Week 1 Quiz

20 questions

1.

R was developed by statisticians working at

- The University of New South Wales
- Harvard University
- Bell Labs
- The University of Auckland

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 study how the program works, and adapt it to your needs.
- [ ] The freedom to prevent users from using the software for undesirable purposes.
- [ ] The freedom to sell the software for any price.
- [ ] The freedom to redistribute copies so you can help your neighbor.
- [ ] The freedom to improve the program, and release your improvements to the public, so that the whole community benefits.
- [ ] The freedom to restrict access to the source code for the software.
- [ ] The freedom to run the program, for any purpose.

3.

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

- [ ] character
- [ ] matrix
- [ ] array
- [ ] list
- [ ] logical
- [ ] numeric
- [ ] integer
- [ ] complex
- [ ] data frame
- [ ] table

4.

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

- complex
- integer
- numeric
- matrix
- real
- list
- vector

5.

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

- logical
- character
- list
- matrix
- numeric
- integer

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

7.

A key property of vectors in R is that

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

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 of length 1.
- [ ] a list containing the number 2 and the letter "a".
- [x] a character vector containing the letter "a".
- [ ] a list containing character vector with the letter "a".
- [ ] a character vector with the elements "a" and "b".

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

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 >= 10] <- 4
- [x] x[x > 10] <- 4
- [ ] x[x == 10] <- 4
- [ ] x[x < 10] <- 4
- [ ] x[x > 10] == 4
- [ ] x[x > 4] <- 10
- [x] x[x >= 11] <- 4
- [ ] x[x == 4] > 10

11.

Use the Week 1 Quiz Data Set (https://d396qusza40orc.cloudfront.net/rprog/data/quiz1_data.zip) to answer questions 11-20.

In the dataset provided for this Quiz, what are the column names of the dataset?

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

12.

Extract the first 2 rows of the data frame and print them to the console. What does the output look like?

```
  Ozone Solar.R Wind Temp Month Day
1    18     224 13.8   67     9  17
2    NA     258  9.7   81     7  22
```

```
  Ozone Solar.R Wind Temp Month Day
1     9      24 10.9   71     9  14
2    18     131  8.0   76     9  29
```

```
  Ozone Solar.R Wind Temp Month Day
1     7      NA  6.9   74     5  11
2    35     274 10.3   82     7  17
```

```
  Ozone Solar.R Wind Temp Month Day
1    41     190  7.4   67     5   1
2    36     118  8.0   72     5   2
```

13.

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

- 45
- 160
- 153
- 129

14.

Extract the *last* 2 rows of the data frame and print them to the console. What does the output look like?

```
    Ozone Solar.R Wind Temp Month Day
152    34     307 12.0   66     5  17
153    13      27 10.3   76     9  18
```

```
    Ozone Solar.R Wind Temp Month Day
152    18     131  8.0   76     9  29
153    20     223 11.5   68     9  30
```

```
    Ozone Solar.R Wind Temp Month Day
152    31     244 10.9   78     8  19
153    29     127  9.7   82     6   7
```

```
    Ozone Solar.R Wind Temp Month Day
152    11      44  9.7   62     5  20
153   108     223  8.0   85     7  25
```

15.

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

- 18
- 21
- 63
- 34

16.

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

- 43
- 78
- 37
- 9

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
- 18.0
- 42.1

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
- 205.0
- 334.0
- 185.9

19.

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

- 75.3
- 79.1
- 85.6
- 90.2

20.

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

- 18
- 100
- 97
- 115

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