Week 1 Quiz

Back to Week 1

20/20 points earned (100%)

Quiz passed!

1 / 1 points

1.
R was developed by statisticians working at

- Johns Hopkins University
- The University of Auckland

Correct
The R language was developed by Ross Ihaka and Robert Gentleman who were statisticians at the University of Auckland in New Zealand.

- StatSci
- Insightful

1 / 1 points

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.

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

Correct
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).

- [x] The freedom to study how the program works, and adapt it to your needs.

Un-selected is correct

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

Correct
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.

Un-selected is correct

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

Un-selected is correct

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

Correct
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 run the program, for any purpose.

Un-selected is correct

✔ 1 / 1 points

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

☐ character

Un-selected is correct

☐ data frame

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

☐ integer

Un-selected is correct

☐ array

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

☐ numeric

Un-selected is correct

☐ logical

Un-selected is correct

- [ ] table

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

- [ ] matrix

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

- [ ] complex

Un-selected is correct

- [ ] list

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

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1 / 1 points

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

- ○ complex
- ◉ integer

Correct
The 'L' suffix creates an integer vector as opposed to a numeric vector.

- ○ matrix
- ○ numeric
- ○ character
- ○ logical

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1 / 1 points

5.
What is the class of the object defined by x <- c(4, TRUE)?

- ○ integer

- [x] numeric

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

- [ ] matrix
- [ ] list
- [ ] logical
- [ ] character

✔ 1 / 1 points

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 vector of length 2
- [ ] a vector of length 3
- [x] a matrix with two rows and three columns

Correct
The 'rbind' function treats vectors as if they were rows of a matrix. It then takes those vectors and binds them together row-wise to create a matrix.

- [ ] a 3 by 3 matrix
- [ ] a 3 by 2 matrix
- [ ] a 2 by 2 matrix

✔ 1 / 1 points

7.
A key property of vectors in R is that

- [x] elements of a vector all must be of the same class

Correct

- [ ] elements of a vector can be of different classes
- [ ] a vector cannot have have attributes like dimensions
- [ ] elements of a vector can only be character or numeric
- [ ] the length of a vector must be less than 32,768

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1 / 1 points

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

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

Un-selected is correct

- [x] a character vector containing the letter "a".

Correct

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

Un-selected is correct

- [x] a list containing the number 2 and the letter "a".

Un-selected is correct

- [x] a character vector of length 1.

Correct

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1 / 1 points

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 3, 4, 5, 6.

Correct

- ( ) a numeric vector with elements 3, 2, 3, 6.
- ( ) a numeric vector with elements 1, 2, 3, 6.
- ( ) an integer vector with elements 3, 2, 3, 6.
- ( ) a numeric vector with elements 3, 2, 3, 4.
- ( ) an integer vector with elements 3, 2, 3, 4.

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1 / 1 points

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 == 0] <- 6

Un-selected is correct

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

Un-selected is correct

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

Un-selected is correct

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

Un-selected is correct

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

Un-selected is correct

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

Correct
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

Un-selected is correct

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

Un-selected is correct

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

Correct
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

Un-selected is correct

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

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

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1 / 1 points

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

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

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

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

- 1, 2, 3, 4, 5, 6
- Ozone, Solar.R, Wind

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1 / 1 points

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

-
```
  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    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    41      190  7.4   67     5   1
3  2    36      118  8.0   72     5   2
```

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

-
```
  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
```

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1 / 1 points

13.

How many observations (i.e. rows) are in this data frame?

- [x] 153

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

- [ ] 129
- [ ] 160
- [ ] 45

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1 / 1 points

14.
Extract the *last* 2 rows of the data frame and print them to the console. What does the output look like?

- [ )

```
  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
```

- [x)

```
  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
```

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

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1 / 1 points

15.
What is the value of Ozone in the 47th row?

- [ ] 63
- [x] 21

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

- [ ] 34
- [ ] 18

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1 / 1 points

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

- [x] 37

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

- [ ] 78
- [ ] 9
- [ ] 43

1 / 1 points

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

- [ ] 18.0
- [ ] 31.5
- [x] 42.1

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

- [ ] 53.2

1 / 1 points

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?

- [ ] 185.9
- [ ] 205.0
- [ ] 334.0
- [x] 212.8

Correct
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.