Introduction:

In this course we learned how to identify and collect a number of different location specific data points from cities across the world. For this project I will be looking at the city of Toronto and identify what are the most common amenities (restaurants, airports, bus stops, yoga studios, etc.) based on neighborhoods in Toronto. Individuals who might be interested in a project like this would perhaps be those looking to start a new business in the greater Toronto area. It might be helpful to know what types of businesses already exit in particular neighborhoods, what business appear to be up-and-coming in certain neighborhoods, and what types of businesses do not currently exist in the different neighborhoods.

Data:

For this project I will be looking at businesses in the greater Toronto area including, but not limited to: boroughs, neighborhoods, restaurant venues, a variety of provided services, and location coordinates. These data will be collected from a number of sources including Wikipedia (https://en.wikipedia.org/wiki/List_of_postal_codes_of_Canada:_M) and Four Square.

Methodology:

For the methods that were employed, please refer to the following links to see not only the code that I utilized, but also the process by which I arrived at my conclusions:

https://github.com/brianptrainor/coursera_capstone/blob/master/Battle.ipynb

Results:

Based on the types of research questions that I thought this particular project might be helpful in answering, I thought it important to look at the most common venue types based on each location in Toronto. The table below shows an abbreviated version of these results:

Cluster Labels	Neighborhood	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
0	Berczy Park	Coffee Shop	Cocktail Bar	Café	Beer Bar	Bakery
1	Brockton, Parkdale Village, Exhibition Place	Café	Bakery	Breakfast Spot	Coffee Shop	Yoga Studio
2	Business reply mail Processing Centre, South C...	Light Rail Station	Yoga Studio	Spa	Auto Workshop	Brewery
3	CN Tower, King and Spadina, Railway Lands, Har...	Airport Service	Airport Lounge	Airport Terminal	Boutique	Sculpture Garden
4	Central Bay Street	Coffee Shop	Café	Italian Restaurant	Sandwich Place	Salad Place

Discussion:

For this project, let's assume that an entrepreneur was looking to open up a new type of restaurant in the greater Toronto area. Further, for brevity's sake, let's just assume the greater Toronto area only consists of those areas identified in the table above. It would appear that one could draw a number of conclusions from the table as well as make some inferences and/or calculated risks. For example, the King and Spadina neighborhood appears to be close to an airport. This means frequent travelers will be coming through this area and the business owner might want to make a decision based on catering to the needs of frequent travelers (i.e. fast food, hotels, relaxation, etc.). Similarly, a number of areas have yoga studios. The business owner could assume that yoga is an important part of life in the Toronto region and may want to invest in a yoga studio. However, they may also conclude that perhaps yoga studios are in too great an abundance and might want to diversify the experience by maybe offering something similar that

doesn't quite have a market yet that caters to the same clientele like a tea shop or a athleisure clothing boutique.

Conclusion:

In conclusion, this course has introduced me to a variety of techniques to explore the realm of data science and given me the opportunity to learn new skills and apply them to real-world situations.