✖

Week 1 Quiz

✓   17/20 questions
correct

Quiz passed!

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✔ 1.

The R language is a dialect of which of the following programming languages?

○   Scheme

○   Fortran

○   Lisp

○   S

Well done!
R is a dialect of the S language which was developed at Bell Labs.

✔ 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.

☐ The freedom to redistribute copies so you can help your neighbor.

Well done!
This is freedom 2.

☑ The freedom to prevent users from using the software for undesirable purposes.

Well done!
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.

☐ The freedom to improve the program, and release your improvements to the public, so that the whole community benefits.

Well done!
This is freedom 3.

☑ The freedom to sell the software for any price.

Well done!
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.

Well done!
This is freedom 0.

☐ The freedom to study how the program works, and adapt it to your needs.

Well done!
This is freedom 1.

☑ The freedom to restrict access to the source code for the software.

Well done!
This is not part of the free software definition. Freedoms 1 and 3 require access to the source code.

✖ 3.

In R the following are all atomic data types EXCEPT: (Select all that apply)

☐ logical

Well done!

☑ matrix

Well done!
'matrix' is not an atomic data type in R.

☐ numeric

Well done!

☑ table

Well done!
'table' is not an atomic data type in R.

☐ character

> **Well done!**

◼ list

> **Well done!**
> 'list' is not an atomic data type in R.

◼ array

> **Well done!**
> 'array' is not an atomic data type in R.

☐ integer

> **Well done!**

☐ data frame

> **Sorry, that's incorrect.**
> 'data frame' is not an atomic data type in R.

☐ complex

> **Well done!**

✔ 4.

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

○ logical

○ integer

> **Well done!**
> The 'L' suffix creates an integer vector as opposed to a numeric vector.

○ matrix

○ numeric

○ complex

○ character

✔ 5.

What is the class of the object defined by x <- c(4, TRUE)?

○ character

○ integer

○ list

○ matrix

○ logical

○ numeric

> **Well done!**
> The numeric 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 rbind(x, y)?

○   a 3 by 3 matrix

○   a vector of length 3

◉   a 3 by 2 matrix

Sorry, that's incorrect.

○   a vector of length 2

○   a matrix with two rows and three columns

○   a 2 by 2 matrix

✔ 7.

A key property of vectors in R is that

○   a vector cannot have have attributes like dimensions

○   the length of a vector must be less than 32,768

○   elements of a vector can be of different classes

○   elements of a vector can only be character or numeric

○   elements of a vector all must be of the same class

Well done!

✖ 8.

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

☐ a numeric vector containing the element 2.

Sorry, that's incorrect.

☐ a list containing the number 2.

Well done!

☐ a list containing a numeric vector of length 1.

Well done!

☐ a character vector containing the element "2".

Well done!

☐ a numeric vector of length 1.

Sorry, that's incorrect.

✔ 9.

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

○ a numeric vector with elements 1, 2, 3, 6.

○ an integer vector with elements 3, 2, 3, 4.

○ a numeric vector with elements 3, 2, 3, 6.

○ a numeric vector with elements 3, 4, 5, 6.

Well done!

○   an integer vector with elements 3, 2, 3, 6.

○   a numeric vector with elements 3, 2, 3, 4.

✔️ 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.

☐   x[x >= 6] <- 0

Well done!
This sets all the elements greater than or equal to 6 to be zero.

☐   x[x == 6] <- 0

Well done!
This sets all the elements that are equal to 6 to be 0.

☑   x[x %in% 1:5] <- 0

Well done!
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

Well done!
This takes the elements of x that are less than 6 and tests whether they are equal to 0 or not.

☐   x[x > 6] <- 0

> ## Well done!
> This sets all the elements *greater* than 6 to be zero.

☐   x[x > 0] <- 6

> ## Well done!
> This sets all the elements greater than 0 to be equal to 6.

☐   x[x == 0] <- 6

> ## Well done!
> This sets all the elements that are equal to 0 to be 6.

☑   x[x < 6] <- 0

> ## Well done!
> You can create a logical vector with the expression x < 6 and then use the [operator to subset the original vector x.

☐   x[x == 0] < 6

> ## Well done!
> This takes the elements of x that are equal to 0 and tests whether they are less than 6 or not.

☑   x[x <= 5] <- 0

> ## Well done!
> You can create a logical vector with the expression x <= 5 and then use the [operator to subset the original vector x.

☐   x[x != 6] <- 0

> ## Well done!
> This sets all the elements not equal 6 to be zero.

✔ **11.**

Use the Week 1 Quiz Data Set
(https://d396qusza40orc.cloudfront.net/rprog/data/quiz1_data.zip) to
answer questions 11-20.

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

○　1, 2, 3, 4, 5, 6

○　Ozone, Solar.R, Wind
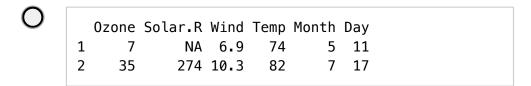
○　Ozone, Solar.R, Wind, Temp, Month, Day

> **Well done!**
> You can get the column names of a data frame with the `names()'
> function.

○　Month, Day, Temp, Wind

✔ **12.**

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

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

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

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

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

Well done!
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?

○ 45

○ 153

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

○ 129

○ 160

✔ 14.

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

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

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

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

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

Well done!
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?

○ 34

◉ 21

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

○ 63

○ 18

✔ **16.**

How many missing values are in the Ozone column of this data frame?

○ 78

○ 37

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

○ 9

○ 43

✔ **17.**

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

○ 31.5

○ 18.0

○ 53.2

○ 42.1

Well done!
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?

○ 212.8

Well done!
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.

○ 334.0

○ 205.0

○ 185.9

✔ 19.

What is the mean of "Temp" when "Month" is equal to 6?

○ 79.1

Well done!

○ 85.6

○ 75.3

○ 90.2

✔ 20.

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

○ 97

○ 100

◯ 115

Well done!

◯ 18

👍 👎 🏳