hw_5

December 14, 2022

1 Homework 5

Make sure to fill in the `YOUR RESPONSE HERE`, and the posting in the Discussion at the end.

1.1 In-class exercise

Geocode an address from Python using the NYC Planning GeoSearch API. Print out the latitude and longitude. Any NYC address is fine:

- Your own
- This building: 238 Thompson St, New York, NY 10012
- etc.

```python
[1]: # your code here
     import requests
     params = {"api_key": "DEMO_KEY"}
     map = requests.get("https://geosearch.planninglabs.nyc/v1/search?text=4310
       ↪cre", params=params)
     data = map.json()
     data
```

```
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```

[2]:
```python
data["features"][0]["geometry"]['coordinates']
```

[2]:
```
[-73.942835, 40.748708]
```

[3]:
```python
#key is for dictionary; ["feature"] is a list [];[0] is the index
```

1.2 Coding

When doing mapping or spatial analysis, it's easier to work with geographic coordinates than addresses. The 311 dataset has the `latitude` and `longitude` filled in for many of the rows, but not all. Enrich the dataset by filling in those missing coordinates, where possible.

- Use the smaller dataset from homework 2: https://storage.googleapis.com/python-public-policy/data/cleaned_311_data_hw2.csv.zip
- Use the same API as above
- To avoid overwhelming the API, operate on a small subset of the data (no more than thirty addresses that need geocoding).

1.2.1 Tips

- Start small: Try doing single requests to the API from code before trying to run it against a DataFrame.
- You're going to be doing API calls (`requests.get()`) row by row (`apply()`)
- You can use this technique for updating multiple columns at once through an `apply()`.

[4]:
```python
# your code here
import requests
import pandas as pd
```

[5]:
```python
df = requests.get("https://storage.googleapis.com/python-public-policy/data/
 ↪cleaned_311_data_hw2.csv.zip")
```

response= requests.get("https://geosearch.planninglabs.nyc/v1/autocomplete")

[6]:
```python
response= requests.get("https://geosearch.planninglabs.nyc/v1/search?text=211
 ↪STREET")
data = response.json()
```

```
data

[6]: {'geocoding': {'version': '0.2',
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```

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```

```python
[ ]: #incident_address
     incident_address = data["features"][0]['properties']['name']
     incident_address
```

```python
[7]: #street_name
     street_name = data["features"][0]['properties']['street']
     street_name
```

```
[7]: '211 STREET'
```

```python
[8]: #latitude & longtitude
     data["features"][0]["geometry"]['coordinates']
```

```
[8]: [-73.781032, 40.780832]
```

```python
[9]: def update_address(row):
         if pd.isna(row['latitude']) and pd.notna(row['address_type']):
```

```python
        if row['address_type'] == 'ADDRESS':address = row['incident_address']
        elif row['address_type'] == 'BLOCKFACE':
            address = row['street_name'] + ' between ' + row['cross_street_1']␣
↪+ ' and ' + row['cross_street_2']
            street_name = data["features"][0]['properties']['street']
            incident_address = data["features"][0]['properties']['name']
        else:
            return row

        response = requests.get("https://geosearch.planninglabs.nyc/v1/search?␣
↪text" + '=' + address + '&size=1')
        data = response.json()
        print(data)

        latitude = data['features'][0]['geometry']['coordinates'][1]
        longitude = data['features'][0]['geometry']['coordinates'][0]
        street_name = data["features"][0]['properties']['street']
        incident_address = data["features"][0]['properties']['name']

        return pd.Series([latitude, longitude, street_name,incident_address])
    else:
        return row
```

```python
[10]: data = response.json()
df['latitude', 'longitude','street_name','incident_address']= df.
 ↪apply(update_address,axis=1)
```

```
        ---------------------------------------------------------------------------
AttributeError                            Traceback (most recent call last)
Cell In [10], line 2
      1 data = response.json()
----> 2 df['latitude', 'longitude','street_name','incident_address']=␣
  ↪df.apply(update_address,axis=1)

AttributeError: 'Response' object has no attribute 'apply'
```

YOUR RESPONSE HERE

Now turn in the assignment.

1.3 Homework 6 Proposal

Please answer the proposal questions as a new Conversation under the HW6 proposals Discussion.

1.4 Participation

Reminder about the between-class participation requirement.

1.4.1 Question

What are the complicating factors with this task? What could make it difficult to do comprehensively? Looking for a paragraph or some bullet points.

```
[ ]: Complicating
     1.Find rows that have missing address information
     2.Match them with geocoding
     3.Use apply()
     difficult
     1. across street information could vary?
```