The Analisys of the NEIGHBOURHOODS of LONDON

London is much more than just a list of 32 boroughs, or the squiggly colored lines of the tube map. In this project, I try to analyze, understand, and explore neighborhoods. To get the most common venue categories in each area, and then use this feature to group the neighborhoods into clusters.

I use:

- The Foursquare API to get the relevant data for each neighborhood and to explore each of the areas.

- Folium library helps to visualize the neighborhoods in London City and their emerging clusters.

- The k-means clustering algorithm is used to grouping the data points into distinct subgroups.

This project may be useful for people coming to the City of London to help them to uncover the places that London has to offer, to help to understand how similar and diverse neighbourhoods in London are.

Data:

public data from Wikipedia and Foursquare

https://en.wikipedia.org/wiki/List_of_London_boroughs

1. Loading the data:

```
In [192]: table = pd.read_html("https://en.wikipedia.org/wiki/List_of_London_boroughs",encoding="utf-8-sig")
          df = pd.DataFrame(table[0])
          df.head()
```

Out[192]:

	0	1	2	3	4	5	6	7	8	9
0	Borough	Inner	Status	Local authority	Political control	Headquarters	Area (sq mi)	Population (2013 est)[1]	Co-ordinates	Nr. in map
1	Barking and Dagenham [note 1]	NaN	NaN	Barking and Dagenham London Borough Council	Labour	Town Hall, 1 Town Square	13.93	194352	51°33′39″N 0°09′21″E / 51.5607°N 0.1557°E	25
2	Barnet	NaN	NaN	Barnet London Borough Council	Conservative	Barnet House, 2 Bristol Avenue, Colindale	33.49	369088	51°37′31″N 0°09′06″W / 51.6252°N 0.1517°W	31
3	Bexley	NaN	NaN	Bexley London Borough Council	Conservative	Civic Offices, 2 Watling Street	23.38	236687	51°27′18″N 0°09′02″E / 51.4549°N 0.1505°E	23
4	Brent	NaN	NaN	Brent London Borough Council	Labour	Brent Civic Centre, Engineers Way	16.70	317264	51°33′32″N 0°16′54″W / 51.5588°N 0.2817°W	12

```
In [193]: df.shape
```

Out[193]: (33, 10)

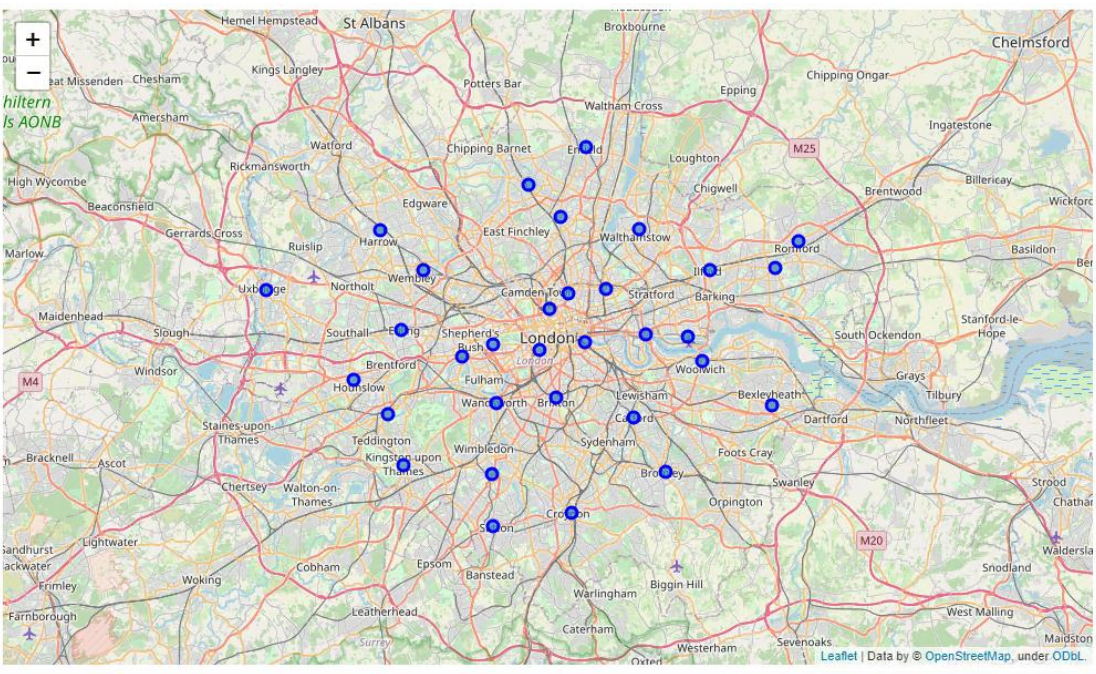
2. Cleaned dataset after some simple manipulations:

Out[180]:

	Borough	Local authority	Political control	Headquarters	Area (sq mi)	Population (2013 est)[1]	Co-ordinates	Nr. in map	Co-ordinates1	Latitude	Longitude
1	Barking and Dagenham [note 1]	Barking and Dagenham London Borough Council	Labour	Town Hall, 1 Town Square	13.93	194352	51°33′39″N 0°09′21″E / 51.5607°N 0.1557°E	25	51.5607°N 0.1557°E	51.5607	0.1557
2	Barnet	Barnet London Borough Council	Conservative	Barnet House, 2 Bristol Avenue, Colindale	33.49	369088	51°37′31″N 0°09′06″W / 51.6252°N 0.1517°W	31	51.6252°N 0.1517°W	51.6252	-0.1517
3	Bexley	Bexley London Borough Council	Conservative	Civic Offices, 2 Watling Street	23.38	236687	51°27′18″N 0°09′02″E / 51.4549°N 0.1505°E	23	51.4549°N 0.1505°E	51.4549	0.1505
4	Brent	Brent London Borough Council	Labour	Brent Civic Centre, Engineers Way	16.70	317264	51°33′32″N 0°16′54″W / 51.5588°N 0.2817°W	12	51.5588°N 0.2817°W	51.5588	-0.2817
5	Bromley	Bromley London Borough Council	Conservative	Civic Centre, Stockwell Close	57.97	317899	51°24′14″N 0°01′11″E / 51.4039°N 0.0198°E	20	51.4039°N 0.0198°E	51.4039	0.0198

3. Visualisation of the areas using Folium

Out[179]:



4. Adding venues to the dataset (using Foursquare API):

In [263]:
```
london_venues.head()
```

Out[263]:

	Neighbourhood	Neighbourhood Latitude	Neighbourhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	Barking and Dagenham [note 1]	51.5607	0.1557	Central Park	51.559560	0.161981	Park
1	Barking and Dagenham [note 1]	51.5607	0.1557	Lara Grill	51.562445	0.147178	Turkish Restaurant
2	Barking and Dagenham [note 1]	51.5607	0.1557	Hoo Hing	51.567561	0.135999	Grocery Store
3	Barking and Dagenham [note 1]	51.5607	0.1557	Asda	51.565751	0.143392	Supermarket
4	Barking and Dagenham [note 1]	51.5607	0.1557	Iceland	51.560578	0.147685	Grocery Store

In [264]:
```
london_venues.shape
```

Out[264]: (2781, 7)

Now, base on this data I'll try to build 5 clusters to compare/analyse the neighbourhoods