

Assignment_07_02_Completed

July 19, 2020

1 Assignment 02: Evaluate the FDNY Dataset

The comments/sections provided are your cues to perform the assignment. You don't need to limit yourself to the number of rows/cells provided. You can add additional rows in each section to add more lines of code.

If at any point in time you need help on solving this assignment, view our demo video to understand the different steps of the code.

Happy coding!

1: View and import the dataset

```
[1]: #Import the required libraries
import numpy as np
import pandas as pd
```

```
[3]: #Import the Fire Department of New York City (FDNY) file
df_NYC_Fire_dep = pd.read_csv('FDNY.csv')
```

```
[3]:
```

	FacilityName \
0	FacilityName
1	Engine 4/Ladder 15
2	Engine 10/Ladder 10
3	Engine 6
4	Engine 7/Ladder 1/Battalion 1/Manhattan Boroug...
..	...
214	Engine 162/Ladder 82/Battalion 23
215	Engine 167/Ladder 87
216	Engine 164/Ladder 84
217	Engine 168/EMS Station 23
218	Engine 151/Ladder 76

	FacilityAddress	Borough
0	FacilityAddress	Borough
1	42 South Street	Manhattan
2	124 Liberty Street	Manhattan

3	49 Beekman Street	Manhattan
4	100-104 Duane Street	Manhattan
..
214	256 Nelson Avenue	Staten Island
215	345 Annadale Road	Staten Island
216	1560 Drumgoole Road West	Staten Island
217	1100 Rossville Avenue	Staten Island
218	7219 Amboy Road	Staten Island

[219 rows x 3 columns]

2: Analyze the dataset

```
[9]: #View the content of the data
df_NYC_Fire_dep
```

```
[9]: FacilityName \
0 FacilityName
1 Engine 4/Ladder 15
2 Engine 10/Ladder 10
3 Engine 6
4 Engine 7/Ladder 1/Battalion 1/Manhattan Boroug...
..
214 Engine 162/Ladder 82/Battalion 23
215 Engine 167/Ladder 87
216 Engine 164/Ladder 84
217 Engine 168/EMS Station 23
218 Engine 151/Ladder 76
```

	FacilityAddress	Borough
0	FacilityAddress	Borough
1	42 South Street	Manhattan
2	124 Liberty Street	Manhattan
3	49 Beekman Street	Manhattan
4	100-104 Duane Street	Manhattan
..
214	256 Nelson Avenue	Staten Island
215	345 Annadale Road	Staten Island
216	1560 Drumgoole Road West	Staten Island
217	1100 Rossville Avenue	Staten Island
218	7219 Amboy Road	Staten Island

[219 rows x 3 columns]

```
[5]: #View the first five records
df_NYC_Fire_dep.head()
```

```
[5]:
```

	FacilityName	FacilityAddress \
0	FacilityName	FacilityAddress
1	Engine 4/Ladder 15	42 South Street
2	Engine 10/Ladder 10	124 Liberty Street
3	Engine 6	49 Beekman Street
4	Engine 7/Ladder 1/Battalion 1/Manhattan Boroug...	100-104 Duane Street

	Borough
0	Borough
1	Manhattan
2	Manhattan
3	Manhattan
4	Manhattan

```
[10]: #Skip the duplicate header row
df_NYC_Fire_Dep_Clean= df_NYC_Fire_dep.drop([0])
```

```
[10]:
```

	FacilityName \
1	Engine 4/Ladder 15
2	Engine 10/Ladder 10
3	Engine 6
4	Engine 7/Ladder 1/Battalion 1/Manhattan Boroug...
5	Ladder 8
..	...
214	Engine 162/Ladder 82/Battalion 23
215	Engine 167/Ladder 87
216	Engine 164/Ladder 84
217	Engine 168/EMS Station 23
218	Engine 151/Ladder 76

	FacilityAddress	Borough
1	42 South Street	Manhattan
2	124 Liberty Street	Manhattan
3	49 Beekman Street	Manhattan
4	100-104 Duane Street	Manhattan
5	14 North Moore Street	Manhattan
..
214	256 Nelson Avenue	Staten Island
215	345 Annadale Road	Staten Island
216	1560 Drumgoole Road West	Staten Island
217	1100 Rossville Avenue	Staten Island
218	7219 Amboy Road	Staten Island

[218 rows x 3 columns]

```
[11]: #Verify if the dataset is fixed
df_NYC_Fire_Dep_Clean
```

```
[11]:
```

	FacilityName \
1	Engine 4/Ladder 15
2	Engine 10/Ladder 10
3	Engine 6
4	Engine 7/Ladder 1/Battalion 1/Manhattan Boroug...
5	Ladder 8
..	...
214	Engine 162/Ladder 82/Battalion 23
215	Engine 167/Ladder 87
216	Engine 164/Ladder 84
217	Engine 168/EMS Station 23
218	Engine 151/Ladder 76

	FacilityAddress	Borough
1	42 South Street	Manhattan
2	124 Liberty Street	Manhattan
3	49 Beekman Street	Manhattan
4	100-104 Duane Street	Manhattan
5	14 North Moore Street	Manhattan
..
214	256 Nelson Avenue	Staten Island
215	345 Annadale Road	Staten Island
216	1560 Drumgoole Road West	Staten Island
217	1100 Rossville Avenue	Staten Island
218	7219 Amboy Road	Staten Island

[218 rows x 3 columns]

```
[14]: #View the data statistics (Hint: use describe() method)
df_NYC_Fire_Dep_Clean.describe()
```

```
[14]:
```

	FacilityName	FacilityAddress \
count	218	218
unique	218	218
top	Engine 160/Rescue 5/Division 8	36-18 Francis Lewis Boulevard
freq	1	1

	Borough
count	218
unique	5
top	Brooklyn
freq	66

```
[15]: #View the attributes of the dataset (Hint: view the column names)
df_NYC_Fire_Dep_Clean.columns
```

```
[15]: Index(['FacilityName', 'FacilityAddress', 'Borough'], dtype='object')
```

```
[16]: #View the index of the dataset
df_NYC_Fire_Dep_Clean.index
```

```
[16]: Int64Index([ 1,  2,  3,  4,  5,  6,  7,  8,  9, 10,
                ...
                209, 210, 211, 212, 213, 214, 215, 216, 217, 218],
                dtype='int64', length=218)
```

3: Find the total number of fire department facilities in New York city

```
[21]: #Count number of records for each attribute
df_Facility_NYC_Fire_Dep = df_NYC_Fire_Dep_Clean.groupby('FacilityName')
df_Facility_NYC_Fire_Dep.size()
```

```
[21]: FacilityName
      Engine 96/Ladder 54      1
      Bronx Borough Command, District Office 6 & 7      1
      EMS Station 17      1
      EMS Station 26      1
      Eng 292/Rescue 4      1
      ..
      Squad 252      1
      Squad 270/Division 13      1
      Squad 288/Hazmat 1      1
      Squad 41      1
      Squad 61/Battalion 20      1
      Length: 218, dtype: int64
```

```
[24]: #view the datatypes of all three attributes
df_NYC_Fire_Dep_Clean.dtypes
```

```
[24]: FacilityName      object
      FacilityAddress  object
      Borough         object
      dtype: object
```

4: Find the total number of fire department facilities in each borough

```
[25]: #Select FDNY information boroughwise
df_Borough_NYC_Fire_dep = df_NYC_Fire_Dep_Clean.groupby('Borough')
```

```
[27]: #View FDNY informationn for each borough
df_Borough_NYC_Fire_dep.size()
```

```
[27]: Borough
      Bronx      34
      Brooklyn  66
```

```

Manhattan      48
Queens         50
Staten Island  20
dtype: int64

```

5: Find the total number of fire department facilities in Manhattan

```

[34]: #Select FDNY information for Manhattan
      FDNY_info_Manhattan_Borough = df_Borough_NYC_Fire_dep.get_group('Manhattan')

```

```

[35]: #View FDNY information for Manhattan
      FDNY_info_Manhattan_Borough

```

```

[35]:
      FacilityName \
1      Engine 4/Ladder 15
2      Engine 10/Ladder 10
3      Engine 6
4  Engine 7/Ladder 1/Battalion 1/Manhattan Boroug...
5      Ladder 8
6      Engine 9/Ladder 6
7      Engine 15/Ladder 18/Battalion 4
8      Engine 28/Ladder 11
9      Engine 5
10     Engine 55
11     Ladder 20/Division 1
12     Engine 24/Ladder 5/Battalion 2
13     Engine 33/Ladder 9
14     Ladder 3/Battalion 6
15     Squad 18
16     Engine 34/Ladder 21
17     Engine 26
18     Engine 3/Ladder 12/Battalion 7
19     Engine 1/Ladder 24
20     Engine 14
21     Engine 16 / Ladder 7
22     Engine 21
23     Engine 54/Ladder 4/Battalion 9
24     Engine 23
25     Rescue 1
26     Engine 40/Ladder 35
27     Ladder 25/District Office 4/Division 3
28     Engine 74
29     Engine 65
30     Engine 8 / Ladder 2 / Battalion 8
31     Engine 39/Ladder 16
32     Engine 44
33     Engine 22/Ladder 13/Battalion 10

```

34	Engine 58/Ladder 26
35	Engine 53/Ladder 43
36	Engine 91
37	Engine 35/Ladder 14
38	Engine 76/Ladder 22/Battalion 11
39	Engine 47
40	Engine 59/Ladder 30
41	Engine 37/Ladder 40
42	Engine 69/Ladder 28/Battalion 16
43	Engine 80/Ladder 23
44	Engine 84/Ladder 34
45	Engine 67
46	Engine 93/Ladder 45/Battalion 13
47	Engine 95/Ladder 36
48	Marine 1

	FacilityAddress	Borough
1	42 South Street	Manhattan
2	124 Liberty Street	Manhattan
3	49 Beekman Street	Manhattan
4	100-104 Duane Street	Manhattan
5	14 North Moore Street	Manhattan
6	75 Canal Street	Manhattan
7	25 Pitt Street	Manhattan
8	222 East 2nd Street	Manhattan
9	340 East 14th Street	Manhattan
10	363 Broome Street	Manhattan
11	253 Lafayette Street	Manhattan
12	227-29 6th Avenue	Manhattan
13	42 Great Jones Street	Manhattan
14	108 East 13th Street	Manhattan
15	132 West 10th Street	Manhattan
16	440 West 38th Street	Manhattan
17	220 West 37th Street	Manhattan
18	150 West 19th Street	Manhattan
19	142-46 West 31st Street	Manhattan
20	14 East 18th Street	Manhattan
21	234 East 29th Street	Manhattan
22	238 East 40th Street	Manhattan
23	782 8th Avenue	Manhattan
24	215 West 58th Street	Manhattan
25	530 West 43rd Street	Manhattan
26	131 Amsterdam Avenue	Manhattan
27	205-207 West 77th Street	Manhattan
28	120 West 83rd Street	Manhattan
29	33 West 43rd Street	Manhattan
30	167 East 51st Street	Manhattan

31	157-59 East 67th Street	Manhattan
32	221 East 75th Street	Manhattan
33	159 East 85th Street	Manhattan
34	1367 5th Avenue	Manhattan
35	1836-46 3rd Avenue	Manhattan
36	242 East 111th Street	Manhattan
37	2282 3rd Avenue	Manhattan
38	145-51 West 100th Street	Manhattan
39	502 West 113th Street	Manhattan
40	111 West 133rd Street	Manhattan
41	415 West 125th Street	Manhattan
42	248 West 143rd Street	Manhattan
43	503 West 139th Street	Manhattan
44	513 West 161st Street	Manhattan
45	518 West 170th Street	Manhattan
46	515 West 181st Street	Manhattan
47	29 Vermilyea Avenue	Manhattan
48	Little West 12th Street/Hudson River	Manhattan