Week 1 Quiz

Quiz, 20 questions

20/20 points (100%)

Congratulations! You passed!

Next Item

1 / 1 points

1.
R was developed by statisticians working at

- StatSci
- 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.

- Bell Labs
- Harvard University

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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).

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

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.

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- [x] The freedom to improve the program, and release your improvements to the public, so that the whole community benefits.

Un-selected is correct

- [x] The freedom to redistribute copies so you can help your neighbor.

Un-selected is correct

- [x] The freedom to run the program, for any purpose.

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.

✔ 1 / 1 points

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

- [x] integer

Un-selected is correct

- [x] table

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

- [x] character

Un-selected is correct

list

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

matrix

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

array

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

numeric

Un-selected is correct

logical

Un-selected is correct

complex

Un-selected is correct

data frame

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

---

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?

logical

character

numeric

complex

matrix

integer

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

---

1 / 1 points

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

logical

character

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

numeric

integer

mixed

---

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 3 by 3 matrix

a 2 by 2 matrix

a vector of length 2

a 3 by 2 matrix

a vector of length 3

a matrix with two rows and three columns

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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.

✔ 1 / 1 points

7.

A key property of vectors in R is that

- elements of a vector can be of different classes
- elements of a vector all must be of the same class

Correct

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

✔ 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 character vector containing the letter "a".

Correct

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

Un-selected is correct

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

Un-selected is correct

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

Un-selected is correct

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- [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, 2, 3, 4.
- [ ] a numeric vector with elements 1, 2, 3, 6.
- [ ] an integer vector with elements 3, 2, 3, 6.
- [ ] an integer vector with elements 3, 2, 3, 4.
- [x] a numeric vector with elements 3, 4, 5, 6.

Correct

- [ ] a numeric vector with elements 3, 2, 3, 6.

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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 < 6] == 0

Un-selected is correct

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

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.

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

Un-selected is correct

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

Un-selected is correct

- [x] 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.

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

Un-selected is correct

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

Un-selected is correct

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

Un-selected is correct

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

Un-selected is correct

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

Correct

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

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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    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     7      NA  6.9   74     5  11
3  2    35     274 10.3   82     7  17
```

---

1 / 1 points

13.

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

160

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153

Correct

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

129

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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    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.

```
  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    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    31     244 10.9   78     8  19
  3   153    29     127  9.7   82     6   7
```

---

1 / 1 points

15.

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

21

Correct

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

34

18

63

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

37

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

9

43

78

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

31.5

53.2

18.0

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?

212.8

Correct

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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.

205.0

185.9

334.0

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1 / 1 points

19.

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

90.2

79.1

Correct

85.6

75.3

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1 / 1 points

20.

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

97

115

Correct

100

18
