Week 1 Quiz

CALIFICACIÓN DEL ÚLTIMO ENVÍO

90%

1. R was developed by statisticians working at **0 / 1 puntos**

- (•) Bell Labs
- ( ) The University of Auckland
- ( ) Harvard University
- ( ) StatSci

! **Incorrecto**
Bell Labs developed the original S language.

2. The definition of free software consists of four freedoms (freedoms 0 through 3). Which of the following is NOT one of the freedoms that are part of the definition? Select all that apply. **1 / 1 puntos**

- [x] The freedom to restrict access to the source code for the software.

✓ **Correcto**
This is not part of the free software definition. Freedoms 1 and 3 require access to the source code.

- [ ] The freedom to improve the program, and release your improvements to the public, so that the whole community benefits.
- [ ] The freedom to redistribute copies so you can help your neighbor.
- [x] The freedom to prevent users from using the software for undesirable purposes.

✓ **Correcto**
This is not part of the free software definition. Freedom 0 requires that the users of free software be free to use the software for any purpose.

- [x] The freedom to sell the software for any price.

Correcto
This is not part of the free software definition. The free software definition does not mention anything about selling software (although it does not disallow it).

- [ ] The freedom to run the program, for any purpose.
- [ ] The freedom to study how the program works, and adapt it to your needs.

3. In R the following are all atomic data types EXCEPT: (Select all that apply) **1 / 1 puntos**

- [ ] character
- [ ] numeric
- [x] table

Correcto
'table' is not an atomic data type in R.

- [x] data frame

Correcto
'data frame' is not an atomic data type in R.

- [x] array

Correcto
'array' is not an atomic data type in R.

- [x] matrix

Correcto
'matrix' is not an atomic data type in R.

- [ ] complex
- [ ] logical
- [x] list

✓ **Correcto**

'list' is not an atomic data type in R.

- [ ] integer

4. If I execute the expression x <- 4L in R, what is the class of the object `x' as determined by the `class()' function? **0 / 1 puntos**

- ( ) complex
- ( ) character
- ( ) matrix
- ( ) integer
- ( ) logical
- (•) numeric

! **Incorrecto**

5. What is the class of the object defined by the expression x <- c(4, "a", TRUE)? **1 / 1 puntos**

- ( ) mixed
- ( ) numeric
- ( ) logical
- (•) character
- ( ) integer

✓ **Correcto**

The character class is the "lowest common denominator" here and so all elements will be coerced into that class.

6. If I have two vectors x <- c(1,3, 5) and y <- c(3, 2, 10), what is produced by the expression cbind(x, y)? **1 / 1 puntos**

- ○ a vector of length 2
- ○ a vector of length 3
- ○ a 2 by 3 matrix
- ○ a 2 by 2 matrix
- ◉ a matrix with 2 columns and 3 rows
- ○ a 3 by 3 matrix

✓ **Correcto**

The 'cbind' function treats vectors as if they were columns of a matrix. It then takes those vectors and binds them together column-wise to create a matrix.

7. A key property of vectors in R is that **1 / 1 puntos**

- ◉ elements of a vector all must be of the same class
- ○ a vector cannot have have attributes like dimensions
- ○ elements of a vector can be of different classes
- ○ elements of a vector can only be character or numeric
- ○ the length of a vector must be less than 32,768

✓ **Correcto**

8. Suppose I have a list defined as x <- list(2, "a", "b", TRUE). What does x[[2]] give me? Select all that apply. **1 / 1 puntos**

- ☑ a character vector of length 1.

Correcto

- [ ] a character vector with the elements "a" and "b".
- [ ] a list containing a character vector with the elements "a" and "b".
- [x] a character vector containing the letter "a".

Correcto

- [ ] a list containing character vector with the letter "a".

9. Suppose I have a vector x <- 1:4 and y <- 2:3. What is produced by the expression x + y? **1 / 1 puntos**

- ( ) a warning
- (•) an integer vector with the values 3, 5, 5, 7.
- ( ) a numeric vector with the values 3, 5, 3, 4.
- ( ) a numeric vector with the values 1, 2, 5, 7.
- ( ) an integer vector with the values 3, 5, 3, 4.
- ( ) an numeric vector with the values 3, 5, 5, 7.
- ( ) an error.

Correcto

10. Suppose I have a vector x <- c(3, 5, 1, 10, 12, 6) and I want to set all elements of this vector that are less than 6 to be equal to zero. What R code achieves this? Select all that apply. **1 / 1 puntos**

- [ ] x[x > 0] <- 6
- [ ] x[x == 6] <- 0
- [ ] x[x != 6] <- 0

- [x] x[x %in% 1:5] <- 0

Correcto
You can create a logical vector with the expression x %in% 1:5 and then use the [operator to subset the original vector x.

- [ ] x[x > 6] <- 0
- [ ] x[x == 0] < 6
- [ ] x[x < 6] == 0
- [ ] x[x >= 6] <- 0
- [x] x[x <= 5] <- 0

Correcto
You can create a logical vector with the expression x <= 5 and then use the [operator to subset the original vector x.

- [ ] x[x == 0] <- 6
- [x] x[x < 6] <- 0

Correcto
You can create a logical vector with the expression x < 6 and then use the [operator to subset the original vector x.

11. Use the Week 1 Quiz Data Set to answer questions 11-20. **1 / 1 puntos**

In the dataset provided for this Quiz, what are the column names of the dataset?

- (•) Ozone, Solar.R, Wind, Temp, Month, Day
- ( ) Month, Day, Temp, Wind
- ( ) Ozone, Solar.R, Wind
- ( ) 1, 2, 3, 4, 5, 6

Correcto

You can get the column names of a data frame with the `names()' function.

12. Extract the first 2 rows of the data frame and print them to the console. What does the output look like? **1 / 1 puntos**

```
  1    Ozone Solar.R Wind Temp Month Day
2 1     18     224 13.8   67     9  17
3 2     NA     258  9.7   81     7  22
```

```
  1    Ozone Solar.R Wind Temp Month Day
2 1      7      NA  6.9   74     5  11
3 2     35     274 10.3   82     7  17
```

```
  1    Ozone Solar.R Wind Temp Month Day
2 1     41     190  7.4   67     5   1
3 2     36     118  8.0   72     5   2
```

```
  1    Ozone Solar.R Wind Temp Month Day
2 1      9      24 10.9   71     9  14
3 2     18     131  8.0   76     9  29
```

Correcto

You can extract the first two rows using the [operator and an integer sequence to index the rows.

13. How many observations (i.e. rows) are in this data frame? **1 / 1 puntos**

- 153
- 129
- 160
- 45

Correcto

You can use the `nrows()' function to compute the number of rows in a data frame.

14.

Extract the *last* 2 rows of the data frame and print them to the console. What does the output look like? **1 / 1 puntos**

```
   1       Ozone Solar.R Wind Temp Month Day
   2   152    11      44  9.7   62     5  20
   3   153   108     223  8.0   85     7  25
```

```
   1       Ozone Solar.R Wind Temp Month Day
   2   152    31     244 10.9   78     8  19
   3   153    29     127  9.7   82     6   7
```

```
   1       Ozone Solar.R Wind Temp Month Day
   2   152    34     307 12.0   66     5  17
   3   153    13      27 10.3   76     9  18
```

```
   1       Ozone Solar.R Wind Temp Month Day
   2   152    18     131  8.0   76     9  29
   3   153    20     223 11.5   68     9  30
```

Correcto

The `tail()' function is an easy way to extract the last few elements of an R object.

15. What is the value of Ozone in the 47th row? **1 / 1 puntos**

- 21
- 63
- 18
- 34

Correcto

The single bracket [operator can be used to extract individual rows of a data frame.

16. How many missing values are in the Ozone column of this data frame? **1 / 1 puntos**

- 37
- 43

- 78
- 9

Correcto

The `is.na' function can be used to test for missing values.

17. What is the mean of the Ozone column in this dataset? Exclude missing values (coded as NA) from this calculation. **1 / 1 puntos**

- 18.0
- 53.2
- 42.1
- 31.5

Correcto

The `mean' function can be used to calculate the mean.

18. Extract the subset of rows of the data frame where Ozone values are above 31 and Temp values are above 90. What is the mean of Solar.R in this subset? **1 / 1 puntos**

- 185.9
- 205.0
- 334.0
- 212.8

Correcto

You need to construct a logical vector in R to match the question's requirements. Then use that logical vector to subset the data frame.

19. What is the mean of "Temp" when "Month" is equal to 6? **1 / 1 puntos**

- 75.3

- 90.2
- (●) 79.1
- 85.6

✓ **Correcto**

20. What was the maximum ozone value in the month of May (i.e. Month is equal to 5)? **1 / 1 puntos**

- 100
- 97
- (●) 115
- 18

✓ **Correcto**