Week 1 Quiz

Back to Week 1

20/20 points earned (100%)

Quiz passed!

1 / 1 points

1.
The R language is a dialect of which of the following programming languages?

- Lisp
- Scheme
- Fortran
- S

Correct Response
R is a dialect of the S language which was developed at Bell Labs.

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 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 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.

☐ 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 sell the software for any price.

Correct 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 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.

✔ 1 / 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)

- [ ] list

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

- [ ] complex

Correct Response

- [ ] matrix

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

- [ ] character

Correct Response

- [ ] data frame

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

- [ ] logical

Correct Response

- [ ] integer

Correct Response

- [ ] numeric

Correct Response

- [ ] table

Correct Response

'table' is not an atomic data type in R

table" is not an atomic data type in R.

- [x] array

Correct Response
'array' 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?

- [ ] matrix
- [ ] numeric
- [ ] character
- [x] integer

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

- [ ] complex
- [ ] logical

---

1 / 1 points

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

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

numeric

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

---

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 matrix with two rows and three columns

Correct Response
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 2 by 2 matrix

a vector of length 2

a vector of length 3

a 3 by 2 matrix

---

1 / 1 points

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 all must be of the same class

Correct Response

Correct Response

- 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[[2]] give me? Select all that apply.

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

Correct Response

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

Correct Response

- [x] a character vector of length 1.

Correct Response

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

Correct Response

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

Correct Response

✔ 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?

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

Correct Response

---

1 / 1 points

10.

Suppose I have a vector x <- c(17, 14, 4, 5, 13, 12, 10) and I want to set all elements of this vector that are greater than 10 to be equal to 4. What R code achieves this? Select all that apply.

- [x] x[x > 10] == 4

Correct Response

This takes the elements of x that are greater than 10 and tests whether they are equal to 4 or not.

- [x] x[x < 10] <- 4

Correct Response

This takes the elements of x that are less than 10 and sets them to 4.

- [x] x[x >= 11] <- 4

Correct Response

You can create a logical vector with the expression x >= 11 and then use the [operator to subset the original vector x.

- [x] x[x > 10] <- 4

Correct Response

You can create a logical vector with the expression x > 10 and then use the [operator to subset the original vector x.

☐ x[x == 4] > 10

Correct Response
This takes the elements that are equal to 4 and tests whether they are greater than 10 or not.

☐ x[x >= 10] <- 4

Correct Response
This takes the elements of x that are greater than or equal to 10 and sets them to 4.

☐ x[x == 10] <- 4

Correct Response
This takes the elements of x that are equal to 10 and sets them to 4.

☐ x[x > 4] <- 10

Correct Response
This takes the elements of x that are greater than 4 and sets them to 10.

✔ 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, Temp, Month, Day

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

○ Month, Day, Temp, Wind

- 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      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     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      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 / 1 points

13.

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

- 45
- 129
- 153

Correct Response

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    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       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 / 1 points

15.

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

18

21

Correct Response

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

63

34

1 / 1 points

16.

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

- 9
- 37

Correct Response

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

- 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.

- 31.5
- 42.1

Correct Response

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

- 18.0
- 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?

- 334.0

205.0

185.9

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

85.6

79.1

Correct Response

75.3

---

1 / 1 points

20.

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

100

115

Correct Response

97

18