**Feedback — Week 1 Quiz**[Help](https://class.coursera.org/rprog-004/help/quizzes?url=https%3A%2F%2Fclass.coursera.org%2Frprog-004%2Fquiz%2Ffeedback%3Fsubmission_id%3D3933)

You submitted this quiz on **Thu 5 Jun 2014 9:49 AM PDT**. You got a score of **20.00** out of **20.00**.

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**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](https://d396qusza40orc.cloudfront.net/rprog%2Fdata%2Fquiz1_data.zip)

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** |
| The University of Auckland | Correct | 1.00 | The R language was developed by Ross Ihaka and Robert Gentleman who were statisticians at the University of Auckland in New Zealand. |
| The University of New South Wales |  |  |  |
| Johns Hopkins University |  |  |  |
| Harvard University |  |  |  |
| Total |  | 1.00 / 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?

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| **Your Answer** |  | **Score** | **Explanation** |
| The freedom to run the program, for any purpose. |  |  |  |
| The freedom to study how the program works, and adapt it to your needs. |  |  |  |
| The freedom to redistribute copies so you can help your neighbor. |  |  |  |
| The freedom to restrict access to the source code for the software. | Correct | 1.00 | This is not part of the free software definition. Freedoms 1 and 3 require access to the source code. |
| Total |  | 1.00 / 1.00 |  |

**Question 3**

In R the following are all atomic data types EXCEPT

|  |  |  |  |
| --- | --- | --- | --- |
| **Your Answer** |  | **Score** | **Explanation** |
| matrix | Correct | 1.00 | 'matrix' is not an atomic data type in R. |
| complex |  |  |  |
| character |  |  |  |
| numeric |  |  |  |
| 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?

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| **Your Answer** |  | **Score** | **Explanation** |
| integer |  |  |  |
| vector |  |  |  |
| real |  |  |  |
| numeric | Correct | 1.00 |  |
| Total |  | 1.00 / 1.00 |  |

**Question 5**

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

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| --- | --- | --- | --- |
| **Your Answer** |  | **Score** | **Explanation** |
| logical |  |  |  |
| list |  |  |  |
| numeric | Correct | 1.00 | The numeric class is the "lowest common denominator" here and so all elements will be coerced into that class. |
| integer |  |  |  |
| 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 <- c(1,3, 5) and y <- c(3, 2, 10), what is produced by the expression rbind(x, y)?

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| **Your Answer** |  | **Score** | **Explanation** |
| a matrix with two rows and three columns | Correct | 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. |
| a 2 by 2 matrix |  |  |  |
| a 3 by 2 matrix |  |  |  |
| a vector of length 2 |  |  |  |
| Total |  | 1.00 / 1.00 |  |

**Question 7**

A key property of vectors in R is that

|  |  |  |  |
| --- | --- | --- | --- |
| **Your Answer** |  | **Score** | **Explanation** |
| elements of a vector all must be of the same class | Correct | 1.00 |  |
| elements of a vector can only be character or numeric |  |  |  |
| the length of a vector must be less than 32,768 |  |  |  |
| elements of a vector can be of different classes |  |  |  |
| Total |  | 1.00 / 1.00 |  |

**Question 8**

Suppose I have a list defined as x <- list(2, "a", "b", TRUE). What does x[[1]] give me?

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| **Your Answer** |  | **Score** | **Explanation** |
| a list containing a numeric vector of length 1. |  |  |  |
| a list containing the number 2. |  |  |  |
| a numeric vector containing the element 2. | Correct | 1.00 |  |
| a list containing the letter "a". |  |  |  |
| Total |  | 1.00 / 1.00 |  |

**Question 9**

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

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| **Your Answer** |  | **Score** | **Explanation** |
| an integer vector with the values 3, 5, 3, 4. |  |  |  |
| an integer vector with the values 3, 5, 5, 7. | Correct | 1.00 |  |
| an error. |  |  |  |
| an numeric vector with the values 3, 5, 5, 7. |  |  |  |
| 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?

|  |  |  |  |
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| **Your Answer** |  | **Score** | **Explanation** |
| x[x > 10] == 4 |  |  |  |
| x[x >= 11] <- 4 | Correct | 1.00 | You can create a logical vector with the expression x >= 11 and then use the [ operator to subset the original vector x. |
| x[x == 4] > 10 |  |  |  |
| x[x > 4] <- 10 |  |  |  |
| Total |  | 1.00 / 1.00 |  |

**Question 11**

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

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| --- | --- | --- | --- |
| **Your Answer** |  | **Score** | **Explanation** |
| Ozone, Solar.R, Wind |  |  |  |
| Ozone, Solar.R, Wind, Temp, Month, Day | Correct | 1.00 | You can get the column names of a data frame with the `names()' function. |
| Month, Day, Temp, Wind |  |  |  |
| 1, 2, 3, 4, 5, 6 |  |  |  |
| 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 18 224 13.8 67 9 17  2 NA 258 9.7 81 7 22 |  |  |  |
| Ozone Solar.R Wind Temp Month Day  1 41 190 7.4 67 5 1  2 36 118 8.0 72 5 2 | Correct | 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 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 |  |  |  |
| Total |  | 1.00 / 1.00 |  |

**Question 13**

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

|  |  |  |  |
| --- | --- | --- | --- |
| **Your Answer** |  | **Score** | **Explanation** |
| 160 |  |  |  |
| 45 |  |  |  |
| 153 | Correct | 1.00 | You can use the `nrows()' function to compute the number of rows in a data frame. |
| 129 |  |  |  |
| Total |  | 1.00 / 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** |
| Ozone Solar.R Wind Temp Month Day  152 11 44 9.7 62 5 20  153 108 223 8.0 85 7 25 |  |  |  |
| 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 18 131 8.0 76 9 29  153 20 223 11.5 68 9 30 | Correct | 1.00 | 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 |  |  |  |
| Total |  | 1.00 / 1.00 |  |

**Question 15**

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

|  |  |  |  |
| --- | --- | --- | --- |
| **Your Answer** |  | **Score** | **Explanation** |
| 34 |  |  |  |
| 21 | Correct | 1.00 | The single bracket [ operator can be used to extract individual rows of a data frame. |
| 18 |  |  |  |
| 63 |  |  |  |
| Total |  | 1.00 / 1.00 |  |

**Question 16**

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

|  |  |  |  |
| --- | --- | --- | --- |
| **Your Answer** |  | **Score** | **Explanation** |
| 9 |  |  |  |
| 43 |  |  |  |
| 78 |  |  |  |
| 37 | Correct | 1.00 |  |
| 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.

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| --- | --- | --- | --- |
| **Your Answer** |  | **Score** | **Explanation** |
| 53.2 |  |  |  |
| 31.5 |  |  |  |
| 18.0 |  |  |  |
| 42.1 | Correct | 1.00 |  |
| Total |  | 1.00 / 1.00 |  |

**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** |
| 334.0 |  |  |  |
| 185.9 |  |  |  |
| 205.0 |  |  |  |
| 212.8 | Correct | 1.00 |  |
| Total |  | 1.00 / 1.00 |  |

**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?

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| --- | --- | --- | --- |
| **Your Answer** |  | **Score** | **Explanation** |
| 85.6 |  |  |  |
| 75.3 |  |  |  |
| 79.1 | Correct | 1.00 |  |
| 90.2 |  |  |  |
| 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** |
| 18 |  |  |  |
| 115 | Correct | 1.00 |  |
| 97 |  |  |  |
| 100 |  |  |  |
| Total |  | 1.00 / 1.00 |  |

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