1.

R was developed by statisticians working at

Insightful

StatSci

Johns Hopkins University

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 sell the software for any price.

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.

This is freedom 3.

The freedom to restrict access to the source code for the software.

This is not part of the free software definition. Freedoms 1 and 3 require access to the source code.

The freedom to run the program, for any purpose.

This is freedom 0.

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

This is freedom 2.

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

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.

This is freedom 1.

3.

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

numeric

integer

data frame

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

complex

logical

list

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

table

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

array

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

matrix

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

character

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

matrix

complex

integer

character

numeric

5.

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

mixed

There is no 'mixed' class in R. Vectors must have all their elements be the same class.

integer

character

numeric

logical

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 vector of length 3

a vector of length 2

a 2 by 3 matrix

a 3 by 3 matrix

a matrix with 2 columns and 3 rows

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.

7.

A key property of vectors in R is that

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

elements of a vector can be of different classes

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

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 character vector containing the letter "a".

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

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

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

a character vector of length 1.

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.

a numeric vector with elements 3, 4, 5, 6.

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

an integer vector with elements 3, 2, 3, 6.

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

a numeric vector with elements 3, 2, 3, 4.

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 == 4] > 10

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

x[x >= 10] <- 4

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

x[x > 4] <- 10

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

x[x == 10] <- 4

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

x[x > 10] <- 4

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

x[x >= 11] <- 4

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

x[x > 10] == 4

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

x[x < 10] <- 4

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

Правильно

Баллов: 1 / 1

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?

1, 2, 3, 4, 5, 6

Month, Day, Temp, Wind

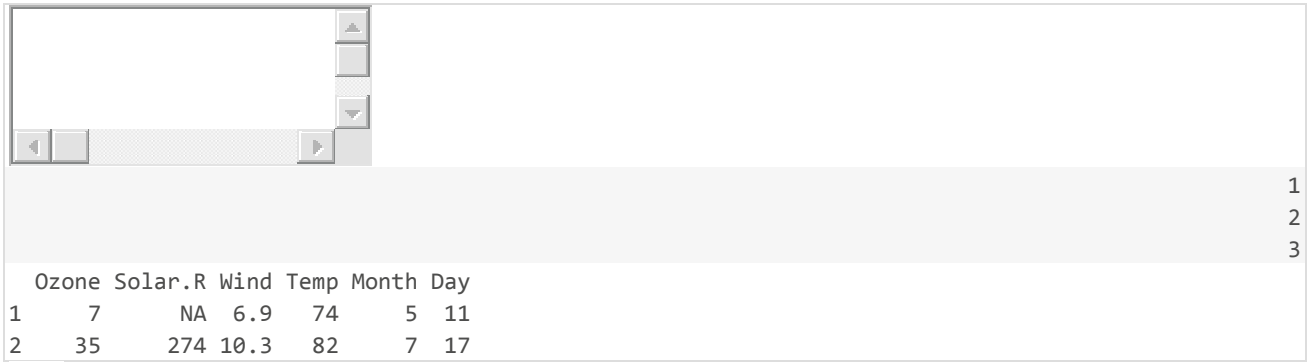
Ozone, Solar.R, Wind

Ozone, Solar.R, Wind, Temp, Month, Day

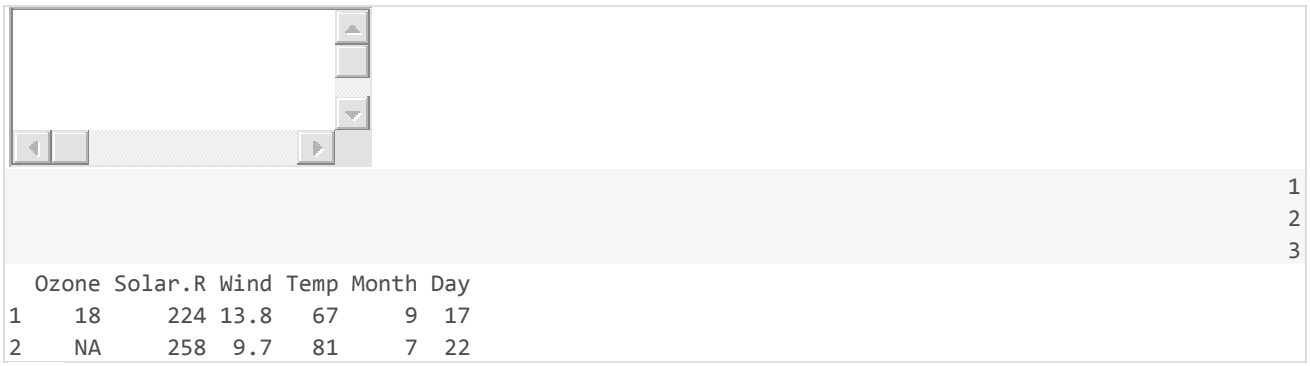
You can get the column names of a data frame with the `names()' function.

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     7      NA  6.9   74     5  11
2    35     274 10.3   82     7  17
```



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

3

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

1
2
3

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

You can extract the first two rows using the [operator and an integer sequence to index the rows.

13.

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

160

45

129

153

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

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
152    18     131  8.0   76     9  29
153    20     223 11.5   68     9  30
```

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

```
    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    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?

63

18

21

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

34

16.

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

9

43

78

37

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

17.

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

42.1

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

18.0

53.2

31.5

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

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.

205.0

185.9

334.0

19.

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

79.1

85.6

75.3

90.2

20.

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

18

97

115

100