Exercises R

Variables

1. Create 3 variables with 3 different values. One of the variables must be invisible
2. List environment variables
3. Remove the 3 variables

constants

1. Check the value of the following constants (see https://stat.ethz.ch/R-manual/R-devel/library/base/html/Constants.html)
   1.1. month names
   1.2. set of letters
   1.3. π value

operators

1. Create some variables with the different assignment operators (except global ones)
2. List environment variables
3. Remove the variables
4. Calculate the exponent of two variables
5. Calculate the remainder of the division between two variables
6. Calculate the integer part of the division between two variables
7. Compare two variables using the "greater than" operator
8. Compare two variables using the "equals" operator
9. Comparing two variables using the "not equal" operator
10. Apply the logical operator AND to two vectors
11. wise OR logical operator to two vectors

vectors

1. Create vector v1 with elements 3, 3, 5, 2, 4, 4, 3, 1, 3, 2, 1, 5, 5, 4, 2, 1, 3, 2, 2, 4
2. Create vector v2 with integers from 1 to 20
3. Create vector v3 with values from 5 to 10 in intervals of 0.5
4. Create vector v4 with names "first", "second", "third" and values 10, 20 and 30
5. Get vector size v1
6. Sort vector v1 descending
7. Get the unique values of vector v1

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8. Get the frequency of elements from vector v1

9. Show only elements 1, 3 and 5 of vector v1

10. Show only even elements of vector v1

11. Get only named value "first" from vector v4

12. Get only values with names "first" and "second" from vector v4

13. Replace the fifth element of vector v2 by 100

14. Replace the values of elements less than 10 of vector v2 with the value 500

15. Create a vector v5 with the elements of vector v2 between positions 3 and 9

matrices

1. Create matrix m1 with values from 1 to 12, with 3 rows and 4 columns

2. Rename rows from m1 to "Row1", "Row2" and "Row3" and of columns to "Column1", "Column2", "Column3" and "Column4"

3. Show only the second column of the matrix

4. Show only the second and third rows of the matrix

5. Show the entire array except the second column

6. Show the entire array except the first row

7. Show the intersection of rows 1 and 2 with columns 3 and 4

8. Show only the odd values existing in the array

9. Show only columns whose names are "Column1" and "Column2"

10. Show only the lines whose names are "Line1" and "Line2"

11. Show only the intersection of columns "Column1" and "Column2" with rows 2 and 3

12. Replace the third element of the second row with 27

13. Replace elements less than 6 with 42

14. Get the matrix transpose

15. Add to the matrix the column from the vector with elements 100, 200, 300

16. Add to the array the row with elements 1111, 2222, 3333, 4444, 5555

lists

1. Create a list using the list ( ) function

   1.1. Create a list with 3 elements: element "x" with value "abc"; element "y" with value 5, and element "c" with integers from 1 to 5

   1.2. Check list structure

2. Read elements from a list

   2.1. Get the elements in positions 2 and 3 of the list

   2.2. Get all elements in the list except the first

   2.3. Using a logical vector, get the first and third elements of the list

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2.4. Create a list with the following values: "name" with the value "John", "age" with the value 19, " speak " with the values " English " and " French "

2.5. Get the " name " element

2.6. Get the " name " and "age" elements

2.7. Get the "age" element using the $ operator

2.8. Get the second element of "age" using the $ operator

3. modify a list

3.1. Change the "age" to 18

3.2. Add the element " married " with the value FALSE to the list

data frames

1. Create a data frame using the data.frame () function

   1.1. Create a data frame with the following content

   ```
   id     nameExpiration
   1      Ana1000
   2      Carla1500
   ```

   1.2. See the data structure frame

2. read data frames

   2.1. View Names with three operators: [ ] , [[ ]] and $

   2.2. View the name of the first record

   2.3. View the iris dataset

   2.4. See the first 5 lines of the iris dataset

   2.5. View the records of the iris dataset whose Species is "versicolor"

3. Modify a data frame

   3.1. on date first exercise frame change Ana's salary to 1250

   3.2. add to date frame of the first exercise the column "City" with the values "Porto" and "Braga" for registers 1 and 2, respectively

factors

1. Create a factor using the factor ( ) function

   1.1. Create a factor with the following values: "male", "female", "male", "female"

   1.2. Create a factor with the following values: "male", "female", "male", "female" defining the levels as: "male" and "female"

2. modify a factor

   2.1. Modify the second element from 1.2 to "male"

   2.2. Modify second element from 1.2 to "undefined" (impossible)

predefined functions

1. math functions

    1.1. Round up 2.5 to excess

    1.2. Calculate the logarithm of pi

2. text functions

    2.1. Create the variable x with the value " abcdef "

    2.2. Show letters in positions 3 and 4

    2.3. Find "C" in c("B" ,"A ","C")

    2.4. Create the vector [abc11 abc12 abc13] by concatenating "abc" with numbers 11 to 13

    2.5. Show x in all capital letters

3. statistical functions

    3.1. Create the vector x with the elements 3, 5, 7, 9

    3.2. Calculate the median of x

    3.3. Calculate the minimum value of x

    3.4. Calculate the sum of the elements of x

4. Useful functions

    4.1. Create a vector with 20 repetitions of the value 5