

## Lab1.R

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```
#Lab 1
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c(1, 2, 3)
## [1] 1 2 3
"c(1, 2, 3)"
## [1] "c(1, 2, 3)"

#Q1
#c(1, 2, 3) is numeric, "c(1, 2, 3)" is character

c_1 = c(1, 2, 3)
c_2 = "c(1, 2, 3)"

#Q2
#function, c_1 equals to a vector (no quotation marks)

#Q3
#variable, c_2 equals to a character/string (has quotation marks)

#Q4
#c_1 equals to a vector with elements 1, 2, and 3
#c_2 equals to a character called "c(1, 2, 3)"

my_vec = 1:6
mat_1 = matrix(my_vec, nrow = 3)
mat_1

##      [,1] [,2]
## [1,]    1    4
## [2,]    2    5
## [3,]    3    6

#Q5
#The matrix has 3 rows and 2 columns.

#Q6
mat_1[3,1]
```

```
## [1] 3

#Q7
mat_2 = matrix(my_vec, nrow = 2, ncol = 3)
mat_2

##      [,1] [,2] [,3]
## [1,]    1    3    5
## [2,]    2    4    6

#Q8
mat_3 = matrix(my_vec, nrow = 3, ncol = 2)
mat_3

##      [,1] [,2]
## [1,]    1    4
## [2,]    2    5
## [3,]    3    6

#Q9
# R uses columns to recycle/distribute the values.

#Q10
mat_4 = matrix(my_vec, nrow = 2, ncol = 2)
mat_4

##      [,1] [,2]
## [1,]    1    3
## [2,]    2    4

#Q11
# R still uses columns to recycle/distribute the values.

first = 5.2
second = "five point two"
third = 0:5
my_list_1 = list(first, second, third)
my_list_1

## [[1]]
## [1] 5.2
##
## [[2]]
## [1] "five point two"
##
## [[3]]
## [1] 0 1 2 3 4 5

names(my_list_1) = c("two", "one", "three")
my_list_1
```

```

## $two
## [1] 5.2
##
## $one
## [1] "five point two"
##
## $three
## [1] 0 1 2 3 4 5

#Q12
my_list_1[[1]]

## [1] 5.2

#value
#by position
#select the first element of the list
my_list_1[[as.numeric("1")]]

## [1] 5.2

#value
#by position
#select the first element of the list
my_list_1[["1"]]

## NULL

#NULL
#By name
#select the element called "1" in the list
my_list_1[["one"]]

## [1] "five point two"

#value
#by name
#select the element called "one" in the list
my_list_1$one

## [1] "five point two"

#value
#by name
#select the element called "one" in the list
my_list_1$"one"

## [1] "five point two"

#value
#by name
#select the element called "one" in the list
#my_list_1$1

```

```
#error
#by position but missing [[]] so not valid
my_list_1$"1"

## NULL

#NULL
#by name
#select the element called "1" in the list

#Q13
my_list_1[["one"]]

## [1] "five point two"

my_list_1$one

## [1] "five point two"

my_list_1$"one"

## [1] "five point two"

#They all select the element called "one", which is "five point two".

#Q14
my_list_1[["1"]]

## NULL

my_list_1$"1"

## NULL

#They both select the element called "1", which does not exist in the list.
```