R

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2023-04-10

Contents

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

```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

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

(　)

2.2 GitHub

CRAN　　　GitHub

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

3

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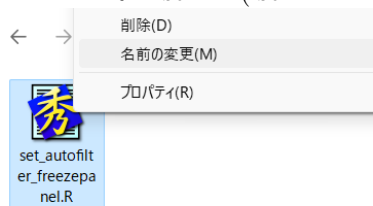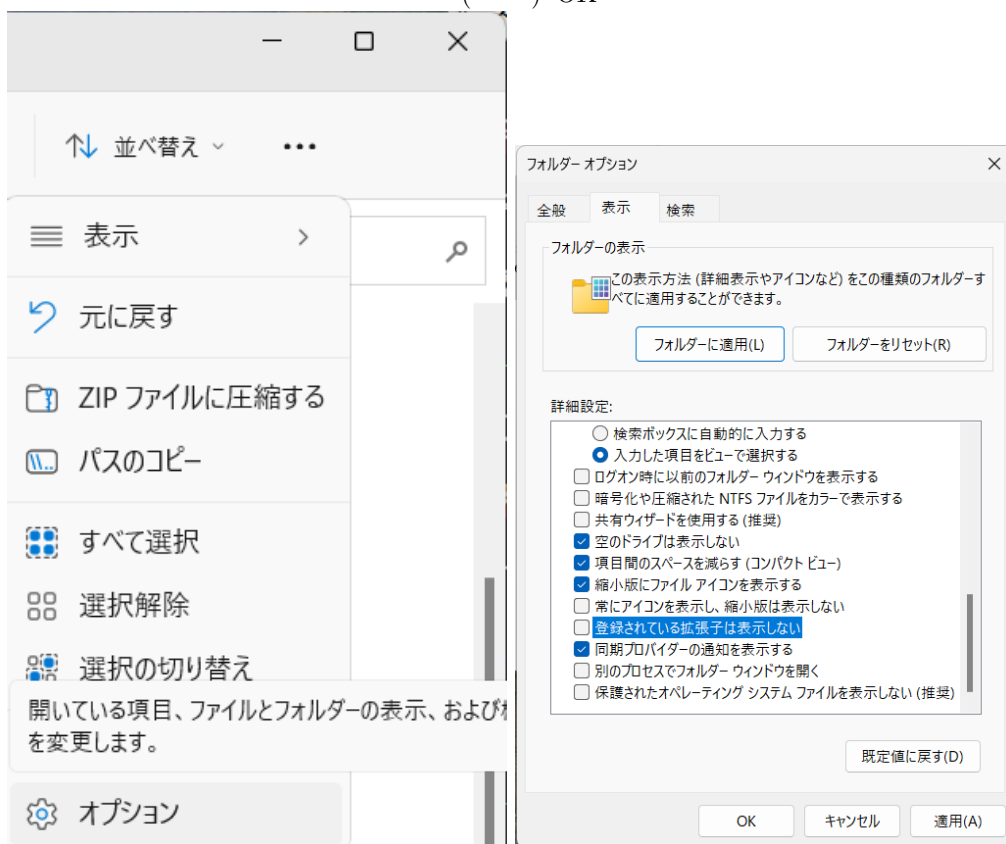
R

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

2. ( ) OK

3.
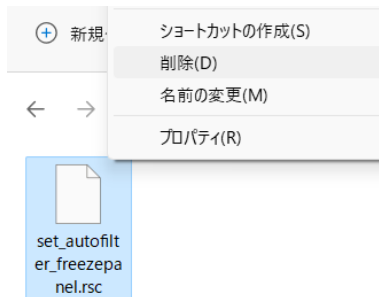
4.

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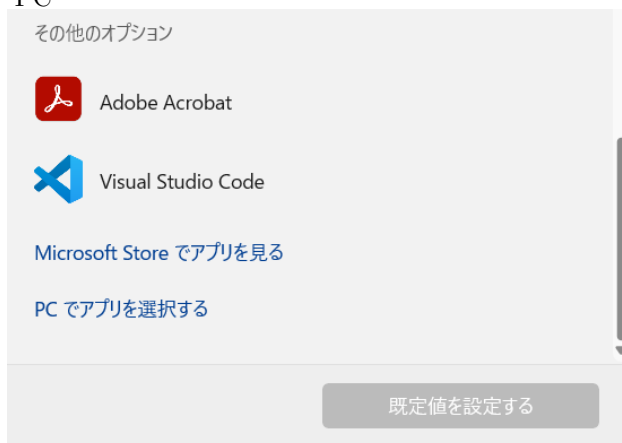
6.　　　　R　　　　　　　　　(c:\Program files\R\R-4.2.3\bin\x64　) Rscript.exe

7. .rsc　　　　　R for windows front-end
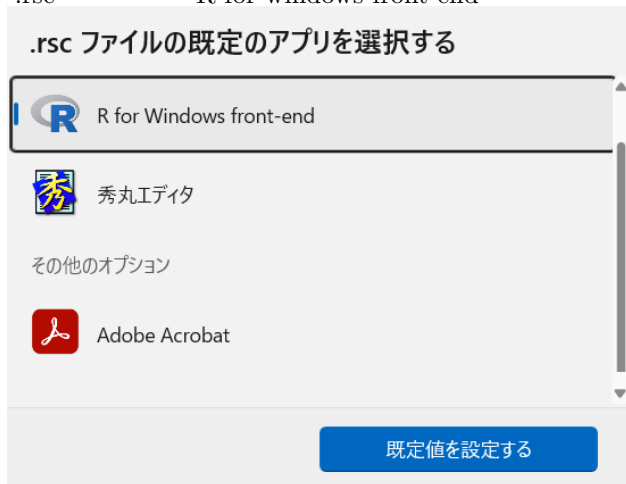
8. 　　　　R for windows front-end　　　　OK

9. R OK

( )
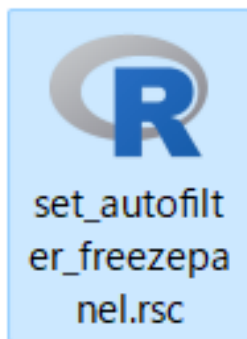
4 ggplot2

4.1 R

- base(graphics)
- lattice

- grid
- ggplot2

4.2 ggplot2

ggplot2 tidy data

4.3 ggplot2

1   plot   facet

magrittr   `%$% %T%`

ggplot2

          ggpubr

4.4 ggplot2

iris   vegan dave   tidy data

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

aesthetics

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

4.5 facet

for   subset   dplyr::filter

group VS facet

4.6 ggsave

- png PDF
  PDF   png

-

4.7   (windows)

-cario?

4.8 theme

-

- theme_bw()

4.9 shiny

R   reactive

4.10

- ggplot2
- ggplot2
- unwin GDA
-

5 magrritr

5.1 tidyverse magrittr

tidyverse R   R   tidyverse   tidyverse 1

```
library(tidyverse)
```

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

tidyverse   1   tibble

5.2 %>%

%>%

- %<>%
- %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
```

5.3 %<>%

5.3.1

%<>%

```
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~
## # ... with 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
##    manufac~1 model displ  year   cyl trans1 trans2 drv     cty   hwy fl    class
##    <chr>     <chr> <dbl> <int> <int> <chr>  <chr>  <chr> <int> <int> <chr> <chr>
##  1 audi      a4      1.8  1999     4 auto   l5     f        18    29 p     comp~
##  2 audi      a4      1.8  1999     4 manual m5     f        21    29 p     comp~
##  3 audi      a4      2.8  1999     6 auto   l5     f        16    26 p     comp~
##  4 audi      a4      2.8  1999     6 manual m5     f        18    26 p     comp~
##  5 audi      a4 q~   1.8  1999     4 manual m5     4        18    26 p     comp~
##  6 audi      a4 q~   1.8  1999     4 auto   l5     4        16    25 p     comp~
##  7 audi      a4 q~   2.8  1999     6 auto   l5     4        15    25 p     comp~
##  8 audi      a4 q~   2.8  1999     6 manual m5     4        17    25 p     comp~
##  9 audi      a6 q~   2.8  1999     6 auto   l5     4        15    24 p     mids~
## 10 chevrolet c150~   5.7  1999     8 auto   l4     r        13    17 r     suv
## # ... with 107 more rows, and abbreviated variable name 1: manufacturer
```

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

```
## # A tibble: 117 x 12
##    manufac~1 model displ  year   cyl trans1 trans2 drv     cty   hwy fl    class
##    <chr>     <chr> <dbl> <int> <int> <chr>  <chr>  <chr> <int> <int> <chr> <chr>
##  1 audi      a4      1.8  1999     4 auto   l5     f        18    29 p     comp~
##  2 audi      a4      1.8  1999     4 manual m5     f        21    29 p     comp~
##  3 audi      a4      2.8  1999     6 auto   l5     f        16    26 p     comp~
##  4 audi      a4      2.8  1999     6 manual m5     f        18    26 p     comp~
##  5 audi      a4 q~   1.8  1999     4 manual m5     4        18    26 p     comp~
##  6 audi      a4 q~   1.8  1999     4 auto   l5     4        16    25 p     comp~
##  7 audi      a4 q~   2.8  1999     6 auto   l5     4        15    25 p     comp~
##  8 audi      a4 q~   2.8  1999     6 manual m5     4        17    25 p     comp~
##  9 audi      a6 q~   2.8  1999     6 auto   l5     4        15    24 p     mids~
## 10 chevrolet c150~   5.7  1999     8 auto   l4     r        13    17 r     suv
## # ... with 107 more rows, and abbreviated variable name 1: manufacturer
```

5.3.2

5.4 %T>%

5.4.1

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~
## # ... with 224 more rows
```

5.4.2

```
          <-   <<-       .        {}       %>%
```

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

5.5   %$%

5.5.1

```
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"
```

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```
## [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"
```

5.5.2

6 rvest

6.1

R   rvest   rvest

R   rvest

(CRAN   )   RStudio usethis,
testthat, devtools

6.2   rvest   RSelenium

R   rvest RSelenium   rvest   URL
RSelenium   Selenium   Javascript
rvest   polite

6.3   rvest

- HTML

- DOM : id, class, tagName

- table
  − HTML   table   table
-

- stringr

-        stringi

- tidyverse magrittr

- Form 　　　　radio 　　　　　　　　moranajp::html_radio_set() 　　　　　radio 　　　　　　　radio
　　　　　polite

6.4

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

6.5　HTML

6.5.1

6.5.2

6.6　DOM

6.6.1

6.6.2

7　Rselenium

Selenium

Javascript PHP 　　　　　　　　　URL 　　　　　　　　rvest

7.1

- RSelenium: CRAN

- Selenium:
  - 　: ver3.xxx
    　　ver4.0　RSeleniumu　　　(Python 　)

- ChromeDriver
  - 　: 　　　　　　(　　　　　) GoogleChrome 　update
  - Selenium

7.2

7.3

7.3.1

7.3.2

7.4

id 　　document.getElementByID()

xpath document.selectQueryAll()[]

　　JavaScript 　　　script <- " " rem$excute(script)

　BiSS

　　　　　　　　- 　5

HTML

HTML

7.5

- R
  - png PDF

  -

  - Seleniumu

  - MeCab GINZA

8 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

8.1

9 DBI

9.1

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

9.2 DBI

- •
- SQL

SQL　　　SQL　　　　　　R　　　　　　　　　R　　　　　　DBI　　　dplyr tidyverse
ggplot2

9.3

```
install.packages("DBI")
library(DBI)
```

9.4

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

10 xlsx

xlsx

10.1

xlsx

10.1.1

- R

- set_autofilter_freezepanel.rsc

- set_autofilter_freezepanel.rsc
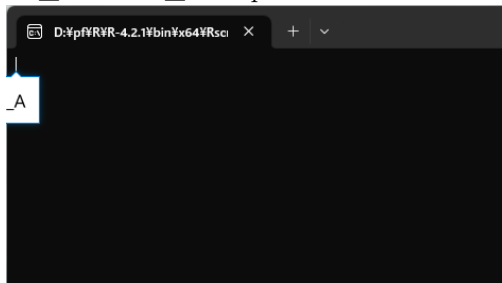
名前	更新日時	種類	サイズ
book1.xlsx	2023/04/10 12:22	Microsoft Excel ワ...	10 KB
book2.xls	2023/04/10 12:22	Microsoft Excel 97...	29 KB
set_autofilter_freezepanel.rsc	2023/04/09 9:55	RSC ファイル	1 KB

-

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

- set_autofilter_freezepanel.rsc

1 A Z 1 1

xlsx 2

10.1.2

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

  # Functions,
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()
}
```

10.2　　（ ）