



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

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

```
In [2]: #Import the Fire Department of New York City (FDNY) file
fire_department = pd.read_csv('../FDNY/FDNY.csv')
```

2: Analyze the dataset

```
In [3]: #View the content of the data
fire_department
```

Out[3]:

	FacilityName	FacilityAddress	Borough
0	FacilityName	FacilityAddress	Borough
1	Engine 4/Ladder 15	42 South Street	Manhattan
2	Engine 10/Ladder 10	124 Liberty Street	Manhattan
3	Engine 6	49 Beekman Street	Manhattan
4	Engine 7/Ladder 1/Battalion 1/Manhattan Borough...	100-104 Duane Street	Manhattan
...
214	Engine 162/Ladder 82/Battalion 23	256 Nelson Avenue	Staten Island
215	Engine 167/Ladder 87	345 Annadale Road	Staten Island
216	Engine 164/Ladder 84	1560 Drummgoole Road West	Staten Island
217	Engine 168/EMS Station 23	1100 Rossville Avenue	Staten Island
218	Engine 151/Ladder 76	7219 Amboy Road	Staten Island

219 rows × 3 columns

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

Out[5]:

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

```
In [13]: #Skip the duplicate header row
fire_department.drop(0,inplace=True)
```

```
In [14]: #Verify if the dataset is fixed
fire_department.head()
```

Out[14]:

	FacilityName	FacilityAddress	Borough
1	Engine 4/Ladder 15	42 South Street	Manhattan
2	Engine 10/Ladder 10	124 Liberty Street	Manhattan
3	Engine 6	49 Beekman Street	Manhattan
4	Engine 7/Ladder 1/Battalion 1/Manhattan Borough...	100-104 Duane Street	Manhattan
5	Ladder 8	14 North Moore Street	Manhattan

```
In [15]: #View the data statistics (Hint: use describe() method)
fire_department.describe()
```

Out[15]:

	FacilityName	FacilityAddress	Borough
count	218	218	218
unique	218	218	5
top	Engine 287/Ladder 136/Battalion 46	126 Foster Avenue	Brooklyn
freq	1	1	66

```
In [16]: #View the attributes of the dataset (Hint: view the column names)
fire_department.columns
```

Out[16]: Index(['FacilityName', 'FacilityAddress', 'Borough'], dtype='object')

```
In [19]: #View the index of the dataset
fire_department.values
```

Out[19]: array([['Engine 4/Ladder 15', '42 South Street', 'Manhattan'],
['Engine 10/Ladder 10', '124 Liberty Street', 'Manhattan'],
['Engine 6', '49 Beekman Street', 'Manhattan'],
['Engine 7/Ladder 1/Battalion 1/Manhattan Borough Command',
'100-104 Duane Street', 'Manhattan'],
['Ladder 8', '14 North Moore Street', 'Manhattan'],
['Engine 9/Ladder 6', '75 Canal Street', 'Manhattan'],
['Engine 15/Ladder 18/Battalion 4', '25 Pitt Street', 'Manhattan'],
['Engine 28/Ladder 11', '222 East 2nd Street', 'Manhattan'],
['Engine 5', '340 East 14th Street', 'Manhattan'],
['Engine 55', '363 Broome Street', 'Manhattan'],
['Ladder 20/Division 1', '253 Lafayette Street', 'Manhattan'],
['Engine 24/Ladder 5/Battalion 2', '227-29 6th Avenue',
'Manhattan'],
['Engine 33/Ladder 9', '42 Great Jones Street', 'Manhattan'],
['Ladder 3/Battalion 6', '108 East 13th Street', 'Manhattan'],
['Squad 18', '132 West 10th Street', 'Manhattan'],
['Engine 34/Ladder 21', '440 West 38th Street', 'Manhattan'],
['Engine 26', '220 West 37th Street', 'Manhattan'],
['Engine 3/Ladder 12/Battalion 7', '150 West 19th Street',
'Manhattan'],
['Engine 1/Ladder 24', '142-46 West 31st Street', 'Manhattan'],
['Engine 14', '14 East 18th Street', 'Manhattan'],
['Engine 16 / Ladder 7', '234 East 29th Street', 'Manhattan'],
['Engine 21', '425 East 40th Street', 'Manhattan'],
['Engine 54/Ladder 4/Battalion 9', '782 8th Avenue', 'Manhattan'],
['Engine 23', '215 West 58th Street', 'Manhattan'],
['Rescue 1', '530 West 43rd Street', 'Manhattan'],
['Engine 40/Ladder 35', '131 Amsterdam Avenue', 'Manhattan'],
['Ladder 25/District Office 4/Division 3',
'205-207 West 77th Street', 'Manhattan'],
['Engine 39', '120 West 83rd Street', 'Manhattan'],
['Engine 65', '333 West 43rd Street', 'Manhattan'],
['Engine 8 / Ladder 2 / Battalion 8', '167 East 51st Street',
'Manhattan'],
['Engine 39/Ladder 16', '157-59 East 67th Street', 'Manhattan'],
['Engine 44', '221 East 75th Street', 'Manhattan'],
['Engine 22/Ladder 13/Battalion 10', '159 East 85th Street',
'Manhattan'],
['Engine 59/Ladder 26', '1367 5th Avenue', 'Manhattan'],
['Engine 53/Ladder 43', '1836-46 3rd Avenue', 'Manhattan'],
['Engine 91', '242 East 11th Street', 'Manhattan'],
['Engine 35/Ladder 14', '2282 3rd Avenue', 'Manhattan'],
['Engine 76/Ladder 22/Battalion 11', '145-51 West 100th Street',
'Manhattan'],
['Engine 47', '502 West 113th Street', 'Manhattan'],
['Engine 59/Ladder 30', '122 West 133rd Street', 'Manhattan'],
['Engine 37/Ladder 40', '415 West 125th Street', 'Manhattan'],
['Engine 69/Ladder 28/Battalion 16', '248 West 143rd Street',
'Manhattan'],
['Engine 80/Ladder 23', '503 West 139th Street', 'Manhattan'],
['Engine 84/Ladder 34', '513 West 161st Street', 'Manhattan'],
['Engine 67', '518 West 170th Street', 'Manhattan'],
['Engine 33/Ladder 45/Battalion 13', '515 West 181st Street',
'Manhattan'],
['Engine 95/Ladder 36', '29 Vermilyea Avenue', 'Manhattan'],
['Marine 1', 'Little West 12th Street/Hudson River', 'Manhattan'],
['Engine 60/Ladder 17/Battalion 14', '341 East 143rd Street',
'Bronx'],
['Squad 41', '330 East 150th Street', 'Bronx'],
['Engine 71/Ladder 50', '720 Melrose Avenue', 'Bronx'],
['Engine 58/Ladder 20', '1155 Washington Avenue', 'Bronx'],
['Engine 92/Ladder 44/Battalion 17', '1259 Morris Avenue',
'Bronx'],
['EMS Station 17', '1080 Ogden Avenue', 'Bronx'],
['Engine 68/Ladder 49', '1160 Ogden Avenue', 'Bronx'],
['EMS Station 26', '1264 Boston Road', 'Bronx'],
['Engine 73/Ladder 42/Battalion 6', '655 Prospect Avenue',
'Bronx'],
['Engine 94/Ladder 48/Battalion 3', '1226 Seneca Avenue', 'Bronx'],
['Engine 42', '1781 Monroe Avenue', 'Bronx'],
['Engine 43/Ladder 59', '1901 Sedgwick Avenue', 'Bronx'],
['Rescue 3', '1655 Washington Avenue', 'Bronx'],
['Engine 46, Ladder 27', '460 Cross Bronx Expressway', 'Bronx'],
['Bronx Borough Command, District Office 6 & 7',
'451 East 176th Street', 'Bronx'],
['Engine 82/Ladder 31', '1213 Intervale Avenue', 'Bronx'],
['Engine 48/Ladder 56/Division 7', '2417 Webster Avenue', 'Bronx'],
['Engine 88/Ladder 38', '2225 Belmont Avenue', 'Bronx'],
['Engine 45/Ladder 58/Battalion 18', '925 East Tremont Avenue',
'Bronx'],
['Engine 75/Ladder 33/Battalion 19', '2175 Walton Avenue',
'Bronx'],
['Engine 81/Ladder 46', '3025 Bailey Avenue', 'Bronx'],
['Engine 79/Ladder 37/Battalion 27', '2328 Briggs Avenue',
'Bronx'],
['Engine 96/Ladder 54', '1689 Story Avenue', 'Bronx'],
['Engine 64/Ladder 47/District Office 7',
'1214 Castle Hill Avenue', 'Bronx'],
['Engine 30/Ladder 41', '1843 White Plains Road', 'Bronx'],
['Squad 61/Battalion 42', '1518 Williamsbridge Road', 'Bronx'],
['Engine 97', '1454 Astor Avenue', 'Bronx'],
['Engine 62/Ladder 32', '3431 White Plains Road', 'Bronx'],
['Engine 38/Ladder 51', '3446 Eastchester Road', 'Bronx'],
['Engine 63/Ladder 39/Battalion 15', '755 East 233rd Street',
'Bronx'],
['Engine 66/Ladder 61', '21 Asch Loop West', 'Bronx'],
['Engine 89/Ladder 50', '2924 Bruckner Boulevard', 'Bronx'],
['Engine 72', '3929 East Tremont Avenue', 'Bronx'],
['Engine 70/Ladder 53', '169 Schofield Street', 'Bronx'],
['Engine 207/Ladder 110/Battalion 31/Division 11/Brooklyn Borough Command',
'172 Tillary Street', 'Brooklyn'],
['Engine 226', '409 State Street', 'Brooklyn'],
['Engine 205/Ladder 118', '74 Middagh Street', 'Brooklyn'],
['Engine 24', '274 Hicks Street', 'Brooklyn'],
['Engine 275/Ladder 131', '232 Lorraine Street', 'Brooklyn'],
['Engine 202/Ladder 101/Battalion 32', '31 Richards Street',
'Brooklyn'],
['Engine 228', '436 39th Street', 'Brooklyn'],
['Engine 201/Ladder 114/Battalion 40', '5113-5117 4th Avenue',
'Brooklyn'],
['Squad 1', '788 Union Street', 'Brooklyn'],
['Engine 239', '395 4th Avenue', 'Brooklyn'],
['Engine 220/Ladder 122', '530-532 11th Street', 'Brooklyn'],
['Ladder 105', '494 Dean Street', 'Brooklyn'],
['Engine 280/Ladder 132', '489-91 Saint John's Place', 'Brooklyn'],
['Rescue 2', '1472 Bergen Street', 'Brooklyn'],
['Engine 234/Ladder 123/Battalion 38', '1352 Saint John's Place',
'Brooklyn'],
['Engine 238/Ladder 16', '423-25 Ralph Avenue', 'Brooklyn'],
['Engine 233/Ladder 176', '25 Rockaway Avenue', 'Brooklyn'],
['Engine 217', '940 Dekalb Avenue', 'Brooklyn'],
['Engine 222/Battalion 37', '32 Ralph Avenue', 'Brooklyn'],
['Engine 214/Ladder 111', '495 Hancock Street', 'Brooklyn'],
['Engine 230', '701 Park Avenue', 'Brooklyn'],
['Engine 235/Battalion 57', '206 Monroe Street', 'Brooklyn'],
['Ladder 102', '625-56 Bedford Avenue', 'Brooklyn'],
['Marine 6', 'Building 292 Brooklyn Navy Yard', 'Brooklyn'],
['Engine 210', '160 Carlton Avenue', 'Brooklyn'],
['Engine 211/Ladder 119', '26 Hooper Street', 'Brooklyn'],
['Engine 221/Ladder 104', '161 South 2nd Street', 'Brooklyn'],
['Engine 216/Ladder 108/Battalion 35', '181 Union Avenue',
'Brooklyn'],
['Engine 236/Ladder 106', '205 Greenpoint Avenue', 'Brooklyn'],
['Engine 229/Ladder 146', '75-77 Richardson Street', 'Brooklyn'],
['Engine 206', '1201 Grand Street', 'Brooklyn'],
['Engine 237', '43 Morgan Avenue', 'Brooklyn'],
['Engine 218', '650 Hart Street', 'Brooklyn'],
['Engine 271/Ladder 124/Battalion 28', '392 Himrod Street',
'Brooklyn'],
['Engine 277/Ladder 112', '582 Knickerbocker Avenue', 'Brooklyn'],
['Squad 252', '625 Central Avenue', 'Brooklyn'],
['Engine 231/Ladder 120/Battalion 44', '107 Watkins Street',
'Brooklyn'],
['Engine 283/Division 15', '885 Howard Avenue', 'Brooklyn'],
['Engine 332/Ladder 175', '165 Bradford Street', 'Brooklyn'],
['Engine 290/Ladder 103', '480 Sheffield Avenue', 'Brooklyn'],
['Engine 236', '998 Liberty Avenue', 'Brooklyn'],
['Engine 225/Ladder 107/Battalion 39', '799 Lincoln Avenue',
'Brooklyn'],
['Engine 310/Ladder 174/Battalion 58', '5105 Snyder Avenue',
'Brooklyn'],
['Engine 249/Ladder 113', '491 Rogers Avenue', 'Brooklyn'],
['Engine 248', '2900 Snyder Avenue', 'Brooklyn'],
['Engine 281/Ladder 147', '1210 Cortelyou Road', 'Brooklyn'],
['Engine 253/Ladder 157', '1367 Rogers Avenue', 'Brooklyn'],
['Engine 240/Battalion 48', '1307 Prospect Avenue', 'Brooklyn'],
['Engine 282/Ladder 148', '4210-12 12th Avenue', 'Brooklyn'],
['Engine 247', '1336 60th Street', 'Brooklyn'],
['Engine 241/Ladder 109', '6630 3rd Avenue', 'Brooklyn'],
['Engine 242', '9219 5th Avenue', 'Brooklyn'],
['Engine 284/Ladder 149', '1157 79th Street', 'Brooklyn'],
['Engine 243/Ladder 168/Battalion 42', '8653 18th Avenue',
'Brooklyn'],
['Engine 250', '126 Foster Avenue', 'Brooklyn'],
['Engine 330/Ladder 172', '2312 65th Street', 'Brooklyn'],
['Engine 276/Ladder 156/Battalion 33', '1635 East 14th Street',
'Brooklyn'],
['Engine 253', '2429 86th Street', 'Brooklyn'],
['Engine 318/Ladder 166', '2510-14 Heptune Avenue', 'Brooklyn'],
['Engine 252', '1215 65th Street', 'Brooklyn'],
['Engine 245/Ladder 161/Battalion 43', '2929 West 8th Street',
'Brooklyn'],
['Engine 257/Ladder 170', '1361 Rockaway Parkway', 'Brooklyn'],
['Engine 323', '6405 Avenue N', 'Brooklyn'],
['Engine 309/Ladder 159', '1851 East 41th Street', 'Brooklyn'],
['Engine 246/Ladder 169', '2732 East 1th Street', 'Brooklyn'],
['Engine 321', '1215 Gerritsen Avenue', 'Brooklyn'],
['Engine 258/Ladder 115', '10-40 47th Avenue', 'Queens'],
['Engine 325/Ladder 163', '41-24 51st Street', 'Queens'],
['Engine 259/Ladder 128/Battalion 45', '33-51 Greenpoint Avenue',
'Queens'],
['Engine 260', '11-15 37th Avenue', 'Queens'],
['Engine 261/Ladder 116', '3720-22 29th Street', 'Queens'],
['Engine 262', '30-89 21st Street', 'Queens'],
['Engine 263/Ladder 117/Battalion 49', '42-06 Astoria Boulevard',
'Queens'],
['Engine 312', '22-63 35th Street', 'Queens'],
['Engine 307/Ladder 154', '81-17 North Boulevard', 'Queens'],
['Engine 289/Ladder 138', '97-28 43rd Avenue', 'Queens'],
['Engine 316', '27-12 Kearney Street', 'Queens'],
['Engine 324/Division 14', '108-01 Horace Harding Blvd.',
'Queens'],
['Eng 292/Rescue 4', '64-18 Queens Boulevard', 'Queens'],
['Squad 288/Hazmat 1', '56-29 68th Street', 'Queens'],
['Engine 287/Ladder 136/Battalion 46', '86-53 Grand Avenue',
'Queens'],
['Engine 291/Ladder 140', '56-07 Metropolitan Avenue', 'Queens'],
['Engine 305/Ladder 151', '111-02 Queens Boulevard', 'Queens'],
['Engine 286/Ladder 135', '46-84 Myrtle Avenue', 'Queens'],
['Engine 319', '78-11 67th Road', 'Queens'],
['Engine 297/Ladder 130', '119-11 14th Road', 'Queens'],
['Engine 295/Ladder 144', '12-49 149th Street', 'Queens'],
['Engine 273/Ladder 129', '40-18 Union Street', 'Queens'],
['Engine 274/Battalion 52', '41-20 Murray Street', 'Queens'],
['Engine 320/Ladder 167', '36-18 Francis Lewis Boulevard',
'Queens'],
['Engine 306/Battalion 53', '40-18 214th Place', 'Queens'],
['Engine 315/Ladder 125', '159-06 Union Turnpike', 'Queens'],
['Engine 299/Ladder 152', '61-20 Utopia Parkway', 'Queens'],
['Engine 326/Ladder 160', '64-04 Springfield Boulevard', 'Queens'],
['Engine 313/Ladder 164', '44-01 244th Street', 'Queens'],
['Engine 251', '254-20 Union Turnpike', 'Queens'],
['Engine 293', '89-40 87th Street', 'Queens'],
['Engine 254/Battalion 142', '103-17 98th Street', 'Queens'],
['Ladder 143', '101-02 Jamaica Avenue', 'Queens'],
['Squad 270/Division 13', '91-45 121st Street', 'Queens'],
['Engine 308/Battalion 51', '107-12 Lefferts Boulevard', 'Queens'],
['Engine 298/Ladder 127/Battalion 50', '113-11 Hillside Avenue',
'Queens'],
['Engine 303/Ladder 126', '104-12 Princeton Street', 'Queens'],
['Engine 275', '63-66 Merrick Boulevard', 'Queens'],
['Engine 301/Ladder 150', '91-04 197th Street', 'Queens'],
['Engine 304/Ladder 162', '218-44 97th Avenue', 'Queens'],
['Engine 302/Ladder 155', '143-15 Rockaway Boulevard', 'Queens'],
['Engine 317/Ladder 165/Battalion 54', '117-11 196th Street',
'Queens'],
['Engine 311/Ladder 158', '145-50 Springfield Boulevard',
'Queens'],
['Engine 314', '142-04 Brookville Boulevard', 'Queens'],
['Engine 331/Ladder 173', '158-57 Cross Bay Boulevard', 'Queens'],
['Engine 264/Engine 328/Ladder 134', '16-15 Central Avenue',
'Queens'],
['Engine 265/Ladder 121/Battalion 47 EMS Station 47',
'48-06 Rockaway Beach Boulevard', 'Queens'],
['Engine 266/Battalion 47', '92-20 Rockaway Beach Boulevard',
'Queens'],
['Engine 268/Ladder 137', '257 Beach 116th Street', 'Queens'],
['Engine 329', '402 Beach 169th Street', 'Queens'],
['Marine 9', 'Saint George Ferry Terminal', 'Staten Island'],
['Engine 155/Ladder 78', '14 Brighton Avenue', 'Staten Island'],
['Ladder 79/Battalion 22', '1189 Castleton Avenue',
'Staten Island'],
['Staten Island'],
['Engine 163/Ladder 83', '875 Jewett Avenue', 'Staten Island'],
['Engine 153/Ladder 77', '74 Broad Street', 'Staten Island'],
['Engine 165/Ladder 85', '3067 Richmond Road', 'Staten Island'],
['Engine 157/Ladder 80', '1573 Castleton Avenue', 'Staten Island'],
['Engine 158', '65 Harbor Road', 'Staten Island'],
['Engine 166/Ladder 86', '1400 Richmond Avenue', 'Staten Island'],
['Engine 154/District Office 8/ Staten Island Borough Command',
'3730 Victory Boulevard', 'Staten Island'],
['Engine 152/Battalion 21', '256 Hylan Boulevard',
'Staten Island'],
['Engine 161/Ladder 81', '278 Mc Clean Avenue', 'Staten Island'],
['Engine 160/Rescue 5/Division 8', '1850 Clove Road',
'Staten Island'],
['Engine 162', '1592 Richmond Road', 'Staten Island'],
['Engine 162/Ladder 82/Battalion 23', '256 Nelson Avenue',
'Staten Island'],
['Engine 167/Ladder 87', '345 Annadale Road', 'Staten Island'],
['Engine 164/Ladder 84', '1560 Drummgoole Road West',
'Staten Island'],
['Engine 168/EMS Station 23', '1100 Rossville Avenue',
'Staten Island'],
['Engine 151/Ladder 76', '7219 Amboy Road', 'Staten Island']]],
dtype=object)

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

```
In [31]: #Count number of records for each attribute
fire_department.Borough.count()
```

Out[31]: 218

```
In [34]: #View the datatypes of all three attributes
fire_department.info()
```

```
<class 'pandas.core.frame.DataFrame'>
Int64Index: 218 entries, 1 to 218
Data columns (total 3 columns):
FacilityName      218 non-null object
FacilityAddress   218 non-null object
Borough           218 non-null object
dtypes: object(3)
memory usage: 6.8+ KB
```

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

```
In [36]: #Select FDNY information boroughwise
fire_department.Borough.value_counts()
```

Out[36]: Brooklyn 66
Queens 50
Manhattan 48
Bronx 34
Staten Island 20
Name: Borough, dtype: int64

```
In [72]: #View FDNY information for each borough
fire_department.groupby('Borough').head()
```

Out[72]:

	FacilityName	FacilityAddress	Borough
1	Engine 4/Ladder 15	42 South Street	Manhattan
2	Engine 10/Ladder 10	124 Liberty Street	Manhattan
3	Engine 6	49 Beekman Street	Manhattan
4	Engine 7/Ladder 1/Battalion 1/Manhattan Borough...	100-104 Duane Street	Manhattan
5	Ladder 8	14 North Moore Street	Manhattan
49	Engine 60/Ladder 17/Battalion 14	341 East 143rd Street	Bronx
50	Squad 41	330 East 150th Street	Bronx
51	Engine 71/Ladder 55/Division 6	720 Melrose Avenue	Bronx
52	Engine 50/Ladder 19	1155 Washington Avenue	Bronx
53	Engine 92/Ladder 44/Battalion 17	1259 Morris Avenue	Bronx
83	Engine 207/Ladder 110/Battalion 31/Division 11...	172 Tillary Street	Brooklyn
84	Engine 226	409 State Street	Brooklyn
85	Engine 205/Ladder 118	74 Middagh Street	Brooklyn
86	Engine 224	274 Hicks Street	Brooklyn
87	Engine 279/Ladder 131	252 Lorraine Street	Brooklyn
149	Engine 258/Ladder 115	10-40 47th Avenue	Queens
150	Engine 325/Ladder 163	41-24 51st Street	Queens
151	Engine 259/Ladder 128/Battalion 45	33-51 Greenpoint Avenue	Queens
152	Engine 260	11-15 37th Avenue	Queens
153	Engine 261/Ladder 116	3720-22 29th Street	Queens
199	Marine 9	Saint George Ferry Terminal	Staten Island
200	Engine 155/Ladder 78	14 Brighton Avenue	Staten Island
201	Ladder 79/Battalion 22	1189 Castleton Avenue	Staten Island
202	Engine 156	412 Broadway	Staten Island
203	Engine 163/Ladder 83	875 Jewett Avenue	Staten Island

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

```
In [46]: #Select FDNY information for Manhattan
manhattan=fire_department.groupby('Borough')
```

```
In [47]: #View FDNY information for Manhattan
manhattan.get_group('Manhattan')
```

```
In [ ]:
```