Package writing

Dr Wayne Stewart

Why write packages?

- 1) To keep a systematic record of your functions including what they do – their inputs and outputs and dependencies.
  - This will facilitate keeping and not losing your work
  - You can easily edit and update your functions once a working edition is made
- 2) To collaborate with fellow scientists concerning your research. A package is the best way to compactly and succinctly manage your applications in one place.
- 3) Pedagogical and motivational: You are forced to determine the impact of the collection of your functions together – this will crystallize the purpose of your work
  - The writing of functions and their documentation will clarify and encourage good programming practices
  - How to write functions
  - Learn more about OOP like S3 in R
  - Encourage you to improve your programming skills

Data

- There are three ways to put data into your package – we will learn one of them today (probably the best for most purposes)

Method to get started

- Open your package project.
- Make a new directory `data`
- Read data into your R session
  - Bear in mind you will be in the root of your package directory structure.
  - Use `obj=read.csv(file.choose())` to read the data in
  - Now save the data to the `data` directory – use `save(obj, file="data/ddt.rda")` this is a special compressed rdata file format that is low in file size.
  - One more step and that is to document the data in the `R` folder.

Documentation: Below is the roxygen file – remember to save as `DDT.R`

```
#' Fish caught in the tennessee river and its tributaries
#'
#' A dataset with 6 variables two of which are quantitative.
#' Interest is in the amount of DDT in their flesh
#'
#' @format A data frame with 144 rows and 6 variables:
#' \describe{
#'   \item{RIVER}{Three letter abbreviation of the River}
#'   \item{MILE}{Mile count for where the fish was caught}
#'   ...
#' }
#' @source \url{https://www.crcpress.com/Statistics-for-Engineering-and-the-Sciences-Sixth-Edition/M  ndenhall-Sincich/p/book/9781498728850}
"ddt“
```

Use this name for documentation (just like you would for a function object)

devtools

- The devtools package will help you compile and install your package
- There are many options to these functions and many things are done beneath the surface

Once the package is made you can install using

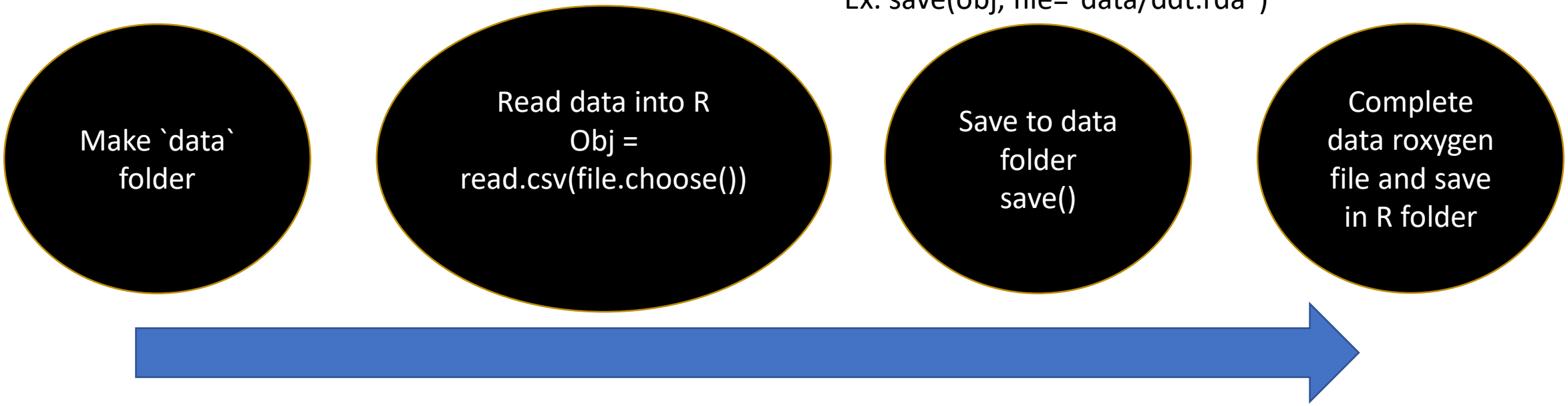
```
devtools::install(build_vignettes = TRUE, force = TRUE)
```

Now check

```
> data(ddt)
> head(ddt)
  RIVER MILE  SPECIES LENGTH WEIGHT DDT
1   FCM    5 CCATFISH   42.5    732  10
2   FCM    5 CCATFISH   44.0    795  16
3   FCM    5 CCATFISH   41.5    547  23
4   FCM    5 CCATFISH   39.0    465  21
5   FCM    5 CCATFISH   50.5   1252  50
6   FCM    5 CCATFISH   52.0   1255 150
```

Workflow

Ex. save(obj, file="data/ddt.rda")



devtools::install(build_vignettes = TRUE, force = TRUE)