

R 语言基础：练习(一)

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1.数组练习

Exercise 1

Create an array (3 dimensional) of 24 elements using the `dim()` function.

Exercise 2

Create an array (3 dimensional) of 24 elements using the `array()` function.

Exercise 3

Assign some dimnames of your choice to the array using the `dimnames()` function.

Exercise 4

Assign some dimnames of your choice to the array using the arguments of the `array()` function.

Exercise 5 （不做）

Instead of column-major array, make a row-major array (transpose).

Exercise 6

For this exercise, and all that follow, download this file(ex.csv), and read it into R using the `read.csv()` function, e.g.: `temp` Copy the column named N into a new variable `arr`.

Exercise 7

Set dimensions of this variable and convert it into a $3 * 2 * 4$ array. Add dimnames.

Exercise 8

Print the whole array on the screen.

Exercise 9

Print only elements of height 2, assuming the first dimension represents height, the second rows and the third column.

Exercise 10

Print elements of height 1 and columns 3 and columns 1.

Exercise 11

Print element of height 2, column 4 and row 2.

Exercise 12

Repeat the exercises 9-11, but instead of using numbers to reference row, column and height, use dimnames.

2. 缺失值练习

Exercise 1

If `X <- c(22, 3, 7, NA, NA, 67)` what will be the output for the R statement `length(X)`

Exercise 2

If `X = c(NA, 3, 14, NA, 33, 17, NA, 41)` write some R code that will remove all occurrences of NA in X.

- a. `X[!is.na(X)]`
- b. `X[is.na(X)]`
- c. `X[X==NA]= 0`

Exercise 3

If `Y = c(1, 3, 12, NA, 33, 7, NA, 21)` what R statement will replace all occurrences of NA with 11?

- a. `Y[Y==NA]= 11`
- b. `Y[is.na(Y)]= 11`
- c. `Y[Y==11] = NA`

Exercise 4

If `X = c(34, 33, 65, 37, 89, NA, 43, NA, 11, NA, 23, NA)` then what will count the number of occurrences of NA in X?

- a. `sum(X==NA)`
- b. `sum(X == NA, is.na(X))`

c. `sum(is.na(X))`

Exercise 5

Consider the following vector `W <- c (11, 3, 5, NA, 6)` Write some R code that will return TRUE for value of W missing in the vector.

Exercise 6

Load Orange dataset from R using the command `data(Orange)` . Replace all values of `age=118` to NA.

Exercise 7

Consider the following vector `A <- c (33, 21, 12, NA, 7, 8)` Write some R code that will calculate the mean of A without the missing value.

Exercise 8

Let:

```
c1 <- c(1,2,3,NA) ;  
c2 <- c(2,4,6,89) ;  
c3 <- c(45,NA,66,101)
```

If `X <- rbind (c1,c2,c3, deparse.level=1)` , write a code that will display all rows with missing values.

Exercise 9

Consider the following data obtained from `df <- data.frame (Name = c(NA, "Joseph", "Martin", NA, "Andrea"), Sales = c(15, 18, 21, 56, 60), Price = c(34, 52, 21, 44, 20), stringsAsFactors = FALSE)` Write some R code that will return a data frame which removes all rows with NA values in Name column

Exercise 10

Consider the following data obtained from `df <- data.frame(Name = c(NA, "Joseph", "Martin", NA, "Andrea"), Sales = c(15, 18, 21, NA, 60), Price = c(34, 52, 33, 44, NA), stringsAsFactors = FALSE)` Write some R code that will remove all rows with NA values and give the following output:

```
Name Sales Price  
2 Joseph 18 52  
3 Martin 21 33
```

3.字符向量练习

Exercise 1

If `x <- "Good Morning! "`, find out the number of characters in `x`

- a. 1
- b. 14
- c. 13

Exercise 2

Consider the character vector `x <- c ("Nature's", "Best ")`, how many characters are there in `x`?

- a. 12
- b. 13
- c. 8,5

Exercise 3

If `x <- c("Nature's", " At its best ")`, how many characters are there in `x`?

- a. 19
- b. 8,13
- c. 8,9

Exercise 4

If `fname <- "James"` and `lname <- "Bond"`, write some R code that will produce the output "James Bond".

Exercise 5

If `m <- "Capital of America is Washington"` then extract the string "Capital of America" from the character vector `m`.

Exercise 6

Write some R code to replace the first occurrence of the word "failed" with "failure" in the string "Success is not final, failed is not fatal".

Exercise 7

Consider two character vectors:

```
Names <- c("John", "Andrew", "Thomas")
Designation <- c("Manager", "Project Head", "Marketing Head")
```

Write some R code to obtain the following output:

```
Names Designation
1 John Manager
2 Andrew Project Head
3 Thomas Marketing Head
```

Exercise 8

Write some R code that will initialise a character vector with fixed length of 10.

Exercise 9

Write some R code that will generate a vector with the following elements, without using loops.(提示使用 `letters` 函数)

```
"aa" "ba" "ca" "da" "ea" "ab" "bb" "cb" "db" "eb" "ac" "bc" "cc" "dc" "ec" "ad" "bd" "cd" "dd" "ed" "ae" "be" "ce" "de" "ee"
```

Exercise 10

Let `df <- data.frame(Date = c("12/12/2000 12:11:10"))`. Write some R code that will convert the given date to character values and gives the following output:
"2000-12-12 12:11:10 CST"

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