Week 1 Quiz

17/20 points (85%)

Quiz, 20 questions

✔ Congratulations! You passed!

Next Item

✖ 0 / 1 points

1.
R was developed by statisticians working at

- ○ Bell Labs

This should not be selected
Bell Labs developed the original S language.

- ○ Harvard University
- ○ StatSci
- ○ The University of Auckland

✖ 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.

- ☐ 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 redistribute copies so you can help your neighbor.

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This should not be selected
This is freedom 2.

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

Un-selected is correct

The freedom to run the program, for any purpose.

Un-selected is correct

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

Un-selected is correct

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

This should be selected

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0 / 1 points

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

data frame

This should be selected

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complex

Un-selected is correct

table

This should be selected

list

This should be selected

character

Un-selected is correct

matrix

This should be selected

numeric

Un-selected is correct

array

Correct

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

logical

Un-selected is correct

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integer

Un-selected is correct

---

1 / 1 points

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

- integer
- list
- matrix
- complex
- numeric

Correct

- real
- 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.

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- mixed
- numeric
- integer

---

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 3 by 3 matrix
- a vector of length 3
- a 2 by 2 matrix
- a 3 by 2 matrix
- 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.

---

1 / 1 points

7.

A key property of vectors in R is that

- elements of a vector can only be character or numeric
-

elements of a vector can be of different classes

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

elements of a vector all must be of the same class

Correct

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[[1]] give me? Select all that apply.

a numeric vector of length 1.

Correct

a list containing a numeric vector of length 1.

Un-selected is correct

a character vector containing the element "2".

Un-selected is correct

a list containing the number 2.

Un-selected is correct

a numeric vector containing the element 2.

Correct

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

---

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 == 0] < 6

Un-selected is correct

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

Un-selected is correct

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x[x >= 6] <- 0

Un-selected is correct

x[x == 6] <- 0

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.

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 <= 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

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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

---

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

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```
  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 / 1 points

13.

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

- 45
- 129
- 153

Correct

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

- 160

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
```

```
  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
```

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

✔ 1 / 1 points

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

- 18
- 63
- 34
- ◉ 21

Correct
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?

- 43
- 9
- 78
- ◉ 37

Correct

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

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1 / 1 points

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

- 53.2
- 31.5
- 42.1

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

- 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?

- 205.0
- 334.0
- 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.

- 185.9

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19.

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

- 85.6
- 75.3
- 79.1

Correct

- 90.2

1 / 1 points

20.

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

- 115

Correct

- 97
- 100
- 18

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