

Assignment Six
BSDS Spring 2021
(due 3/12, 11:59pm PST)

Note: You must submit this assignment as BOTH a Jupyter Notebook file (.ipynb) and an (.html) file on Canvas. All of the following must be satisfied.

- The filenames must be of the form
`[last_name]_HW6.ipynb` and `[last_name]_HW6.html`
- You must include your name and the assignment number in a Markdown cell at the beginning of the notebook
- You must separate questions using Markdown cells
- If a question requires a short answer rather than code, use a markdown cell.

In the next few problems you will explore the `storms` dataset which is automatically loaded into your working memory when you load the `tidyverse` library.

1. Create the vector

```
myVector <- c(1, 4, 3, 2, NA, 3.22, -44, 2, NA, 0, 22)
```

and **write code that runs** to answer each of the following questions. (Hint: what function returns the number of elements in a vector?)

- (a) How many positive numbers (>0) are there in this vector?
- (c) How many 0's are there in this vector?
- (d) How many missing values are there in this vector?
- (e) What is the sum of the negative numbers in this vector?

2. Look at the table in Section 20.4.2 of the textbook. For each test function, create two vectors (or lists). One that returns True and another that returns False.

3. Do the following.

- (a) Extract the column `sleep_rem` from the `msleep` dataset as an atomic vector.
- (b) Run the function `is.na()` on the vector. Explain the output.
- (c) Coerce the new vector to an integer vector. Explain the output.

(d) Now run the function `mean(is.na())` on the extract column. Explain the output.

4. Create the list

```
myList <- list("a", "b", list("c", "d"), list("e", "f"))
```

and **write code that runs using myVector** to create the following objects **using myList**.

- (a) A character vector of length one containing "a"
- (b) A list of length one containing "a"
- (c) A list of length one containing "e"
- (d) A character vector of length containing "c" and "d"

5. Create the vector

```
c(1, 2, 1, 2, 1, 2)
```

using the following methods.

- (a) Add two **distinct** vectors to create the above vector.
- (b) Multiply two **distinct** vectors to create the above vector.
- (c) Add two vectors of **different** lengths to create the above vector.
- (d) Use the `rep()` function to create the above vector.

6. Write your own tibble from scratch. It must have **at least** 16 values and a column vector of type integer, double, logical, and character.

7. Extract the `carrier` column as an atomic vector from the `flights` dataset. Turn this atomic vector into a factor vector where the levels are the unique values. (Hint: you'll have to find a way to extract a vector of unique values from a vector with repeated values)