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Lab 1: R Fundamentals 1

Expressions and Strings

1. The outputs of the two lines are different because the first line is just listing number integers within the parentheses. When adding the quotation marks, this makes anything within those marks a string of text. This now makes them different as one has numerical values and the latter is a string of letter characters.

Variables:

2. `c_1` would be considered a variable. This is because when inputting this code, the computer recognizes that `c_1` takes the variable of 1,2,3.
3. `c_2` is a function. This is because the quotation marks give the total value of `c_2` to what is in the parentheses. The computer now recognizes the value of `c_2` as being that.
4. They have different values because the way in which we write our code is critical to giving definition and meaning to our variables. Putting parentheses versus quotation marks dramatically changes the value.

Matrices

5. The matrix is made up of three rows and one column.

6. Code:

```
> matrix(3,1)
      [,1]
[1,]  3
```

Matrices 2

7. Code

```
> mat_2 <- matrix(my_vec, nrow=2, ncol=3)
> mat_2
      [,1] [,2] [,3]
[1,]  1   3   2
[2,]  2   1   3
```

8. Code:

```
> mat_3 <- matrix(my_vec, nrow=3, ncol=2)
> mat_3
      [,1] [,2]
[1,]  1   1
[2,]  2   2
[3,]  3   3
```

9. R used columns to recycle the values in `my_vec`. When the initial `my_vec` was created, there were three rows but only 1 column of values.

10. `mat_4 <- matrix(my_vec, nrow= 5, ncol=2)`

11. R did not like this. It left me with a warning message stating that the data length of 3 is not a sub-multiple or multiple of the number of rows-5. This makes sense as 5 is not a multiple of 3.

List Subsetting

12.

1. It returned a value of 5.2. This was gathered by finding the numbered position of a specific component of the list. R chose 5.2 because this was (1) on the list.

2. It again returned a value of 5.2. This was gathered by searching through the numerical integers to find the specific component that had the numerical integer of 1.

3. This line returned as NULL. This is because there were no elements of the list specifically named "1".

4. It returned a value of "five point two". The bracket sub setting was used to search for the component. R chose this element because it was searching for the list component named "one".

5. It returned a value of "five point two". The \$sign sub setting was used to search for the component. It searched for a component labeled 'one' and was able to match that to retrieve the coinciding element.

6. It returned a value of "five point two"

7. There was an error: "unexpected numeric constant"

8. It returned a NULL value. This is because to search for a component you either use the double bracket or the \$ sign. Because of this, this was essentially written a different way for the same variable as the #3 code.

13. Lines 4,5,6 produced the "five point two" output. This is because, all component searches were conducted using characters and lines of characters rather than using integers to search for the specific component.

14. The third and eighth lines produced a NULL output. This is because there is no component specifically named "1". A component may be named "one" or have the value of the integer 1, but the component of the list itself is not "1".