DATA

To solve this problem, we will need below data:

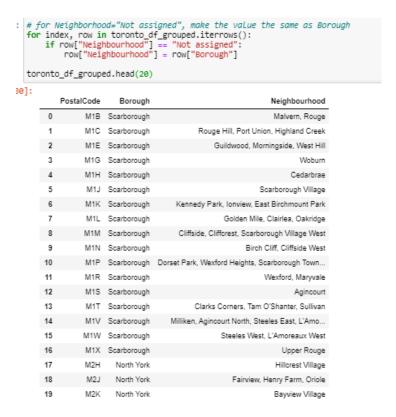   I.   List of Boroughs in Toronto.

This data is required in order to be able to get a sense of the number of boroughs in Toronto, and the number of neighbourhoods corresponding to them.

```
df.groupby('Borough').count()['Neighborhood']
```

```
]: Borough
   Central Toronto      9
   Downtown Toronto    19
   East Toronto         5
   East York            5
   Etobicoke           12
   Mississauga          1
   North York          24
   Scarborough         17
   West Toronto         6
   York                 5
   Name: Neighborhood, dtype: int64
```

   II.   List of neighbourhoods in Toronto (displayed 20 of them for example)

This data is required to get the nearby venues, while using the Foursquare API.

```
: # for Neighborhood="Not assigned", make the value the same as Borough
  for index, row in toronto_df_grouped.iterrows():
      if row["Neighbourhood"] == "Not assigned":
          row["Neighbourhood"] = row["Borough"]

  toronto_df_grouped.head(20)
```

	PostalCode	Borough	Neighbourhood
0	M1B	Scarborough	Malvern, Rouge
1	M1C	Scarborough	Rouge Hill, Port Union, Highland Creek
2	M1E	Scarborough	Guildwood, Morningside, West Hill
3	M1G	Scarborough	Woburn
4	M1H	Scarborough	Cedarbrae
5	M1J	Scarborough	Scarborough Village
6	M1K	Scarborough	Kennedy Park, Ionview, East Birchmount Park
7	M1L	Scarborough	Golden Mile, Clairlea, Oakridge
8	M1M	Scarborough	Cliffside, Cliffcrest, Scarborough Village West
9	M1N	Scarborough	Birch Cliff, Cliffside West
10	M1P	Scarborough	Dorset Park, Wexford Heights, Scarborough Town...
11	M1R	Scarborough	Wexford, Maryvale
12	M1S	Scarborough	Agincourt
13	M1T	Scarborough	Clarks Corners, Tam O'Shanter, Sullivan
14	M1V	Scarborough	Milliken, Agincourt North, Steeles East, L'Amo...
15	M1W	Scarborough	Steeles West, L'Amoreaux West
16	M1X	Scarborough	Upper Rouge
17	M2H	North York	Hillcrest Village
18	M2J	North York	Fairview, Henry Farm, Oriole
19	M2K	North York	Bayview Village

III. Latitude and Longitude of these neighbourhoods (displayed 20 for example)

This data is required to better understand the location of gyms in neighbourhoods in Toronto and is also needed as an input while using the Foursquare API.

```python
# Loading the coordinates from the csv file on Coursera
coordinates = pd.read_csv('https://cocl.us/Geospatial_data')
coordinates.rename(columns={"Postal Code": "PostalCode"}, inplace=True)
# merging two tables to get coordinates
toronto_df_new = toronto_df_grouped.merge(coordinates, on="PostalCode", how="left")
toronto_df_new.head(20)
```

]:

	PostalCode	Borough	Neighbourhood	Latitude	Longitude
0	M1B	Scarborough	Malvern, Rouge	43.806686	-79.194353
1	M1C	Scarborough	Rouge Hill, Port Union, Highland Creek	43.784535	-79.160497
2	M1E	Scarborough	Guildwood, Morningside, West Hill	43.763573	-79.188711
3	M1G	Scarborough	Woburn	43.770992	-79.216917
4	M1H	Scarborough	Cedarbrae	43.773136	-79.239476
5	M1J	Scarborough	Scarborough Village	43.744734	-79.239476
6	M1K	Scarborough	Kennedy Park, Ionview, East Birchmount Park	43.727929	-79.262029
7	M1L	Scarborough	Golden Mile, Clairlea, Oakridge	43.711112	-79.284577
8	M1M	Scarborough	Cliffside, Cliffcrest, Scarborough Village West	43.716316	-79.239476
9	M1N	Scarborough	Birch Cliff, Cliffside West	43.692657	-79.264848
10	M1P	Scarborough	Dorset Park, Wexford Heights, Scarborough Town...	43.757410	-79.273304
11	M1R	Scarborough	Wexford, Maryvale	43.750072	-79.295849
12	M1S	Scarborough	Agincourt	43.794200	-79.262029
13	M1T	Scarborough	Clarks Corners, Tam O'Shanter, Sullivan	43.781638	-79.304302
14	M1V	Scarborough	Milliken, Agincourt North, Steeles East, L'Amo...	43.815252	-79.284577
15	M1W	Scarborough	Steeles West, L'Amoreaux West	43.799525	-79.318389
16	M1X	Scarborough	Upper Rouge	43.836125	-79.205636
17	M2H	North York	Hillcrest Village	43.803762	-79.363452
18	M2J	North York	Fairview, Henry Farm, Oriole	43.778517	-79.346556
19	M2K	North York	Bayview Village	43.786947	-79.385975

IV. Venue data.

This data is required in order to be able to know the number of different venues and to check if gym is present as one of the multiple venues.

Neighborhood	Neighborhood Latitude	Neighborhood Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
Berczy Park	58	58	58	58	58	58
Brockton, Parkdale Village, Exhibition Place	23	23	23	23	23	23
Business reply mail Processing Centre, South Central Letter Processing Plant Toronto	18	18	18	18	18	18
CN Tower, King and Spadina, Railway Lands, Harbourfront West, Bathurst Quay, South Niagara, Island airport	15	15	15	15	15	15
Central Bay Street	65	65	65	65	65	65
Christie	17	17	17	17	17	17
Church and Wellesley	78	78	78	78	78	78
Commerce Court, Victoria Hotel	100	100	100	100	100	100
Davisville	33	33	33	33	33	33
Davisville North	7	7	7	7	7	7
Dufferin, Dovercourt Village	16	16	16	16	16	16
First Canadian Place, Underground city	100	100	100	100	100	100
Forest Hill North & West, Forest Hill Road Park	4	4	4	4	4	4
Garden District, Ryerson	100	100	100	100	100	100
Harbourfront East, Union Station, Toronto Islands	100	100	100	100	100	100
High Park, The Junction South	25	25	25	25	25	25
India Bazaar, The Beaches West	19	19	19	19	19	19
Kensington Market, Chinatown, Grange Park	68	68	68	68	68	68
Lawrence Park	3	3	3	3	3	3
Little Portugal, Trinity	44	44	44	44	44	44