

Untitled2

August 26, 2020

[]:

1 PART 1

Imporpyting required libraries

```
[28]: import pandas as pd
import numpy as np
import requests
```

Installing required libraries for retriving and processing data from web

```
[29]: !pip install beautifulsoup4
from bs4 import BeautifulSoup
!pip install lxml
```

```
Requirement already satisfied: beautifulsoup4 in
/home/jupyterlab/conda/envs/python/lib/python3.6/site-packages (4.9.1)
Requirement already satisfied: soupsieve>1.2 in
/home/jupyterlab/conda/envs/python/lib/python3.6/site-packages (from
beautifulsoup4) (2.0.1)
Requirement already satisfied: lxml in
/home/jupyterlab/conda/envs/python/lib/python3.6/site-packages (4.5.2)
```

```
[30]: import numpy as np
import pandas
import seaborn # library to handle data in a vectorized manner
import pandas as pd # library for data analysis
pd.set_option('display.max_columns', None)
pd.set_option('display.max_rows', None)

import json # library to handle JSON files

!conda install -c conda-forge geopy --yes # uncomment this line if you haven't
↳ completed the Foursquare API lab
from geopy.geocoders import Nominatim # convert an address into latitude and
↳ longitude values
```

```

import requests # library to handle requests
from pandas.io.json import json_normalize # tranform JSON file into a pandas
↳dataframe

# Matplotlib and associated plotting modules
import matplotlib.cm as cm
import matplotlib.colors as colors

# import k-means from clustering stage
from sklearn.cluster import KMeans

#!conda install -c conda-forge folium=0.5.0 --yes # uncomment this line if you
↳haven't completed the Foursquare API lab
import folium # map rendering library

print('Libraries imported.')

```

Collecting package metadata (current_repodata.json): done
Solving environment: done

```

==> WARNING: A newer version of conda exists. <==
  current version: 4.8.3
  latest version: 4.8.4

```

Please update conda by running

```
$ conda update -n base -c defaults conda
```

All requested packages already installed.

Libraries imported.

```

[31]: wiki = 'https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_M'
wiki_page = requests.get(wiki)

wiki_raw = pd.read_html(wiki_page.content, header = 0)[0]
df = wiki_raw[wiki_raw.District != 'Not assigned']
df.reset_index(inplace = True)
df.head()

```

```

[31]:   index Postal Code      District \
0      2      M3A      North York
1      3      M4A      North York

```

2	4	M5A	Downtown Toronto
3	5	M6A	North York
4	6	M7A	Downtown Toronto

			Neighbourhood
0			Parkwoods
1			Victoria Village
2			Regent Park, Harbourfront
3			Lawrence Manor, Lawrence Heights
4			Queen's Park, Ontario Provincial Government

```
[32]: df.groupby(['Postal Code']).first()
```

```
[32]:
```

	index	District \
Postal Code		
M1B	9	Scarborough
M1C	18	Scarborough
M1E	27	Scarborough
M1G	36	Scarborough
M1H	45	Scarborough
M1J	54	Scarborough
M1K	63	Scarborough
M1L	72	Scarborough
M1M	81	Scarborough
M1N	90	Scarborough
M1P	99	Scarborough
M1R	108	Scarborough
M1S	117	Scarborough
M1T	126	Scarborough
M1V	135	Scarborough
M1W	144	Scarborough
M1X	153	Scarborough
M2H	46	North York
M2J	55	North York
M2K	64	North York
M2L	73	North York
M2M	82	North York
M2N	91	North York
M2P	100	North York
M2R	109	North York
M3A	2	North York
M3B	11	North York
M3C	20	North York
M3H	47	North York
M3J	56	North York
M3K	65	North York
M3L	74	North York

M3M	83	North York
M3N	92	North York
M4A	3	North York
M4B	12	East York
M4C	21	East York
M4E	30	East Toronto
M4G	39	East York
M4H	48	East York
M4J	57	East York
M4K	66	East Toronto
M4L	75	East Toronto
M4M	84	East Toronto
M4N	93	Central Toronto
M4P	102	Central Toronto
M4R	111	Central Toronto
M4S	120	Central Toronto
M4T	129	Central Toronto
M4V	138	Central Toronto
M4W	147	Downtown Toronto
M4X	156	Downtown Toronto
M4Y	165	Downtown Toronto
M5A	4	Downtown Toronto
M5B	13	Downtown Toronto
M5C	22	Downtown Toronto
M5E	31	Downtown Toronto
M5G	40	Downtown Toronto
M5H	49	Downtown Toronto
M5J	58	Downtown Toronto
M5K	67	Downtown Toronto
M5L	76	Downtown Toronto
M5M	85	North York
M5N	94	Central Toronto
M5P	103	Central Toronto
M5R	112	Central Toronto
M5S	121	Downtown Toronto
M5T	130	Downtown Toronto
M5V	139	Downtown Toronto
M5W	148	Downtown Toronto
M5X	157	Downtown Toronto
M6A	5	North York
M6B	14	North York
M6C	23	York
M6E	32	York
M6G	41	Downtown Toronto
M6H	50	West Toronto
M6J	59	West Toronto
M6K	68	West Toronto

M6L	77	North York
M6M	86	York
M6N	95	York
M6P	104	West Toronto
M6R	113	West Toronto
M6S	122	West Toronto
M7A	6	Downtown Toronto
M7R	114	Mississauga
M7Y	168	East Toronto
M8V	142	Etobicoke
M8W	151	Etobicoke
M8X	160	Etobicoke
M8Y	169	Etobicoke
M8Z	178	Etobicoke
M9A	8	Etobicoke
M9B	17	Etobicoke
M9C	26	Etobicoke
M9L	80	North York
M9M	89	North York
M9N	98	York
M9P	107	Etobicoke
M9R	116	Etobicoke
M9V	143	Etobicoke
M9W	152	Etobicoke

Neighbourhood

Postal Code

M1B	Malvern, Rouge
M1C	Rouge Hill, Port Union, Highland Creek
M1E	Guildwood, Morningside, West Hill
M1G	Woburn
M1H	Cedarbrae
M1J	Scarborough Village
M1K	Kennedy Park, Ionview, East Birchmount Park
M1L	Golden Mile, Clairlea, Oakridge
M1M	Cliffside, Cliffcrest, Scarborough Village West
M1N	Birch Cliff, Cliffside West
M1P	Dorset Park, Wexford Heights, Scarborough Town...
M1R	Wexford, Maryvale
M1S	Agincourt
M1T	Clarks Corners, Tam O'Shanter, Sullivan
M1V	Milliken, Agincourt North, Steeles East, L'Amo...
M1W	Steeles West, L'Amoreaux West
M1X	Upper Rouge
M2H	Hillcrest Village
M2J	Fairview, Henry Farm, Oriole
M2K	Bayview Village

M2L	York Mills, Silver Hills
M2M	Willowdale, Newtonbrook
M2N	Willowdale, Willowdale East
M2P	York Mills West
M2R	Willowdale, Willowdale West
M3A	Parkwoods
M3B	Don Mills
M3C	Don Mills
M3H	Bathurst Manor, Wilson Heights, Downsview North
M3J	Northwood Park, York University
M3K	Downsview
M3L	Downsview
M3M	Downsview
M3N	Downsview
M4A	Victoria Village
M4B	Parkview Hill, Woodbine Gardens
M4C	Woodbine Heights
M4E	The Beaches
M4G	Leaside
M4H	Thorncliffe Park
M4J	East Toronto, Broadview North (Old East York)
M4K	The Danforth West, Riverdale
M4L	India Bazaar, The Beaches West
M4M	Studio District
M4N	Lawrence Park
M4P	Davisville North
M4R	North Toronto West, Lawrence Park
M4S	Davisville
M4T	Moore Park, Summerhill East
M4V	Summerhill West, Rathnelly, South Hill, Forest...
M4W	Rosedale
M4X	St. James Town, Cabbagetown
M4Y	Church and Wellesley
M5A	Regent Park, Harbourfront
M5B	Garden District, Ryerson
M5C	St. James Town
M5E	Berczy Park
M5G	Central Bay Street
M5H	Richmond, Adelaide, King
M5J	Harbourfront East, Union Station, Toronto Islands
M5K	Toronto Dominion Centre, Design Exchange
M5L	Commerce Court, Victoria Hotel
M5M	Bedford Park, Lawrence Manor East
M5N	Roselawn
M5P	Forest Hill North & West, Forest Hill Road Park
M5R	The Annex, North Midtown, Yorkville
M5S	University of Toronto, Harbord

M5T	Kensington Market, Chinatown, Grange Park
M5V	CN Tower, King and Spadina, Railway Lands, Har...
M5W	Stn A PO Boxes
M5X	First Canadian Place, Underground city
M6A	Lawrence Manor, Lawrence Heights
M6B	Glencairn
M6C	Humewood-Cedarvale
M6E	Caledonia-Fairbanks
M6G	Christie
M6H	Dufferin, Dovercourt Village
M6J	Little Portugal, Trinity
M6K	Brockton, Parkdale Village, Exhibition Place
M6L	North Park, Maple Leaf Park, Upwood Park
M6M	Del Ray, Mount Dennis, Keelsdale and Silverthorn
M6N	Runnymede, The Junction North
M6P	High Park, The Junction South
M6R	Parkdale, Roncesvalles
M6S	Runnymede, Swansea
M7A	Queen's Park, Ontario Provincial Government
M7R	Canada Post Gateway Processing Centre
M7Y	Business reply mail Processing Centre, South C...
M8V	New Toronto, Mimico South, Humber Bay Shores
M8W	Alderwood, Long Branch
M8X	The Kingsway, Montgomery Road, Old Mill North
M8Y	Old Mill South, King's Mill Park, Sunnylea, Hu...
M8Z	Mimico NW, The Queensway West, South of Bloor,...
M9A	Islington Avenue, Humber Valley Village
M9B	West Deane Park, Princess Gardens, Martin Grov...
M9C	Eringate, Bloordale Gardens, Old Burnhamthorpe...
M9L	Humber Summit
M9M	Humberlea, Emery
M9N	Weston
M9P	Westmount
M9R	Kingsview Village, St. Phillips, Martin Grove ...
M9V	South Steeles, Silverstone, Humbergate, Jamest...
M9W	Northwest, West Humber - Clairville

```
[33]: len(df['Postal Code'].unique())
```

```
[33]: 103
```

removing coloumns which contains “Not assigned”

```
[34]: df[df.District!= 'Not assigned']
```

```
[34]:
```

	index	Postal Code	District \
0	2	M3A	North York

1	3	M4A	North York
2	4	M5A	Downtown Toronto
3	5	M6A	North York
4	6	M7A	Downtown Toronto
5	8	M9A	Etobicoke
6	9	M1B	Scarborough
7	11	M3B	North York
8	12	M4B	East York
9	13	M5B	Downtown Toronto
10	14	M6B	North York
11	17	M9B	Etobicoke
12	18	M1C	Scarborough
13	20	M3C	North York
14	21	M4C	East York
15	22	M5C	Downtown Toronto
16	23	M6C	York
17	26	M9C	Etobicoke
18	27	M1E	Scarborough
19	30	M4E	East Toronto
20	31	M5E	Downtown Toronto
21	32	M6E	York
22	36	M1G	Scarborough
23	39	M4G	East York
24	40	M5G	Downtown Toronto
25	41	M6G	Downtown Toronto
26	45	M1H	Scarborough
27	46	M2H	North York
28	47	M3H	North York
29	48	M4H	East York
30	49	M5H	Downtown Toronto
31	50	M6H	West Toronto
32	54	M1J	Scarborough
33	55	M2J	North York
34	56	M3J	North York
35	57	M4J	East York
36	58	M5J	Downtown Toronto
37	59	M6J	West Toronto
38	63	M1K	Scarborough
39	64	M2K	North York
40	65	M3K	North York
41	66	M4K	East Toronto
42	67	M5K	Downtown Toronto
43	68	M6K	West Toronto
44	72	M1L	Scarborough
45	73	M2L	North York
46	74	M3L	North York
47	75	M4L	East Toronto

48	76	M5L	Downtown Toronto
49	77	M6L	North York
50	80	M9L	North York
51	81	M1M	Scarborough
52	82	M2M	North York
53	83	M3M	North York
54	84	M4M	East Toronto
55	85	M5M	North York
56	86	M6M	York
57	89	M9M	North York
58	90	M1N	Scarborough
59	91	M2N	North York
60	92	M3N	North York
61	93	M4N	Central Toronto
62	94	M5N	Central Toronto
63	95	M6N	York
64	98	M9N	York
65	99	M1P	Scarborough
66	100	M2P	North York
67	102	M4P	Central Toronto
68	103	M5P	Central Toronto
69	104	M6P	West Toronto
70	107	M9P	Etobicoke
71	108	M1R	Scarborough
72	109	M2R	North York
73	111	M4R	Central Toronto
74	112	M5R	Central Toronto
75	113	M6R	West Toronto
76	114	M7R	Mississauga
77	116	M9R	Etobicoke
78	117	M1S	Scarborough
79	120	M4S	Central Toronto
80	121	M5S	Downtown Toronto
81	122	M6S	West Toronto
82	126	M1T	Scarborough
83	129	M4T	Central Toronto
84	130	M5T	Downtown Toronto
85	135	M1V	Scarborough
86	138	M4V	Central Toronto
87	139	M5V	Downtown Toronto
88	142	M8V	Etobicoke
89	143	M9V	Etobicoke
90	144	M1W	Scarborough
91	147	M4W	Downtown Toronto
92	148	M5W	Downtown Toronto
93	151	M8W	Etobicoke
94	152	M9W	Etobicoke

95	153	M1X	Scarborough
96	156	M4X	Downtown Toronto
97	157	M5X	Downtown Toronto
98	160	M8X	Etobicoke
99	165	M4Y	Downtown Toronto
100	168	M7Y	East Toronto
101	169	M8Y	Etobicoke
102	178	M8Z	Etobicoke

			Neighbourhood
0			Parkwoods
1			Victoria Village
2			Regent Park, Harbourfront
3			Lawrence Manor, Lawrence Heights
4			Queen's Park, Ontario Provincial Government
5			Islington Avenue, Humber Valley Village
6			Malvern, Rouge
7			Don Mills
8			Parkview Hill, Woodbine Gardens
9			Garden District, Ryerson
10			Glencairn
11			West Deane Park, Princess Gardens, Martin Grov...
12			Rouge Hill, Port Union, Highland Creek
13			Don Mills
14			Woodbine Heights
15			St. James Town
16			Humewood-Cedarvale
17			Eringate, Bloordale Gardens, Old Burnhamthorpe...
18			Guildwood, Morningside, West Hill
19			The Beaches
20			Berczy Park
21			Caledonia-Fairbanks
22			Woburn
23			Leaside
24			Central Bay Street
25			Christie
26			Cedarbrae
27			Hillcrest Village
28			Bathurst Manor, Wilson Heights, Downsview North
29			Thorncliffe Park
30			Richmond, Adelaide, King
31			Dufferin, Dovercourt Village
32			Scarborough Village
33			Fairview, Henry Farm, Oriole
34			Northwood Park, York University
35			East Toronto, Broadview North (Old East York)
36			Harbourfront East, Union Station, Toronto Islands

37 Little Portugal, Trinity
 38 Kennedy Park, Ionview, East Birchmount Park
 39 Bayview Village
 40 Downsview
 41 The Danforth West, Riverdale
 42 Toronto Dominion Centre, Design Exchange
 43 Brockton, Parkdale Village, Exhibition Place
 44 Golden Mile, Clairlea, Oakridge
 45 York Mills, Silver Hills
 46 Downsview
 47 India Bazaar, The Beaches West
 48 Commerce Court, Victoria Hotel
 49 North Park, Maple Leaf Park, Upwood Park
 50 Humber Summit
 51 Cliffside, Cliffcrest, Scarborough Village West
 52 Willowdale, Newtonbrook
 53 Downsview
 54 Studio District
 55 Bedford Park, Lawrence Manor East
 56 Del Ray, Mount Dennis, Keelsdale and Silverthorn
 57 Humberlea, Emery
 58 Birch Cliff, Cliffside West
 59 Willowdale, Willowdale East
 60 Downsview
 61 Lawrence Park
 62 Roselawn
 63 Runnymede, The Junction North
 64 Weston
 65 Dorset Park, Wexford Heights, Scarborough Town...
 66 York Mills West
 67 Davisville North
 68 Forest Hill North & West, Forest Hill Road Park
 69 High Park, The Junction South
 70 Westmount
 71 Wexford, Maryvale
 72 Willowdale, Willowdale West
 73 North Toronto West, Lawrence Park
 74 The Annex, North Midtown, Yorkville
 75 Parkdale, Roncesvalles
 76 Canada Post Gateway Processing Centre
 77 Kingsview Village, St. Phillips, Martin Grove ...
 78 Agincourt
 79 Davisville
 80 University of Toronto, Harbord
 81 Runnymede, Swansea
 82 Clarks Corners, Tam O'Shanter, Sullivan
 83 Moore Park, Summerhill East

```

84         Kensington Market, Chinatown, Grange Park
85 Milliken, Agincourt North, Steeles East, L'Amo...
86 Summerhill West, Rathnelly, South Hill, Forest...
87 CN Tower, King and Spadina, Railway Lands, Har...
88         New Toronto, Mimico South, Humber Bay Shores
89 South Steeles, Silverstone, Humbergate, Jamest...
90         Steeles West, L'Amoreaux West
91         Rosedale
92         Stn A PO Boxes
93         Alderwood, Long Branch
94         Northwest, West Humber - Clairville
95         Upper Rouge
96         St. James Town, Cabbagetown
97         First Canadian Place, Underground city
98         The Kingsway, Montgomery Road, Old Mill North
99         Church and Wellesley
100 Business reply mail Processing Centre, South C...
101 Old Mill South, King's Mill Park, Sunnylea, Hu...
102 Mimico NW, The Queensway West, South of Bloor,...
```

```
[ ]:
```

```
[35]: df.shape
```

```
[35]: (103, 4)
```

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[ ]:
```

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[ ]:
```