx <- function(pdf, docx = NULL){
  if(is.null(docx)){
    docx <- paste0(getwd(), sub("pdf", "docx", pdf))
  }
  wordApp <- RDCOMClient::COMCreate("Word.Application")
  wordApp[["Visible"]] <- TRUE
  wordApp[["DisplayAlerts"]] <- FALSE
  doc <-
    wordApp[["Documents"]]$Open(normalizePath(pdf), ConfirmConversions = FALSE)
  doc$SaveAs2(docx)
  doc$close()
}

wd <- "d:/matu/work/tmp/"
setwd(wd)
path_docx <- function(path_pdf){
  if(grepl("[A-z]:", path_pdf)){
    return(sub("pdf", "docx", path_pdf))
  }
  path <- file.path(getwd(), sub("pdf", "docx", path_pdf))
  return(sub("//", "/", path))
}
testthat::expect_equal(path_docx("a.pdf"                 ), "d:/matu/work/tmp/a.docx"     )
testthat::expect_equal(path_docx("d:/matu/work/tmp/a.pdf"), "d:/matu/work/tmp/a.docx"     )
```

```
testthat::expect_equal(path_docx("test/a.pdf"            ), "d:/matu/work/tmp/test/a.docx")
testthat::expect_equal(path_docx("/test/a.pdf"           ), "d:/matu/work/tmp/test/a.docx")


wd <- "d:/"
setwd(wd)
pdf2docx("a.pdf")
```

15.2 pdf2docx

16 Microsoft365R

https://cran.r-project.org/web/packages/Microsoft365R # Outlook # https://cran.r-project.org/web/packages/Microsoft365R/vignettes/outlook.html

16.1 Outlook

TO CC BCC TO 1

ML

3 1

&

16.1.1

1 OK.

```
  #
install.packages("Microsoft365R")
  #
library(Microsoft365R)
 #
Microsoft365R::get_business_outlook()
 #
  # Microsoft365R::get_personal_outlook()
```

16.1.2

```
 #
outlook <- Microsoft365R::get_business_outlook()
 #
  # outlook <- Microsoft365R::get_personal_outlook()

  #   email
  #
  #   outlook
em <-
  outlook$create_email(
    body = "Hello from R\nHello from R\n",
    subject = "Hello",
    to = "matutosi@gmail.com",
    cc = "matutosi@konan-wu.ac.jp"
  )
```

```
  #
em$send()

  # outlook
drafts <- outlook$get_drafts()$list_emails()
  #
drafts
  #       1
drafts[[1]]$send()

  #
inbox <- outlook$get_inbox()$list_emails()
  #    1
inbox[[1]]
```

16.1.3

- : send( ) 1: 0:
- : to( )
- CC: cc( )
- BCC: bcc( )
- : subject( )
- : body( )
- : attachment( )

CC BCC

path( ) path

```
  #
  #

  #
source("https://gist.githubusercontent.com/matutosi/bed00135698c8e3d2c49ef08d12eef9c/raw/6acc2de844eeea

outlook <- Microsoft365R::get_business_outlook()
  #
  #   working directory
  #     ("c:/user/documents/outlook.xlsx" )
path <- "outlook.xlsx"
  #
create_email(path, outlook, send = TRUE)

  #
  #   "send = FALSE"
create_email(path, outlook, send = FALSE)
```