

LAB Logbook

Lab 1

Lab Logbook Requirement:

1) Create a vector using `np.arange`.

Determine the number of the vector elements using the following method: Take the last two digits from your SID. It should be from 00 to 99. If this number is 10 or more, it becomes the required number of the vector elements. If it is less than 10, add 100 to your number.

For example, if your SID is 2287467, and the last two digits are 67, which is greater than 10. The required number is 67. If your SID is 2287407, and the last two digits are 07, which is less than 10. The required number is 107.

Then,

2. Change matrix `a` to 2-d array with 1 row. Print the array. You should have the two sets of brackets for a 2-d array with one row.
3. Save it in another array. Print the array.
4. Check the shape attribute value.
5. Add the code and result to your Lab Logbook

NOTE: DON'T FORGET TO SAVE AND BACK UP YOUR COMPLETED JUPYTER NOTEBOOK AND LAB LOGBOOK ON GITHUB OR ONEDRIVE.

1. Created a vector with `np.arange`. The last two digits of my SID is 31. So the range is from 1 to 32 in order to get 31 elements.

```
[17]: a = np.arange(1,32)
      print(a)

[ 1  2  3  4  5  6  7  8  9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
 25 26 27 28 29 30 31]
```

2. Changed the matrix a to 2D array with one row using reshape. The array has two sets of brackets.

```
[23]: a = a.reshape(31,1)  
print(a)
```

```
[[ 1]  
 [ 2]  
 [ 3]  
 [ 4]  
 [ 5]  
 [ 6]  
 [ 7]  
 [ 8]  
 [ 9]  
[10]  
[11]  
[12]  
[13]  
[14]  
[15]  
[16]  
[17]  
[18]  
[19]  
[20]  
[21]  
[22]  
[23]  
[24]  
[25]  
[26]  
[27]  
[28]  
[29]  
[30]  
[31]]
```

3. Saved 2D array a into b. Then show contents of b.

```
[25]: b = a  
      print(b)
```

```
[[ 1]  
 [ 2]  
 [ 3]  
 [ 4]  
 [ 5]  
 [ 6]  
 [ 7]  
 [ 8]  
 [ 9]  
[10]  
[11]  
[12]  
[13]  
[14]  
[15]  
[16]  
[17]  
[18]  
[19]  
[20]  
[21]  
[22]  
[23]  
[24]  
[25]  
[26]  
[27]  
[28]  
[29]  
[30]  
[31]]
```

4. Check the shape attribute value for b.

```
[15]: b.shape
```

```
[15]: (31,)
```

Lab 2

Lab Logbook Requirement:

```
<html> <h3 style="font-style:italic; color:blue;">
```

- 1) Determine a number (n) equal to the last digit of your SID.
- 2) Group by "relationship" and "hours-per-week".
- 3) Reduce all "hours-per-week" column values in the original DataFrame by the value 'n'.
- 4) Group by "relationship" and reduced "hours-per-week".
- 5) Add the code and result to your Lab Logbook.

NOTE: DON'T FORGET TO SAVE AND BACK UP YOUR COMPLETED JUPYTER GITHUB OR ONEDRIVE.

```
[90]: n = 31
```

```
Group_by_relationship_hpw = data.groupby(["relationship","hours-per-week"])
Group_by_relationship_hpw.size().unstack()
```

```
[90]: hours-per-week  13.0  16.0  30.0  40.0  45.0  50.0  80.0
```

| relationship | | | | | | | |
|---------------|-----|-----|-----|-----|-----|-----|-----|
| Husband | 1.0 | NaN | NaN | 2.0 | 1.0 | NaN | 1.0 |
| Not-in-family | NaN | 1.0 | NaN | 2.0 | NaN | 2.0 | NaN |
| Own-child | NaN | NaN | 1.0 | NaN | NaN | NaN | NaN |
| Wife | NaN | NaN | NaN | 2.0 | NaN | NaN | NaN |

```
[91]: def reduce_hours(x):
      return x - n
```

```
data["hours-per-week"] = data["hours-per-week"].apply(reduce_hours)
```

```
Group_by_relationship_hpw = data.groupby(["relationship","hours-per-week"])
```

```
Group_by_relationship_hpw.size().unstack()
```

```
[91]: hours-per-week  -18.0 -15.0  -1.0   9.0  14.0  19.0  49.0
```

| relationship | | | | | | | |
|---------------|-----|-----|-----|-----|-----|-----|-----|
| Husband | 1.0 | NaN | NaN | 2.0 | 1.0 | NaN | 1.0 |
| Not-in-family | NaN | 1.0 | NaN | 2.0 | NaN | 2.0 | NaN |
| Own-child | NaN | NaN | 1.0 | NaN | NaN | NaN | NaN |
| Wife | NaN | NaN | NaN | 2.0 | NaN | NaN | NaN |

Lab 3

Lab 4

Lab 5

Lab 6

Lab 7

Lab 8

Lab 9

Lab 10

Lab 11

Lab 12