Week 1 Quiz

Quiz, 20 questions

Congratulations! You passed!

Next Item

1 / 1 point

1.

R was developed by statisticians working at

- Bell Labs
- Harvard University
- 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.

- StatSci

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1 / 1 point

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

Un-selected is correct

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

Un-selected is correct

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- [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.

- [x] 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.

- [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).

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

Un-selected is correct

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

Un-selected is correct

✔ 1 / 1 point

3.

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

- [x] matrix

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

- [x] table

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

- [x] array

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

- [ ] numeric

Un-selected is correct

- [ ] integer

Un-selected is correct

- [ ] character

Un-selected is correct

- [ ] complex

Un-selected is correct

- [ ] logical

Un-selected is correct

- [x] list

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

- [x] data frame

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

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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
- complex
- matrix
- numeric
- character
- integer

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

1 / 1 point

5.

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

- mixed
- numeric
- character

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

- logical
- integer

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

---

1 / 1 point

7.

A key property of vectors in R is that

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

Correct

- elements of a vector can be of different classes

---

1 / 1 point

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

Un-selected is correct

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

Correct

- [x] a character vector of length 1.

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

✔ 1 / 1 point

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.
- ( ) an integer vector with elements 3, 2, 3, 6.
- (•) a numeric vector with elements 3, 4, 5, 6.

Correct

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

a numeric vector with elements 3, 2, 3, 6.

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a numeric vector with elements 1, 2, 3, 6.

---

1 / 1 point

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

Un-selected is correct

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

Un-selected is correct

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

Un-selected is correct

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

Un-selected is correct

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

Un-selected is correct

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

Correct

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

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Unselected is correct

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

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

---

1 / 1 point

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

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

---

1 / 1 point

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     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     9      24 10.9   71     9  14
  3  2    18     131  8.0   76     9  29
```

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```
  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
```

1 / 1 point

13.

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

- 129
- 160
- 153

Correct

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

- 45

1 / 1 point

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    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       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 / 1 point

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

1 / 1 point

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.

43

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9

1 / 1 point

17.

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

53.2

42.1

Correct

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

31.5

18.0

1 / 1 point

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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19.

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

- 85.6
- 75.3
- 90.2
- 79.1

Correct

1 / 1 point

20.

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

- 115

Correct

- 18
- 97
- 100