Basic Course on R: Objects and Functions Practical

Karl Brand* and Elizabeth Ribble†

20-24 May 2019

Contents

*brandk@gmail.com
†emcclel3@msudenver.edu

1 Objects and Functions

1.1 Function Arguments

(a) Look at the help file for the function `mean()`. How many arguments does function have? What types of vectors are accepted?

(b) Use the function `mean()` to calculate the mean of the following values (note the NA and use named arugment matching):

1 2 NA 6

(c) Do (b) again but rearrange the arguments.

(d) Do (b) again using positional matching.

(e) Determine the class of `mean()` using `class()`.

(f) Determine the class of `mean()` using `str()`.

(g) Determine the class of the value output in part (d) using `class()`.

(h) Determine the class of the value output in part (d) using `str()`.

1.2 Use R as a calculator to calculate the following values:

$$17^4, \quad 45 - 2 \cdot 3, \quad (45 - 2) \cdot 3$$

1.3 Use the operators %% and %/% to do the following:

(a) Calculate the remainder after dividing 29,079 into 184,277,809.

(b) How many times does 29,079 go into 184,277,809 (i.e. what's the "integer divide" value)?

1.4 Do the last calculation from Q1.4 in another way, like this:

```
a <- 45
b <- 2
c <- 3
d <- (a - b) * c
```

Now check what `a`, `b`, `c`, and `d` are. You can just type the variable name (e.g. `a`) and hit 'Control' then 'Return' or use the command `print(a)`.

1.5 Do the following to practice saving and opening files in R.

(a) Look at the variables (or other objects) that are stored in your Workspace by typing either `objects()` or `ls()`.

(b) Check your working directory by typing `getwd()`. Now change it to a different directory - preferably your own flash drive - by using the function `setwd()`, for example:

```
setwd("C:/Users/Elizabeth/My Documents/R Course")
```

(c) Use the function "save.image()" to save your R session to a file called `YourLastName_practical1.RData` (replace YourLastName with your last name). Note that this will save a .RData file that contains only those objects you see when you run `ls()`. It does not save any code you typed into the console or into the source pane.

(d) Use the RStudio "File" drop-down menu to save your R source code to a file called `YourLastName_practical1.R` (replace YourLastName with your last name). Note that this will only save the text you've typed into the source pane. It does not save any objects or anything typed into or ran through the console.

(e) Use the function "save()" to save only the objects `myFirstList` and `pets` to a file called `YourLastName_objects.RData` (replace YourLastName with your last name).

(f) Now close out RStudio entirely, select "Save" or "Yes" in any dialog boxes that pop up, and then reopen RStudio. Is your source code still there?

(g) Run `ls()`; are your objects still there?

(h) You can change these kinds of options by going to "Tools - Global Options". Go there and deselect "Restore .RData into workspace at startup". Then close RStudio and choose to save the .RData file.

(i) Reopen RStudio; your environment should be empty. Load your objects back in using `load()` (e.g. `load("Ribble_practical1.RData")`) and then run ls() again. Do you see your objects now?

(j) Check what the working directory is by again running `getwd()` - has it been reset?

2 Document License