STAT 542

Example Solutions – Homework 1

1) The pipe operator "%>%" will not be recognized by R unless the package it is in (magrittr, which comes with tidyverse) is loaded.

2) A file name should be wrapped in quotation marks in R.

3) See the output returned below:

> obj1 <- 2:10

> obj2 <- c(2, 5)

> obj3 <- c(TRUE, FALSE)

> obj4 <- 42

> obj1 \* 10

**[1] 20 30 40 50 60 70 80 90 100**

> obj1[2:4]

**[1] 3 4 5**

> obj1[-3]

**[1] 2 3 5 6 7 8 9 10**

> obj1 + obj2

**[1] 4 8 6 10 8 12 10 14 12**

Warning message:

In obj1 + obj2 :

longer object length is not a multiple of shorter object length

> obj1 \* obj3

**[1] 2 0 4 0 6 0 8 0 10**

Warning message:

In obj1 \* obj3 :

longer object length is not a multiple of shorter object length

> obj1 + obj4

**[1] 44 45 46 47 48 49 50 51 52**

> obj2 + obj3

**[1] 3 5**

> sum(obj2)

**[1] 7**

> sum(obj3)

**[1] 1**

Note the warning messages when adding or elementwise multiplying vectors that are not of the same length.

4)

> mylist <- list(x1 = "sally", x2 = 42, x3 = FALSE, x4 = 1:5)

> is.list(mylist)

**[1] TRUE**

> names(mylist)

**[1] "x1" "x2" "x3" "x4"**

> length(mylist)

**[1] 4**

> mylist[[2]]

**[1] 42**

> mylist[["x1"]]

**[1] "sally"**

> mylist$x2

**[1] 42**

> length(mylist[["x4"]])

**[1] 5**

> class(mylist)

**[1] "list"**

> typeof(mylist)

**[1] "list"**

> class(mylist[[4]])

**[1] "integer"**

> typeof(mylist[[3]])

**[1] "logical"**

Note that we refer to elements of a list using the double square brackets notation.

5) It should really be

help(NHANES, package = "NHANES")

because the code in the book actually creates an object called package with the value

"NHANES"

6) help(CPS85, package="mosaicData")

explains that this object is a data set with the Current Population Survey from 1985 (a study to gather census information during the years in between the official census years).

7) The name of the column in mtcars is cyl, not cylinders.

8) The argument that date takes is a date-time object (a special type of R object). It returns a character string that indicates the date in words and numbers. Sys.time returns a character string telling the current date and time.

9) See the output below and the classes of each result:

> a <- c(10, 15)

> b <- c(TRUE, FALSE)

> c <- c("happy", "sad")

> data.frame(a, b, c)

**a b c**

**1 10 TRUE happy**

**2 15 FALSE sad**

**This is a data frame.**

> cbind(a, b)

**a b**

**[1,] 10 1**

**[2,] 15 0**

**This is a (numeric) matrix.**

> rbind(a, b)

**[,1] [,2]**

**a 10 15**

**b 1 0**

**This is a (numeric) matrix.**

> cbind(a, b, c)

**a b c**

**[1,] "10" "TRUE" "happy"**

**[2,] "15" "FALSE" "sad"**

**This is a (character) matrix.**

> list(a, b, c)[[2]]

**[1] TRUE FALSE**

**This is a logical vector.**

10) sqrt(10) needs parentheses around the 10.

Should be <- rather than <--

The name of an R object cannot start with a number.

Missing a closing quotation mark.

Would be fine except that the previous statement needs a closing quotation mark to complete that statement.

11) The double-equals is a logical check for equality, which is called for here. The single-equals inside a function is for specifying an argument value, which is not what we want here.

13 [Extra credit]. Answers can vary, but the four elements should be clearly and correctly labeled.