c(1, 2, 3)

"c(1, 2, 3)"

Q1

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

The first line is a function and the second is a string of characters.

Run the following two lines of code in the console and consider the differences:

c\_1 = c(1, 2, 3)

c\_2 = "c(1, 2, 3)"

Answer the following (1 pt each):

### Q2

Is c\_1 a variable, or a function?

Function

### Q3

Is c\_2 a variable, or a function?

Variable

### Q4

If c\_1 and c\_2 have different values, why?

Yes, because the first one is the function c() that creates a vector, in this case as a string of numbers, and the other has “ ” which R reads as a string of characters.

Create a numeric vector of length 3 called my\_vec. It should contain the integers from 1 to 3.

Build a matrix using the following code:

mat\_1 = matrix(my\_vec)

### Q5

What are the dimensions of the matrix (i.e. how many rows and columns)?

3 rows 1 column

### Q6

Write R code to retrieve the element of mat\_1 that has a value of 3.

**mat\_1[3,]**

You will use my\_vec from the previous question again.

Instructions:

Create a matrix mat\_2 that has **two** rows and **three** columns using my\_vec. Do not use the c() or rep() functions.

Create a matrix mat\_3 that has three rows and two columns using my\_vec. Do not use the c() or rep() functions.

### Q7

(1pt.): Paste the code you used to create mat\_2.

**mat\_2 = matrix(my\_vec, nrow=2, ncol=3)**

### Q8

(1pt.): Paste the code you used to create mat\_3.

**mat\_3 =matrix(my\_vec, nrow=3, ncol=2)**

### Q9

(1pt.): Did R use rows or columns to recycle the values in my\_vec?

**columns**

### Q10

(1pt.): Create a matrix, mat\_4, with a number of elements that is not a multiple of 3 and paste the code into the editor.

**my\_vec2<-c(1,2,3,4)**

**mat\_4 = matrix(my\_vec2)**

### Q11

(1pt.): How did R handle the recycling of values of my\_vec in mat\_4?

**It gave an error message. *the length of the data [3] is not a submultiple or multiple of the number of rows [4] in the array***

Two of the ways we can subset objects are:

* By position. What is the value of the third element in the object?
* By name. What is the value of the element called “abc” in the object?

Create a list, named my\_list\_1 with following three elements:

* first element is numeric: 5.2
* second element is a string “five point two”
* third element is a vector of all integers from 0 to 5.

Do recall how to do this from the DataCamp course?

Name the elements in my\_list\_1:

* “two”
* “one”
* “three”

Run the following lines of code.

### Q12

(8 pts) For each of the 8 lines, answer the following:

* 1. Did the line return a 1: value, 2: error, or 3: NULL
  2. If it did not return an error, what type of subsetting operation was used?
  3. If it did not return an error, explain how R chose which element to retrieve.
* my\_list\_1[[1]] **value,** **[[]], selected a component is using the numbered position of that component.**
* my\_list\_1[[as.numeric("1")]] **value, [[]], selected a component is using the numbered position of that component.**
* my\_list\_1[["1"]] **NULL, [[]], selected a component is using the numbered position of that component, but this is not in the format of the numerical position, the one looks like a string character.**
* my\_list\_1[["one"]] **value, [[]], refer to the names of the components**
* my\_list\_1$one **value, $, refer to the names of the components**
* my\_list\_1$"one" **value, $, refer to the names of the components**
* my\_list\_1$1 Error: unexpected numeric constant in "my\_list\_1$1"
* my\_list\_1$"1" **NULL, $, there is no component named “1”.**

### Q13

(2 pts): Identify which lines produced output "five point two" and explain why.

* my\_list\_1[["one"]] **value, [[]], refer to the names of the components**
* my\_list\_1$one **value, $, refer to the names of the components**
* my\_list\_1$"one" **value, $, refer to the names of the components**

### Q14

(2 pts): Identify which lines produced NULL output and explain why.

* my\_list\_1[["1"]] **NULL, [[]], selected a component is using the numbered position of that component, but this is not in the format of the numerical position, the one looks like a string character.**
* my\_list\_1$"1" **NULL, $, there is no component named “1”.**