

Feedback — Week 1 Quiz

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You submitted this quiz on **Sun 12 Jul 2015 9:37 AM PDT**. You got a score of **17.00** out of **20.00**. You can [attempt again](#), if you'd like.

Introduction

This first quiz will check your ability to execute basic operations on objects in R and to understand some basic concepts. For questions 11–20 you will need to load a dataset into R and do some basic manipulations in order to answer the questions on the quiz.

You may want to print a copy of the quiz questions to look at as you work on the assignment. It is recommended that you save your answers as you go in the event that a technical problem should occur with your network connection or computer. Ultimately, you must submit the quiz online to get credit!

Data

The zip file containing the data for questions 11–20 in this Quiz can be downloaded here:

- [Week 1 Quiz Data](#)

For this assignment you will need to unzip this file in your working directory.

Question 1

R was developed by statisticians working at

Your Answer	Score	Explanation
<input checked="" type="radio"/> StatSci	× 0.00	
<input type="radio"/> Microsoft		
<input type="radio"/> The University of Auckland		
<input type="radio"/> Harvard University		
Total	0.00 / 1.00	

Question 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?

Your Answer	Score	Explanation
<input type="radio"/> The freedom to study how the program works, and adapt it to your needs.		
<input type="radio"/> The freedom to improve the program, and release your improvements to the public, so that the whole community benefits.		
<input type="radio"/> The freedom to run the program, for any purpose.		
<input checked="" type="radio"/> The freedom to sell the software for any price.	✓ 1.00	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).
Total	1.00 / 1.00	

Question 3

In R the following are all atomic data types EXCEPT

Your Answer	Score	Explanation
<input type="radio"/> logical		
<input checked="" type="radio"/> array	✓ 1.00	'array' is not an atomic data type in R.
<input type="radio"/> character		
<input type="radio"/> complex		
Total	1.00 / 1.00	

Question 4

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

Your Answer	Score	Explanation
<input checked="" type="radio"/> integer	✘ 0.00	By default, numbers in R are represented as numeric objects.
<input type="radio"/> numeric		
<input type="radio"/> list		
<input type="radio"/> matrix		
Total	0.00 / 1.00	

Question 5

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

Your Answer	Score	Explanation
<input type="radio"/> character		
<input checked="" type="radio"/> numeric	✔ 1.00	The numeric class is the "lowest common denominator" here and so all elements will be coerced into that class.
<input type="radio"/> matrix		
<input type="radio"/> logical		
Total	1.00 / 1.00	

Question Explanation

R does automatic coercion of vectors so that all elements of the vector are the same data class.

Question 6

If I have two vectors $x \leftarrow c(1,3, 5)$ and $y \leftarrow c(3, 2, 10)$, what is produced by the expression `rbind(x, y)`?

Your Answer	Score	Explanation
<input checked="" type="radio"/> a 2 by 3 matrix	✓ 1.00	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.
<input type="radio"/> a 2 by 2 matrix		
<input type="radio"/> a vector of length 2		
<input type="radio"/> a vector of length 3		
Total	1.00 / 1.00	

Question 7

A key property of vectors in R is that

Your Answer	Score	Explanation
<input type="radio"/> a vector cannot have have attributes like dimensions		
<input type="radio"/> elements of a vector can only be character or numeric		
<input type="radio"/> the length of a vector must be less than 32,768		
<input checked="" type="radio"/> elements of a vector all must be of the same class	✓ 1.00	
Total	1.00 / 1.00	

Question 8

Suppose I have a list defined as `x <- list(2, "a", "b", TRUE)`. What does `x[[2]]` give me?

Your Answer	Score	Explanation
<input checked="" type="radio"/> a character vector containing the letter "a".	✓ 1.00	
<input type="radio"/> a list containing a character vector with the elements "a" and "b".		
<input type="radio"/> a character vector with the elements "a" and "b".		
<input type="radio"/> a list containing character vector with the letter "a".		
Total	1.00 / 1.00	

Question 9

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

Your Answer	Score	Explanation
<input type="radio"/> a numeric vector with elements 3, 2, 3, 6.		
<input type="radio"/> an integer vector with elements 3, 2, 3, 6.		
<input checked="" type="radio"/> a numeric vector with elements 3, 4, 5, 6.	✓ 1.00	
<input type="radio"/> a numeric vector with elements 3, 2, 3, 4.		
Total	1.00 / 1.00	

Question 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?

Your Answer	Score	Explanation

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

`x[x > 10]`
`== 4`

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

`x[x >= 10]` ✘ 0.00 This takes the elements of x that are greater than or equal to 10 and sets them to 4.
`<- 4`

Total 0.00 /
 1.00

Question 11

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

Your Answer	Score	Explanation
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1, 2, 3, 4, 5, 6

Ozone, Solar.R, Wind

Ozone, Solar.R, Wind, Temp, Month, Day ✔ 1.00 You can get the column names of a data frame with the ``names()`` function.

Month, Day, Temp, Wind

Total 1.00 /
 1.00

Question 12

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

Your Answer	Score	Explanation
-------------	-------	-------------

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



1.00

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

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



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

Total	1.00 /
	1.00

Question 13

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

Your Answer	Score	Explanation
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45

153 1.00 You can use the `nrows()` function to compute the number of rows in a data frame.

160

129

Total	1.00 /
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1.00

Question 14

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

Your Answer	Score	Explanation
<input type="radio"/> <pre>Ozone Solar.R Wind Te mp Month Day 152 31 244 10.9 78 8 19 153 29 127 9.7 82 6 7</pre>		
<input checked="" type="radio"/> <pre>Ozone Solar.R Wind Te mp Month Day 152 18 131 8.0 76 9 29 153 20 223 11.5 68 9 30</pre>	✓ 1.00	The `tail()` function is an easy way to extract the last few elements of an R object.
<input type="radio"/> <pre>Ozone Solar.R Wind Te mp Month Day 152 11 44 9.7 62 5 20 153 108 223 8.0 85 7 25</pre>		
<input type="radio"/> <pre>Ozone Solar.R Wind Te mp Month Day 152 34 307 12.0 66 5 17 153 13 27 10.3 76 9 18</pre>		
Total	1.00 /	1.00

Question 15

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

Your Answer	Score	Explanation
<input type="radio"/> 63		
<input type="radio"/> 18		
<input checked="" type="radio"/> 21	1.00	The single bracket [operator can be used to extract individual rows of a data frame.
<input type="radio"/> 34		
Total	1.00 / 1.00	

Question 16

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

Your Answer	Score	Explanation
<input type="radio"/> 78		
<input checked="" type="radio"/> 37	1.00	
<input type="radio"/> 9		
<input type="radio"/> 43		
Total	1.00 / 1.00	

Question Explanation

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

Question 17

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

Your Answer	Score	Explanation
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<input type="radio"/> 18.0		
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<input checked="" type="radio"/> 42.1	✓	1.00
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<input type="radio"/> 53.2		
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<input type="radio"/> 31.5		
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Total		1.00 / 1.00
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Question Explanation

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

Question 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?

Your Answer	Score	Explanation
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<input checked="" type="radio"/> 212.8	✓	1.00
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<input type="radio"/> 185.9		
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<input type="radio"/> 205.0		
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<input type="radio"/> 334.0		
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Total		1.00 / 1.00
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Question Explanation

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.

Question 19

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

Your Answer	Score	Explanation
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<input checked="" type="radio"/> 79.1	✓	1.00
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85.6

90.2

75.3

Total

1.00 / 1.00

Question 20

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

Your Answer

Score

Explanation

97

18

100

115



1.00

Total

1.00 / 1.00