Week 1 Quiz

Back to Week 1

16/20 points earned (80%)

Quiz passed!

1 / 1 points

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

- C
- Java
- Haskell
- S

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

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

Un-selected is correct

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

This should not be selected
This is freedom 3.

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

This should be selected

☐ 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 run the program, for any purpose.

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

Un-selected is correct

✖ 0 / 1 points

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

☐ numeric

Un-selected is correct

☐ complex

Un-selected is correct

☐ character

Un-selected is correct

☐ integer

Un-selected is correct

☐ table

This should be selected

☑ logical

Un-selected is correct

☑ matrix

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

☑ array

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

☐ data frame

This should be selected

☑ list

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

✖ 0 / 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?

◉ numeric

This should not be selected

○ integer

○ character

○ matrix

○ complex

○ logical

---

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.

- 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 cbind(x, y)?

- a vector of length 2
- a 3 by 3 matrix
- a matrix with 2 columns and 3 rows

Correct
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 vector of length 3
- a 2 by 3 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 can only be character or numeric

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

---

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.

a list containing the number 2 and the letter "a".

Un-selected is correct

a character vector with the elements "a" and "b".

Un-selected is correct

a character vector of length 1.

Correct

a character vector containing the letter "a".

Correct

a list containing character vector with the letter "a".

Un-selected is correct

---

1 / 1 points

9.
Suppose I have a vector x <- 1:4 and y <- 2:3. What is produced by the expression x + y?

a warning

an error.

an integer vector with the values 3, 5, 3, 4.

- [x] an integer vector with the values 3, 5, 5, 7.

Correct

- [ ] a numeric vector with the values 1, 2, 5, 7.
- [ ] a numeric vector with the values 3, 5, 3, 4.
- [ ] an numeric vector with the values 3, 5, 5, 7.

✖ 0 / 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 == 4] > 10

Un-selected is correct

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

Un-selected is correct

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

This should be selected

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

This should be selected

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

Un-selected is correct

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

Un-selected is correct

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

Un-selected is correct

- [ ]

```
x[x == 10] <- 4
```

This should not be selected

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

---

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
- 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

---

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     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     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?

- [x] 153

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

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

---

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
```

- [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.

- [ ]
```
  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 / 1 points

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

- [ ] 18
- [x] 21

Correct
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?

- 43
- 37

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

- 9
- 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.

- 18.0
- 53.2
- 42.1

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

- 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?

- 334.0
-

185.9

205.0

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.

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1 / 1 points

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

100

97

18
