Task: Geographic Analysis

2.3.1 Plot the locations of restaurants on a map using longitude and latitude coordinates.

In [4]:
```
import pandas as pd
import matplotlib.pyplot as plt
```

In [5]:
```
dt = pd.read_csv(r"C:\Users\HP\OneDrive\Documents\Cognifyz Internship Program\Dataset.cs
dt
```

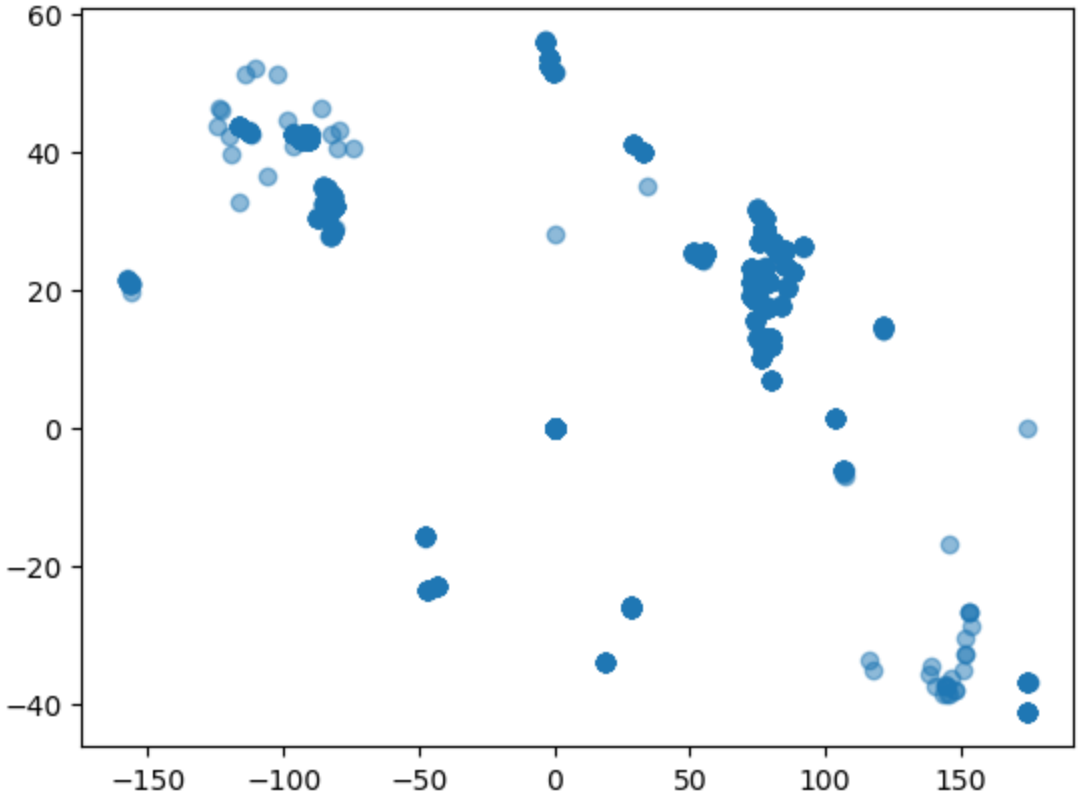
Out[5]:

	Restaurant ID	Restaurant Name	Country Code	City	Address	Locality	Locality Verbose	Longi
0	6317637	Le Petit Souffle	162	Makati City	Third Floor, Century City Mall, Kalayaan Avenu...	Century City Mall, Poblacion, Makati City	Century City Mall, Poblacion, Makati City, Mak...	121.02
1	6304287	Izakaya Kikufuji	162	Makati City	Little Tokyo, 2277 Chino Roces Avenue, Legaspi...	Little Tokyo, Legaspi Village, Makati City	Little Tokyo, Legaspi Village, Makati City, Ma...	121.01
2	6300002	Heat - Edsa Shangri-La	162	Mandaluyong City	Edsa Shangri-La, 1 Garden Way, Ortigas, Mandal...	Edsa Shangri-La, Ortigas, Mandaluyong City	Edsa Shangri-La, Ortigas, Mandaluyong City, Ma...	121.05
3	6318506	Ooma	162	Mandaluyong City	Third Floor, Mega Fashion Hall, SM Megamall, O...	SM Megamall, Ortigas, Mandaluyong City	SM Megamall, Ortigas, Mandaluyong City, Mandal...	121.05
4	6314302	Sambo Kojin	162	Mandaluyong City	Third Floor, Mega Atrium, SM Megamall, Ortigas...	SM Megamall, Ortigas, Mandaluyong City	SM Megamall, Ortigas, Mandaluyong City, Mandal...	121.05
...	...	...	...	...	...	...	...	
9546	5915730	Naml\ Gurme	208	��stanbul	Kemanke�� Karamustafa Pa��a Mahallesi, R\ht\m ...	Karak�_y	Karak�_y, ��stanbul	28.97
9547	5908749	Ceviz A��ac\	208	��stanbul	Ko��uyolu Mahallesi, Muhittin ��st�_nda�� Cadd...	Ko��uyolu	Ko��uyolu, ��stanbul	29.04
9548	5915807	Huqqa	208	��stanbul	Kuru�_e��me Mahallesi, Muallim Naci Caddesi, N...	Kuru�_e��me	Kuru�_e��me, ��stanbul	29.03
9549	5916112	A���k Kahve	208	��stanbul	Kuru�_e��me Mahallesi, Muallim Naci Caddesi, N...	Kuru�_e��me	Kuru�_e��me, ��stanbul	29.03
9550	5927402	Walter's Coffee Roastery	208	��stanbul	Cafea��a Mahallesi, Bademalt\ Sokak, No 21/B, ...	Moda	Moda, ��stanbul	29.02

9551 rows × 21 columns

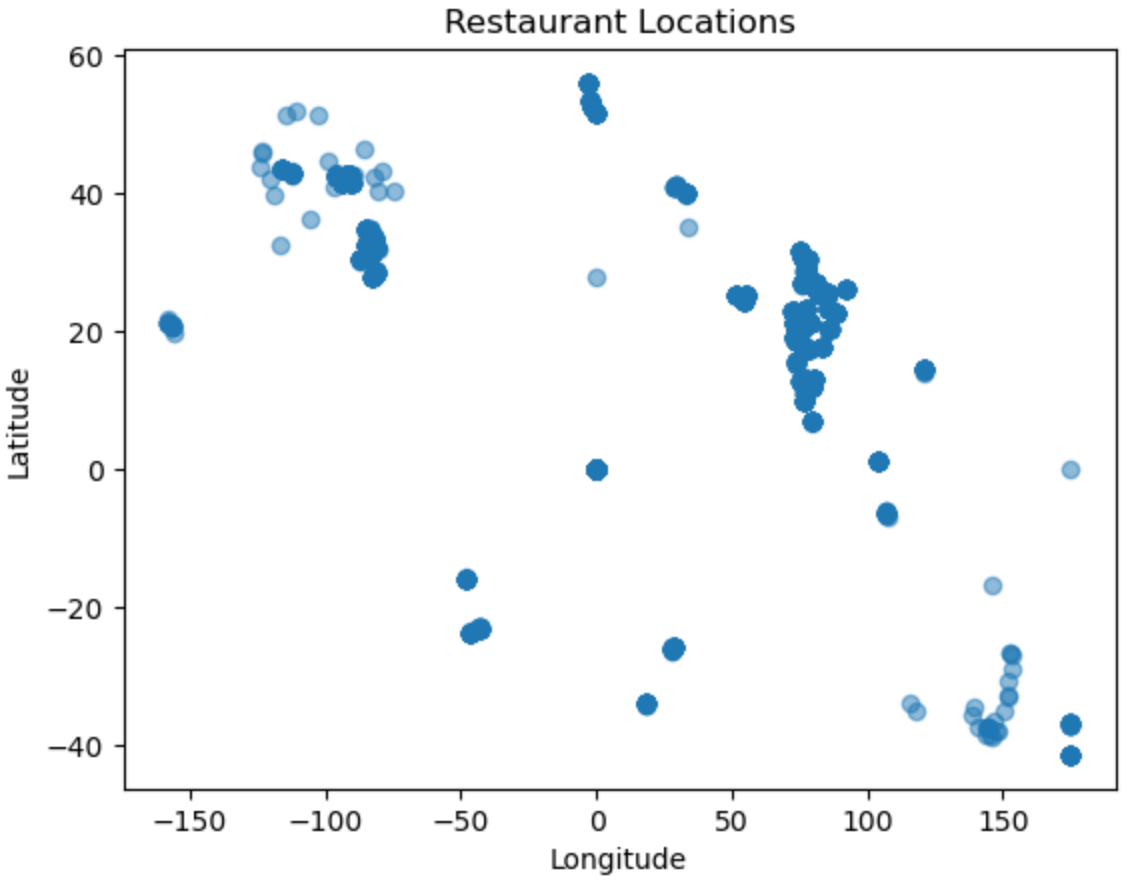
In [7]:
```
plt.scatter(dt['Longitude'], dt['Latitude'], alpha=0.5)
```

Out[7]:
```
<matplotlib.collections.PathCollection at 0x169204eaf10>
```



In [14]:
```
plt.xlabel('Longitude')
plt.ylabel('Latitude')
plt.title('Restaurant Locations')
plt.scatter(dt['Longitude'], dt['Latitude'], alpha=0.5)
```

Out[14]:
```
<matplotlib.collections.PathCollection at 0x169210ab9a0>
```



In [10]:
```
plt.show
```

Out[10]:
```
<function matplotlib.pyplot.show(close=None, block=None)>
```

2.3.2 Identify any patterns or clusters of restaurants in specific areas.

In [16]:
```
from sklearn.cluster import KMeans
```

In [17]:
```
# Extract latitude and longitude
location = dt[['Longitude', 'Latitude']]
```

In [19]:
```
# Fit KMeans Model
kmeans = KMeans(n_clusters=5)
kmeans.fit(location)
```

Out[19]:
```
KMeans(n_clusters=5)
```

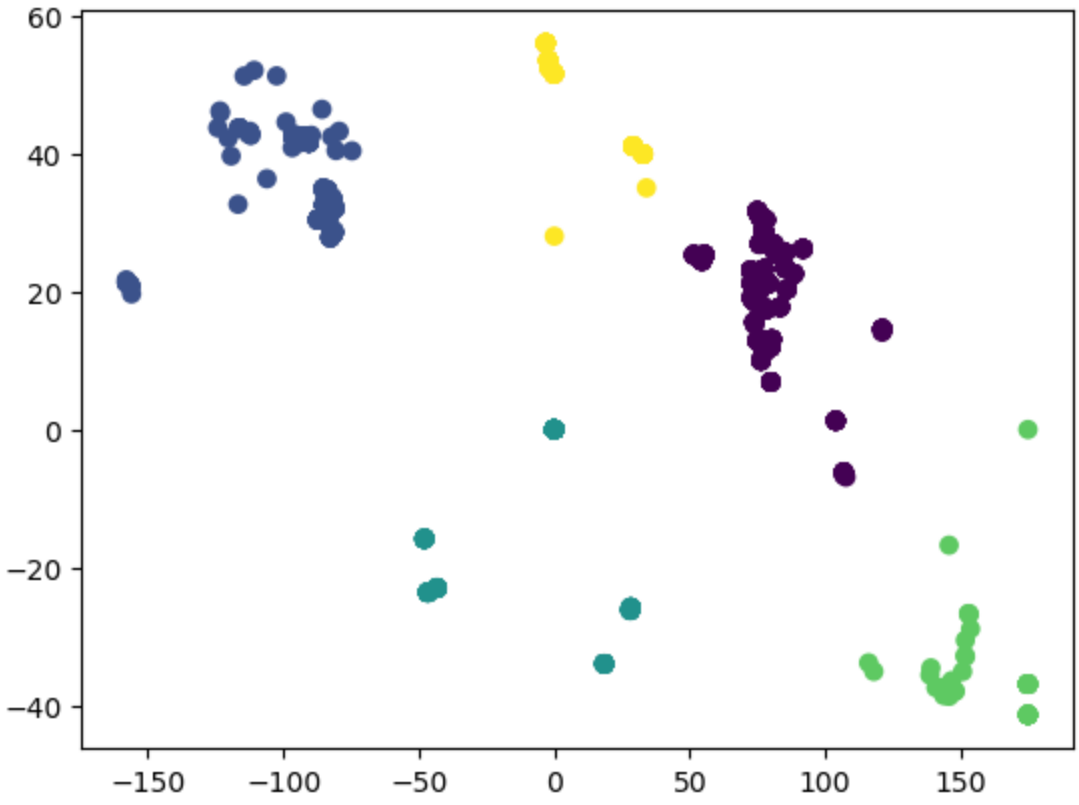
In [21]:
```
# Get cluster labels
labels = kmeans.predict(location)
```

In [22]:
```
labels
```

Out[22]:
```
array([0, 0, 0, ..., 4, 4, 4])
```

In [24]:
```
# Plot Clustered Points
plt.scatter(location['Longitude'], location['Latitude'], c=labels)
```

Out[24]:
```
<matplotlib.collections.PathCollection at 0x16924fb7a30>
```



In [26]:
```
# SHow plot
plt.xlabel('Longitude')
plt.ylabel('Latitude')
plt.title('Restaurant Location Clusters')
```

```
plt.scatter(location['Longitude'], location['Latitude'], c=labels)
plt.show()
```

In [ ]: