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Analysis of Environmental Data
Lab 1 Report
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1. Explain why the outputs of the two lines are different.

> The outputs of the two lines are different because the way the lines are written. The first line is a vector data type. In the second line, the parentheses indicate string data. This means that the output will be a character data.

2. Is c_1 a variable, or a function? How do you know?

> It is a variable because it stores the values in a vector.

3. Is c_2 a variable, or a function? How do you know?

> It is a variable because stores characters.

4. If c_1 and c_2 have different values, why?

> 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 row, 1 column

6. Write R code to retrieve the element of mat_1 that has a value of 3.

```
mat_1[3,1]
```

7. Paste the code you used to create mat_2.

```
mat_2 = matrix(my_vec, nrow = 2, ncol = 3, byrow = TRUE)
```

8. Paste the code you used to create mat_3.

```
mat_3 = matrix(my_vec, nrow = 3, ncol = 2, byrow = TRUE)
```

9. Did R use rows or columns to recycle the values in my_vec?

> mat_2: in the columns

> mat_3: in the rows

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 = 2, byrow = TRUE)
```

11. How did R handle the recycling of values of my_vec in mat_4?

It recycled numbers in the columns, but not in the 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

2. Value

3. NULL

4. Value

5. Value

6. Value

7. Error

8. NULL

B. If it did not return an error, what type of sub setting operation was used?

1. Position

2. Position

3. Name

4. Name

5. Name

6. Name

8. Name

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

* 5.2 holds the first position in the list. It is named <u>two</u>

* "five point two" holds the second position in the list. It is named <u>one</u>

1.
- Double brackets pick the numbered position
- The position within the bracket was 1
- The first position holds the numeric value of 5.2

2.
- Double brackets pick the numbered position
- as.numeric transfers character data into numeric
- Therefore, R converted the characters one into 1
- R chose the position of 1

- The first position holds the number of 5.2

3.
- Double brackets with parentheses pick the named value
- There was no value in the list named <u>1</u> so it came out as a null

4.
- Double brackets with parentheses pick the named value
- R selected the value named <u>one</u>
- The value named <u>one</u> is the character "five point two"

5.
- Dollar signs pick the named value
- R selected the value named <u>one</u>
- The value named <u>one</u> is the character "five point two"

6.
- Dollar signs pick the named value, even if the parentheses are present
- R selected the value named <u>one</u>
- The value named <u>one</u> is the character "five point two"

8.
- Dollar signs pick the named value, even if the parentheses are present
- There was no value in the list named <u>1</u> so it came out as a null

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

4. Double brackets with parentheses pick the named value. The name within the parentheses is <u>one</u>. R selected the value named <u>one</u>. The value named <u>one</u> is the character "five point two".

5. Dollar signs pick the named value. The name after the dollar sign is <u>one</u>. R selected the value named <u>one</u>. The value named <u>one</u> is the character "five point two".

6. Dollar signs pick the named value, even if the parentheses are present.
The name after the dollar sign and in the parentheses is <u>one</u>. R selected the value named <u>one</u>. The value named <u>one</u> is the character "five point two".

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

3. Double brackets with parentheses pick the named value. There was no value in the list named <u>1</u> so R was unable to select a value. It is important to remember that that 1 does not equal "one". This is why the outcome was NULL.

8. Dollar signs pick the named value, even if the parentheses are present. There was no value in the list named <u>1</u> so R was unable to select a value. It is important to remember that that 1 does not equal "one". This is why the outcome was NULL.