

Julia Vineyard

Worked with: Andrew Gordon, Jessica Bonin, Juliana Berube

## Lab 1: R Fundamentals 1

1. Explain why the outputs of the 2 lines are different  
The first line of code is vector data type and the second line is a text data type.
2. Is `c_1` a variable, or a function? How do you know?  
It is a variable because it is equal to the output of the function.
3. Is `c_2` a variable, or a function? How do you know?  
It is a variable as it is equal to the text.
4. If `c_1` and `c_2` have different values, why?  
No, `c_1` is equal to the output of the function while `c_2` is equal to the text.
5. What are the dimensions of the matrix (i.e. how many rows and columns)?  
3 rows, 1 column
6. Write R code to retrieve the element of `mat_1` that has a value of 3  
`mat_1 [3]`
7. Paste the code you used to create `mat_2`.  
`mat_2 = matrix(my_vec, nrow = 2, ncol = 3)`
8. Paste the code you used to create `mat_3`.  
`mat_3 = matrix(my_vec, nrow = 3, ncol = 2)`
9. Did R use rows or columns to recycle the values in `my_vec`?  
R defaults to using columns to recycle the values.
10. Create a matrix, `mat_4`, with a number of elements that is not a multiple of 3 and paste the code into your report.  
`mat_4 = matrix(my_vec, nrow = 5, ncol = 5)`
11. How did R handle the recycling of values of `my_vec` in `mat_4`?  
R used the default of filling the matrix by columns but gave a warning message that the data length is not a sub-multiple or multiple of the number of rows.
12. For each of the 8 lines, answer the following:
  - a. Did the line return a 1: value, 2: error, or 3: NULL?
    1. Value, numeric

2. Value, text
3. NULL
4. Value, text
5. Value, text
6. Value, text
7. Error
8. NULL

b. If it did not return an error, what type of subsetting operation was used?

1. [[]]
2. [[]]
3. [[]]
4. [[]]
5. \$
6. \$
7. Error
8. \$

c. If it did not return an error, explain how R chose which element to retrieve.

1. R chose the value associated with the first element in the list
2. R chose the value associated with the first element in the list
3. R was not able to retrieve a value as there is no list element named "1"
4. R chose the value associated with the list element named "one"
5. R chose the value associated with the element in the list named one
6. R chose the value associated with the list element named "one"
7. Error
8. R was not able to retrieve a value as there is no list element named "1"

13. Identify which lines produced output "five point two" and explain why.

4, 5, and 6 produced the output "five point two". When the dollar sign is used it retrieves the value associated with the element named one or "one" as in lines 5 and 6. Line 4 produces "five point two" because the double brackets pull the value associated with the name "one".

14. Identify which lines produced NULL output and explain why.

Lines 3 and 8 both produced a NULL output as there is no list element with the name 1.