Lab2 Instruction

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Lab2 contains basics for file and directory manipulation, and R data input and output. Rather than a complete collection of functions, I will introduce the frequenty-used functions from my own R experience.

Note that all R codes in the following are run on my own Mac OS X. When you try them on your own computer, please customize your own working directory.

Part I File and Directory Manipulation

`setwd()` and `getwd()`: used to change or determine the current working directory. It's a good habit to set working directory before your data analysis as all results during your data analysis will be stored in the working directory.

`list.files()` and `list.dirs()`: returns a character vector of names of files or directories under the given directory.

`file.info()`: gives file size, creation time, directory vs. ordinary file status, and so on for each file whose name is in the argument, a character vector.

`file.create()` and `dir.create()`: creates files or directories with the given names if they do not already exist.

`file.exists()` and `dir.exists()`: returns a logical vector indicating whether the given file exists for each name in the first argument, a character vector.

`file.copy()` and `file.rename()`: moves files `from` source path `to` destination path.

`file.remove()` and **`unlink()`**: deletes the files or directories specified by the first argument, a character vector.

```
# set current working directory to DAE
setwd("/Users/tonytsai/Documents/R/DAE")
getwd()
```

```
## [1] "/Users/tonytsai/Documents/R/DAE"
```

```
# list all files including directories under current working directory DAE
list.files()
```

```
## [1] "Lab1note.pdf"             "Lab2"
## [3] "Lecture1Introduction.pdf" "LICENSE"
## [5] "README.md"                "reference"
## [7] "script"                   "生态数据分析课程大纲.pdf"
```

```
# extract file information for those files
file.info(list.files())
```

```
##                               size isdir mode               mtime
## Lab1note.pdf                553464 FALSE  777 2015-09-20 12:59:30
## Lab2                           306  TRUE  755 2015-09-20 16:11:01
## Lecture1Introduction.pdf   1134795 FALSE  640 2015-09-20 12:59:16
## LICENSE                       1077 FALSE  644 2015-09-18 09:40:04
## README.md                      244 FALSE  644 2015-09-18 09:58:11
## reference                      170  TRUE  777 2015-09-16 11:22:01
## script                         136  TRUE  755 2015-09-20 16:10:53
## 生态数据分析课程大纲.pdf  253722 FALSE  777 2015-09-12 18:07:12
##                                           ctime               atime uid gid
## Lab1note.pdf              2015-09-20 14:24:21 2015-09-20 14:24:23 501  20
## Lab2                      2015-09-20 16:11:01 2015-09-20 16:10:53 501  20
## Lecture1Introduction.pdf  2015-09-20 12:59:29 2015-09-20 12:59:15 501  20
## LICENSE                   2015-09-18 09:42:06 2015-09-20 12:49:52 501  20
## README.md                 2015-09-18 09:58:11 2015-09-18 09:58:04 501  20
## reference                 2015-09-16 13:27:58 2015-09-20 16:10:53 501  20
## script                    2015-09-20 16:10:53 2015-09-20 16:10:53 501  20
## 生态数据分析课程大纲.pdf 2015-09-16 13:27:58 2015-09-16 13:27:58 501  20
##                               uname grname
## Lab1note.pdf              tonytsai  staff
## Lab2                      tonytsai  staff
## Lecture1Introduction.pdf  tonytsai  staff
## LICENSE                   tonytsai  staff
## README.md                 tonytsai  staff
## reference                 tonytsai  staff
## script                    tonytsai  staff
## 生态数据分析课程大纲.pdf tonytsai  staff
```

```
# list only directories under DAE
list.dirs()
```

```
## [1] "."
## [2] "./Lab2"
## [3] "./Lab2/data"
## [4] "./Lab2/data/CMDSSS"
## [5] "./Lab2/data/CMDSSS/SURF_CLI_CHN_MUL_DAY_V3.0"
## [6] "./reference"
## [7] "./script"
```

```
# find all R scripts under DAE and give their full path names (or absolute paths)
list.files(recursive = TRUE, pattern = ".R$", full.names = TRUE)
```

```
## [1] "./script/20150916.R"
```

```
# create a recursive directory under DAE/Lab2, which stores the TXT data
# that will be read in Part III.
if(!dir.exists("Lab2/data/CMDSSS/SURF_CLI_CHN_MUL_DAY_V3.0"))
  dir.create("Lab2/data/CMDSSS/SURF_CLI_CHN_MUL_DAY_V3.0", recursive = TRUE)

# create a temporary directory under script
if(!dir.exists("script/tmp")) dir.create("script/tmp")
# create a temporary R script under tmp to say Hello World, Hello R!
file.create("script/tmp/tmp.R")
```

```
## [1] TRUE
```

```
cat("print('Hello World, Hello R!')", file = "script/tmp/tmp.R")
# excute the R script
source("script/tmp/tmp.R")
```

```
## [1] "Hello World, Hello R!"
```

```
# copy tmp.R to helloworld.R
file.copy("script/tmp/tmp.R", "script/helloworld.R")
```

```
## [1] TRUE
```

```
list.files("script", recursive = TRUE)
```

```
## [1] "20150916.R"   "helloworld.R" "tmp/tmp.R"
```

```
# rename helloworld.R to hello.R
file.rename("script/helloworld.R", "script/hello.R")
```

```
## [1] TRUE
```

```
list.files("script", recursive = TRUE)
```

```
## [1] "20150916.R" "hello.R"    "tmp/tmp.R"
```

```
# delete all R scripts under script directory except for 20150916.R
# attempt to delete inexistent hellworld.R
file.remove(c("script/hello.R", "script/helloworld.R"))
```

```
## Warning in file.remove(c("script/hello.R", "script/helloworld.R")): cannot
## remove file 'script/helloworld.R', reason 'No such file or directory'
```

```
## [1]  TRUE FALSE
```

```
list.files("script", recursive = TRUE)
```

```
## [1] "20150916.R" "tmp/tmp.R"
```

```
# delete the temporary directory that is not empty.
unlink("script/tmp", recursive = TRUE)
list.files("script")
```

```
## [1] "20150916.R"
```

To see all the file- and directory-related functions, type the following:

```
> ?files
```

Part II Capturing Results from Console

`print()`

`sink()`

Part III Imports and Exports

`read.table()`, `write.table()`

`read.csv()`, `write.csv()`

`read.xls()`, `write.xls()`

`load()`, `save()`

`data()`

`read.dbf()`

References

The following are materials on R data import/export that you can access on the Web.

- R Data Import/Export