

1. Python does not support stack or queue by default. However, you can wrap the existing list and available functions to imitate these data structures. This exercise is limited to concepts we have learned in the workshop so far but you want to look up how to handle *default* arguments and how *'None'* argument works. You will create two functions: 1. **stack** and 2. **queue**. Both functions will have only two operations: **add** and **remove**. It works as follows:

stack(our_list, operation, new_element)

our_list: existing list such as [1, 2, 3]

operation: 'add' or 'remove'

new_element: element to be added or removed, such as 4

queue(our_list, operation, new_element)

our_list: existing list such as [1, 2, 3]

operation: 'add' or 'remove'

new_element: element to be added or removed, such as 4

It works as follows:

```
new_list = [1, 2, 3, 4]
print("Adding new element to the stack")
new_list = stack(new_list, 'add', 0)
print(new_list)
print("Adding remove an element from stack")
new_list = stack(new_list, 'remove')
print(new_list)
print("Adding new element to the queue")
new_list = queue(new_list, 'add', 5)
print(new_list)
print("Adding remove and element from the queue")
new_list = queue(new_list, 'remove')
print(new_list)
```

Result:

```
Adding new element to the stack
[0, 1, 2, 3, 4]
Adding remove an element from stack
[1, 2, 3, 4]
Adding new element to the queue
[1, 2, 3, 4, 5]
Adding remove and element from the queue
[2, 3, 4, 5]
```

2. This exercise is to practice applying a function to pandas dataframes. You will need to write a function that counts number of vowels in the given column. You can use the imdb dataset we used during the class.

Title	Year	Vowels
Marybeth	1978	2
Matrix	1999	2

Your solution must include a sample dataframe and your new function applied. I will evaluate using my own data for correctness.

Ref: <https://pandas.pydata.org/docs/reference/api/pandas.DataFrame.apply.html>

3. You will need to create a streamlit app that allows me to upload a CSV file with two columns as follows:

Name	Age
John	76
Kumar	54
Zoey	51

If a valid file is uploaded, you need to plot a histogram of ages.

References:

- https://docs.streamlit.io/library/api-reference/widgets/st.file_uploader
- <https://docs.streamlit.io/library/api-reference/charts>

Instructions:

- All the submissions must be through GitHub and must be accessible to the user "shameeriqbal" for evaluation.