

## Bathrick – Lab 1 Answers

- **Q1 (2 pts.):** Explain why the outputs of the two lines are different.

Placing the code in quotes turns it into a character string instead of numerical variable

- **Q2 (1 pt.):** Is `c_1` a variable, or a function? How do you know?

`c_1` is a function, because you have assigned a numeric string of variables

- **Q3 (1 pt.):** Is `c_2` a variable, or a function? How do you know?

`c_2` is a variable, because the entire phrase is in quotes and thus treated as a character

- **Q4 (1 pt.):** If `c_1` and `c_2` have different values, why?

The quotes lump the variables together or separate them

- **Q5 (1 pt.):** What are the dimensions of the matrix (i.e. how many rows and columns)?

3x2 (three rows, two columns)

- **Q6 (2 pts.):** Write R code to retrieve the element of `mat_1` that has a value of 3.

`mat_1[3,1]`

- **Q7 (1 pt.):** Paste the code you used to create `mat_2`.

`mat_2=matrix(my_vec, nrow=2)`

- **Q8 (1 pt.):** Paste the code you used to create `mat_3`.

`mat_3=matrix(my_vec, nrow=3)`

- **Q9 (1 pt.):** Did R use rows or columns to recycle/distribute the values in `my_vec`?

columns

- **Q10 (1 pt.):** Using `my_vec`, create a matrix, `mat_4`. `mat_4` must have a total number of elements that is not a multiple of 3.

`mat_4=matrix(my_vec, nrow=2, ncol=7)`

- **Q11 (1 pt.):** How did R handle the recycling/distributing of values of `my_vec` in `mat_4`?

It began another column from the beginning of the string, but didn't have the space to fill in the entire string.

- **Q12 (8 pts.):** For each of the 8 lines, answer the following: A. Did the line return a 1: value, 2: error, or 3: `NULL`? B. What type of subsetting operation was used (or attempted)? C. If

it **did not** return an error describe, in ordinary English, a plausible explanation of how R could have performed the subsetting.

- `my_list_1[[1]]`
  - A: 1
  - B: numbered component of the list
  - C: R found the first item in the list, regardless of what it's name was
- `my_list_1[[as.numeric("1")]]`
  - A: 1
  - B: numbered component
  - C: R was told to read the character within the quotes as numeric, so it is the same command as the code prior
- `my_list_1[["1"]]`
  - A: 3
  - B: character-named component
- `my_list_1[["one"]]`
  - A: 1
  - B: character-named component
  - R found the variable that was labelled "one", not the first variable
- `my_list_1$one`
  - A: 1
  - B: character-named component
  - C: R found the variable that is named "one", it didn't require the quotes because of the \$
- `my_list_1$"one"`
  - A: 1
  - B: character-named component
  - C: R found the variable that is named "one", \$ was used instead of brackets
- `my_list_1$1`
  - A: 2
  - B: there was an attempt to select either the first element or the one labelled "one," needs to be in brackets
- `my_list_1$"1"`
  - A: 3
  - B: There is no element named "1"

- **Q13 (2 pts.):** Identify which lines produced the string output "five point two" and explain why.

- `my_list_1$one`
- `my_list_1$"one"`
- `my_list_1[["one"]]`

All these commands specify the same element, they are just different ways of selecting it.

- **Q14 (1 pt.):** Identify which lines produced `NULL` output and explain why.

- `my_list_1$"1"`
- `my_list_1[["1"]]`

R looked for an element that was named "1", which does not exist – it is named "one"