Week 1 Quiz

Back to Week 1

17/20 points earned (85%)

Quiz passed!

1 / 1 points

1.
R was developed by statisticians working at

- Harvard University
- The University of Auckland

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

- The University of New South Wales
- Bell Labs

0 / 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 improve the program, and release your improvements to the public, so that the whole community benefits.

Correct Response
This is freedom 3.

☐ The freedom to sell the software for any price.

Incorrect Response
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 restrict access to the source code for the software.

Correct Response
This is not part of the free software definition. Freedoms 1 and 3 require access to the source code.

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

Correct Response
This is freedom 2.

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

Correct Response
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 study how the program works, and adapt it to your needs.

Correct Response
This is freedom 1.

☐ The freedom to run the program, for any purpose.

Correct Response
This is freedom 0.

✖ 0 / 1 points

3.

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

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

- [x] logical

Correct Response

- [x] table

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

- [x] numeric

Correct Response

- [ ] matrix

Incorrect Response
'matrix' is not an atomic data type in R.

- [x] complex

Correct Response

- [x] array

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

- [ ] list

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

- [x] integer

Correct Response

- [x] data frame

Correct Response

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

- [x] character

Correct Response

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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?

- [x] integer

Correct Response

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

- [ ] logical
- [ ] matrix
- [ ] character
- [ ] numeric
- [ ] complex

---

1 / 1 points

5.

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

- [ ] character
- [ ] integer
- [ ] matrix
- [ ] logical

list

numeric

Correct Response

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

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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 cbind(x, y)?

a 3 by 3 matrix

a vector of length 2

a matrix with 2 columns and 3 rows

Correct Response

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.

a 2 by 2 matrix

a 2 by 3 matrix

a vector of length 3

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1 / 1 points

7.

A key property of vectors in R is that

a vector cannot have have attributes like dimensions

elements of a vector all must be of the same class

Correct Response

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

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

elements of a vector can only be character or numeric

elements of a vector can be of different classes

---

1 / 1 points

8.

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

- [x] a character vector containing the element "2".

Correct Response

- [x] a list containing a numeric vector of length 1.

Correct Response

- [x] a list containing the number 2.

Correct Response

- [x] a numeric vector of length 1.

Correct Response

- [x] a numeric vector containing the element 2.

Correct Response

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0 / 1 points

9.

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

a numeric vector with the values 1, 2, 5, 7.

- an error.
- a warning
- an numeric vector with the values 3, 5, 5, 7.

Incorrect Response

- an integer vector with the values 3, 5, 3, 4.
- a numeric vector with the values 3, 5, 3, 4.
- an integer vector with the values 3, 5, 5, 7.

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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[x < 6] == 0

Correct Response

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

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

Correct Response

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[x == 6] <- 0

Correct Response

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

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

Correct Response

You can create a logical vector with the expression x < 6 and then use

the [operator to subset the original vector x.

☐ x[x > 6] <- 0

Correct Response

This sets all the elements *greater* than 6 to be zero.

☐ x[x == 0] < 6

Correct Response

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

Correct Response

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

Correct Response

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

☐ x[x != 6] <- 0

Correct Response

This sets all the elements not equal 6 to be zero.

☐ x[x > 0] <- 6

Correct Response

This sets all the elements greater than 0 to be equal to 6.

☐ x[x >= 6] <- 0

Correct Response

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

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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?

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

Correct Response

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

- 1, 2, 3, 4, 5, 6
- Month, Day, Temp, 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     9      24 10.9   71     9  14
3 2    18     131  8.0   76     9  29
```

-
```
  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
```

Correct Response

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    18     224 13.8   67     9  17
3 2    NA     258  9.7   81     7  22
```

---

1 / 1 points

points

13.

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

- 160
- 129
- 45
- 153

Correct Response

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

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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    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    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    18     131  8.0   76     9  29
  3   153    20     223 11.5   68     9  30
```

Correct Response

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

```
  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 / 1 points

15.

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

- 63
- 18
- 34
- 21 ✓

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

✓ 1 / 1 points

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

- 78
- 43
- 9
- 37 ✓

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

✓ 1 / 1 points

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

- 42.1 ✓

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

- 18.0

- 53.2
- 31.5

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?

- 205.0
- 185.9
- 334.0
- 212.8

Correct Response

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.

1 / 1 points

19.

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

- 90.2
- 79.1

Correct Response

- 85.6
- 75.3

1 / 1 points

20.

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

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

- 100
- 18
- 115

Correct Response

- 97