List Vol.2 Exercises

Answers to the exercises are available here.

Exercise 1

Consider 3 vectors, day, month and year:

```
year=c(2005:2016)
month=c(1:12)
day=c(1:31)
```

Define a list Date such as:

```
Date=

$year
[1] 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015
2016

$month
[1] 1 2 3 4 5 6 7 8 9 10 11 12

$day
[1] 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22
23 24 25 26 27 28 29 30 31
```

Exercise 2

write an R statement that will replace the values of year element in Date list for c(2000:2010).

Exercise 3

write an R statement that will delete the value 4 of the month component of the list Date.

Learn more about lists in the online courses:

- Learn By Example: Statistics and Data Science in R (lecture 59)
- The Comprehensive Statistics and Data Science with R Course (lectures 69-76)
- R Programming: Advanced Analytics In R For Data Science (11 lectures all about lists, ~ 1.5 hrs in total)

Exercise 4

Consider a vector x such that:
x=c(1,3,4,7,11,18,29)
Write an R statement that will return a list X2 with components of value:
x*2,x/2,sqrt(x) and names "x*2","x/2","sqrt(x)"

Exercise 5

Consider the X2 list.
Write an R statement that will return a vector:
2.000000 2.645751 3.316625

Exercise 6

Write an R statement that will return a concatenation M, of Date and X2 lists.

```
M
$year
[1] 2000 2001 2002 2003 2004 2005 2006 2007 2008

$month
[1] 1 2 3 5 6 7 8 9 10 11 12
```

```
$day
[1] 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22
23
[24] 24 25 26 27 28 29 30 31

$`x*2`
[1] 2 6 8 14 22 36 58

$`x/2`
[1] 0.5 1.5 2.0 3.5 5.5 9.0 14.5

$`sqrt(x)`
[1] 1.000000 1.732051 2.000000 2.645751 3.316625 4.242641
5.385165
```

Exercise 7

Write an R statement that will return a sublist N of M, with components year,x*2 and day.

Exercise 8

Consider the N list.
Write an R statement that will return:
-the length of x*2 vector in N
-the value of the second element of vector year in N

Exercise 9

Consider 3 letters vectors, and 2 numeric vectors:
A=letters[1:4],B=letters[5:10],C=letters[11:15]
D=c(1:10),E=c(20:5)

Define a list z, with elementes x and y,such that
x is a list with elements A,B,and C;
and y is alist with elements D and E.

Exercise 10
Write an R statement that will return:
-the number on third position on the second vector of the

first list of z
-the letter on fifth position on the third vector of the second list of z

Want some extra practice with lists? Please take a look here

List exercises

In the exercises below we cover the basics of lists. Before proceeding, first read section 6.1-6.2 of An Introduction to R, and the help pages for the sum, length, strsplit, and setdiff functions.

Answers to the exercises are available here.

Learn more about lists in the online courses Learn By Example: Statistics and Data Science in R , The Comprehensive Statistics and Data Science with R Course and R Programming: Advanced Analytics In R For Data Science

Exercise 1

If:
p <- c(2,7,8), q <- c("A", "B", "C") and
x <- list(p, q),
then what is the value of x[2]?
a. NULL
b. "A" "B" "C"
c. "7"

Exercise 2

If:
w <- c(2, 7, 8)
v <- c("A", "B", "C")
x <- list(w, v),

then which R statement will replace "A" in x with "K".
a. x[[2]] <- "K"
b. x[[2]][1] <- "K"
c. x[[1]][2] <- "K"

Exercise 3
If a <- list ("x"=5, "y"=10, "z"=15), which R statement will give the sum of all elements in a?
a. sum(a)
b. sum(list(a))
c. sum(unlist(a))

Exercise 4
If Newlist <- list(a=1:10, b="Good morning", c="Hi"), write an R statement that will add 1 to each element of the first vector in Newlist.

Exercise 5
If b <- list(a=1:10, c="Hello", d="AA"), write an R expression that will give all elements, except the second, of the first vector of b.

Exercise 6
Let x <- list(a=5:10, c="Hello", d="AA"), write an R statement to add a new item z = "NewItem" to the list x.

Exercise 7
Consider y <- list("a", "b", "c"), write an R statement that will assign new names "one", "two" and "three" to the elements of y.

Exercise 8
If x <- list(y=1:10, t="Hello", f="TT", r=5:20), write an R statement that will give the length of vector r of x.

Exercise 9
Let string <- "Grand Opening", write an R statement to split this string into two and return the following output:

```
[[1]]
[1] "Grand"

[[2]]
[1] "Opening"
```

Exercise 10

Let:
y <- list("a", "b", "c") and
q <- list("A", "B", "C", "a", "b", "c").
Write an R statement that will return all elements of q that are not in y, with the following result:

```
[[1]]
[1] "A"

[[2]]
[1] "B"

[[3]]
[1] "C"
```

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