Sathish_Kumar_Rajendiran_Week7_7.5_MongoDB_JSON_async_activity

August 13, 2020

Name: Sathish Kumar Rajendiran Task: Week7: 7.4 MongoDB Date: 8/12/2020

```python
[3]: #import libraries
     from urllib import request
     import json
     import pymongo
     from pymongo import MongoClient
```

```python
[4]: # get the bbc rss feed of news stories and connect to it
     earthquake_url = "http://earthquake.usgs.gov/earthquakes/feed/v1.0/summary/
      ↪significant_month.geojson"
```

```python
[6]: try:
         # reponse
         response = request.urlopen(earthquake_url).read().decode('utf8')
     except urllib.error.URLError as e:
         if hasattr(e, 'reason'):
             print('We failed to reach a server.')
             print('Reason: ', e.reason)
         elif hasattr(e, 'code'):
             print('The server couldn\'t fulfill the request.')
             print('Error code: ', e.code)
     else:
     # the url request was successful - convert the response to a string
         eq_json = json.loads(response)
```

```python
[8]: # from the json dictionary we get the title to print
     title = eq_json['metadata']['title']
     print('Collected data from', title,'\n')
     #  and we get the list of earthquakes
     quakelist = eq_json['features']
     print('quake list', quakelist)
```

```
Collected data from USGS Significant Earthquakes, Past Month

quake list [{'type': 'Feature', 'properties': {'mag': 6, 'place': '66 km ESE of
Vikindu, Tanzania', 'time': 1597252395896, 'updated': 1597301198286, 'tz': None,
```

'url': 'https://earthquake.usgs.gov/earthquakes/eventpage/us6000bdg8', 'detail':
'https://earthquake.usgs.gov/earthquakes/feed/v1.0/detail/us6000bdg8.geojson',
'felt': 190, 'cdi': 4.3, 'mmi': 5.309, 'alert': 'green', 'status': 'reviewed',
'tsunami': 0, 'sig': 636, 'net': 'us', 'code': '6000bdg8', 'ids':
',us6000bdg8,', 'sources': ',us,', 'types': ',dyfi,ground-
failure,losspager,moment-tensor,origin,phase-data,shakemap,', 'nst': None,
'dmin': 5.239, 'rms': 0.98, 'gap': 26, 'magType': 'mww', 'type': 'earthquake',
'title': 'M 6.0 - 66 km ESE of Vikindu, Tanzania'}, 'geometry': {'type':
'Point', 'coordinates': [39.8073, -7.3283, 15.49]}, 'id': 'us6000bdg8'},
{'type': 'Feature', 'properties': {'mag': 5.1, 'place': '4 km SE of Sparta,
North Carolina', 'time': 1596974857680, 'updated': 1597301154214, 'tz': None,
'url': 'https://earthquake.usgs.gov/earthquakes/eventpage/se60324281', 'detail':
'https://earthquake.usgs.gov/earthquakes/feed/v1.0/detail/se60324281.geojson',
'felt': 101934, 'cdi': 6.4, 'mmi': 7.48, 'alert': 'yellow', 'status':
'reviewed', 'tsunami': 0, 'sig': 1290, 'net': 'se', 'code': '60324281', 'ids':
',us6000bbei,se60324281,', 'sources': ',us,se,', 'types': ',dyfi,general-
text,ground-failure,losspager,moment-tensor,oaf,origin,phase-data,shakemap,',
'nst': 34, 'dmin': 0.452, 'rms': 0.33, 'gap': 50, 'magType': 'mw', 'type':
'earthquake', 'title': 'M 5.1 - 4 km SE of Sparta, North Carolina'}, 'geometry':
{'type': 'Point', 'coordinates': [-81.0935, 36.4755, 7.58]}, 'id':
'se60324281'}, {'type': 'Feature', 'properties': {'mag': 4.8, 'place': '2 km SSE
of Magas Arriba, Puerto Rico', 'time': 1596770820400, 'updated': 1596999808878,
'tz': None, 'url':
'https://earthquake.usgs.gov/earthquakes/eventpage/pr2020220000', 'detail':
'https://earthquake.usgs.gov/earthquakes/feed/v1.0/detail/pr2020220000.geojson',
'felt': 545, 'cdi': 6.2, 'mmi': 5.694, 'alert': 'green', 'status': 'reviewed',
'tsunami': 0, 'sig': 692, 'net': 'pr', 'code': '2020220000', 'ids':
',pt20220050,us6000baev,pr2020220000,', 'sources': ',pt,us,pr,', 'types':
',dyfi,losspager,moment-tensor,origin,phase-data,shakemap,', 'nst': 31, 'dmin':
0.1203, 'rms': 0.15, 'gap': 161, 'magType': 'ml', 'type': 'earthquake', 'title':
'M 4.8 - 2 km SSE of Magas Arriba, Puerto Rico'}, 'geometry': {'type': 'Point',
'coordinates': [-66.7606, 17.995, 12]}, 'id': 'pr2020220000'}, {'type':
'Feature', 'properties': {'mag': 6.3, 'place': 'Prince Edward Islands region',
'time': 1596757004553, 'updated': 1596921908354, 'tz': None, 'url':
'https://earthquake.usgs.gov/earthquakes/eventpage/us6000badi', 'detail':
'https://earthquake.usgs.gov/earthquakes/feed/v1.0/detail/us6000badi.geojson',
'felt': None, 'cdi': None, 'mmi': 0, 'alert': 'green', 'status': 'reviewed',
'tsunami': 0, 'sig': 611, 'net': 'us', 'code': '6000badi', 'ids':
',us6000badi,', 'sources': ',us,', 'types': ',losspager,moment-
tensor,origin,phase-data,shakemap,', 'nst': None, 'dmin': 8.274, 'rms': 0.8,
'gap': 18, 'magType': 'mww', 'type': 'earthquake', 'title': 'M 6.3 - Prince
Edward Islands region'}, 'geometry': {'type': 'Point', 'coordinates': [42.4486,
-41.6794, 10]}, 'id': 'us6000badi'}, {'type': 'Feature', 'properties': {'mag':
6.4, 'place': '71 km E of Lakatoro, Vanuatu', 'time': 1596629136240, 'updated':
1596803546500, 'tz': None, 'url':
'https://earthquake.usgs.gov/earthquakes/eventpage/us6000b9mv', 'detail':
'https://earthquake.usgs.gov/earthquakes/feed/v1.0/detail/us6000b9mv.geojson',
'felt': None, 'cdi': None, 'mmi': 4.24, 'alert': 'green', 'status': 'reviewed',

'tsunami': 0, 'sig': 630, 'net': 'us', 'code': '6000b9mv', 'ids': ',us6000b9mv,', 'sources': ',us,', 'types': ',ground-failure,losspager,moment-tensor,origin,phase-data,shakemap,', 'nst': None, 'dmin': 1.073, 'rms': 0.92, 'gap': 33, 'magType': 'mww', 'type': 'earthquake', 'title': 'M 6.4 - 71 km E of Lakatoro, Vanuatu'}, 'geometry': {'type': 'Point', 'coordinates': [168.0816, -16.1118, 174.75]}, 'id': 'us6000b9mv'}, {'type': 'Feature', 'properties': {'mag': 6.4, 'place': '11 km SE of Litayan, Philippines', 'time': 1596301741608, 'updated': 1596551529757, 'tz': None, 'url': 'https://earthquake.usgs.gov/earthquakes/eventpage/us6000b80p', 'detail': 'https://earthquake.usgs.gov/earthquakes/feed/v1.0/detail/us6000b80p.geojson', 'felt': 4, 'cdi': 4.1, 'mmi': 2.859, 'alert': 'green', 'status': 'reviewed', 'tsunami': 0, 'sig': 632, 'net': 'us', 'code': '6000b80p', 'ids': ',us6000b80p,', 'sources': ',us,', 'types': ',dyfi,ground-failure,losspager,moment-tensor,origin,phase-data,shakemap,', 'nst': None, 'dmin': 1.462, 'rms': 1.04, 'gap': 13, 'magType': 'mww', 'type': 'earthquake', 'title': 'M 6.4 - 11 km SE of Litayan, Philippines'}, 'geometry': {'type': 'Point', 'coordinates': [124.1199, 7.2781, 480.6]}, 'id': 'us6000b80p'}, {'type': 'Feature', 'properties': {'mag': 3.81, 'place': '1km NNE of San Fernando, CA', 'time': 1596116899180, 'updated': 1596973196531, 'tz': None, 'url': 'https://earthquake.usgs.gov/earthquakes/eventpage/ci39322767', 'detail': 'https://earthquake.usgs.gov/earthquakes/feed/v1.0/detail/ci39322767.geojson', 'felt': 1644, 'cdi': 3.8, 'mmi': 4.92, 'alert': None, 'status': 'reviewed', 'tsunami': 0, 'sig': 603, 'net': 'ci', 'code': '39322767', 'ids': ',ci39322767,us6000b6u2,', 'sources': ',ci,us,', 'types': ',dyfi,focal-mechanism,moment-tensor,nearby-cities,origin,phase-data,scitech-link,shakemap,', 'nst': 141, 'dmin': 0.03806, 'rms': 0.23, 'gap': 16, 'magType': 'mw', 'type': 'earthquake', 'title': 'M 3.8 - 1km NNE of San Fernando, CA'}, 'geometry': {'type': 'Point', 'coordinates': [-118.4355, 34.2936667, 7.24]}, 'id': 'ci39322767'}, {'type': 'Feature', 'properties': {'mag': 4.17, 'place': '1km SE of Sylmar, CA', 'time': 1596108569050, 'updated': 1597171344405, 'tz': None, 'url': 'https://earthquake.usgs.gov/earthquakes/eventpage/ci39322287', 'detail': 'https://earthquake.usgs.gov/earthquakes/feed/v1.0/detail/ci39322287.geojson', 'felt': 15506, 'cdi': 4.9, 'mmi': 5.82, 'alert': 'green', 'status': 'reviewed', 'tsunami': 1, 'sig': 758, 'net': 'ci', 'code': '39322287', 'ids': ',ew1596108569,ci39322287,at00qea594,us6000b6qd,', 'sources': ',ew,ci,at,us,', 'types': ',dyfi,focal-mechanism,impact-link,losspager,moment-tensor,nearby-cities,oaf,origin,phase-data,scitech-link,shake-alert,shakemap,', 'nst': 196, 'dmin': 0.03917, 'rms': 0.26, 'gap': 14, 'magType': 'mw', 'type': 'earthquake', 'title': 'M 4.2 - 1km SE of Sylmar, CA'}, 'geometry': {'type': 'Point', 'coordinates': [-118.4383333, 34.3016667, 8.85]}, 'id': 'ci39322287'}, {'type': 'Feature', 'properties': {'mag': 6.4, 'place': 'South Sandwich Islands region', 'time': 1595724839067, 'updated': 1596779061364, 'tz': None, 'url': 'https://earthquake.usgs.gov/earthquakes/eventpage/us6000b46r', 'detail': 'https://earthquake.usgs.gov/earthquakes/feed/v1.0/detail/us6000b46r.geojson', 'felt': 0, 'cdi': 0, 'mmi': 3.32, 'alert': 'green', 'status': 'reviewed', 'tsunami': 1, 'sig': 630, 'net': 'us', 'code': '6000b46r', 'ids': ',pt20208000,us6000b46r,', 'sources': ',pt,us,', 'types': ',dyfi,impact-link,losspager,moment-tensor,origin,phase-data,shakemap,', 'nst': None, 'dmin':

8.819, 'rms': 0.57, 'gap': 20, 'magType': 'mww', 'type': 'earthquake', 'title': 'M 6.4 - South Sandwich Islands region'}, 'geometry': {'type': 'Point', 'coordinates': [-25.4055, -60.7812, 10]}, 'id': 'us6000b46r'}, {'type': 'Feature', 'properties': {'mag': 6.3, 'place': 'western Xizang', 'time': 1595448439183, 'updated': 1596034387259, 'tz': None, 'url': 'https://earthquake.usgs.gov/earthquakes/eventpage/us6000b26j', 'detail': 'https://earthquake.usgs.gov/earthquakes/feed/v1.0/detail/us6000b26j.geojson', 'felt': 2, 'cdi': 2, 'mmi': 7.363, 'alert': 'yellow', 'status': 'reviewed', 'tsunami': 0, 'sig': 650, 'net': 'us', 'code': '6000b26j', 'ids': ',us6000b26j,', 'sources': ',us,', 'types': ',dyfi,ground-failure,losspager,moment-tensor,origin,phase-data,shakemap,', 'nst': None, 'dmin': 5.171, 'rms': 0.88, 'gap': 14, 'magType': 'mww', 'type': 'earthquake', 'title': 'M 6.3 - western Xizang'}, 'geometry': {'type': 'Point', 'coordinates': [86.8666, 33.1463, 10]}, 'id': 'us6000b26j'}, {'type': 'Feature', 'properties': {'mag': 7.8, 'place': '105 km SSE of Perryville, Alaska', 'time': 1595398364593, 'updated': 1597299773367, 'tz': None, 'url': 'https://earthquake.usgs.gov/earthquakes/eventpage/us7000asvb', 'detail': 'https://earthquake.usgs.gov/earthquakes/feed/v1.0/detail/us7000asvb.geojson', 'felt': 287, 'cdi': 7.1, 'mmi': 6.924, 'alert': 'green', 'status': 'reviewed', 'tsunami': 1, 'sig': 1140, 'net': 'us', 'code': '7000asvb', 'ids': ',at00qdux98,us7000asvb,ak0209dha24u,', 'sources': ',at,us,ak,', 'types': ',dyfi,finite-fault,general-link,general-text,ground-failure,impact-link,losspager,moment-tensor,oaf,origin,phase-data,shakemap,trump-origin,trump-shakemap,', 'nst': None, 'dmin': 0.647, 'rms': 1.27, 'gap': 64, 'magType': 'mww', 'type': 'earthquake', 'title': 'M 7.8 - 105 km SSE of Perryville, Alaska'}, 'geometry': {'type': 'Point', 'coordinates': [-158.5217, 55.0298, 28]}, 'id': 'us7000asvb'}, {'type': 'Feature', 'properties': {'mag': 5.9, 'place': '3 km SE of Iquique, Chile', 'time': 1594964436354, 'updated': 1596460328841, 'tz': None, 'url': 'https://earthquake.usgs.gov/earthquakes/eventpage/us7000aq5p', 'detail': 'https://earthquake.usgs.gov/earthquakes/feed/v1.0/detail/us7000aq5p.geojson', 'felt': 230, 'cdi': 6.9, 'mmi': 6.771, 'alert': 'yellow', 'status': 'reviewed', 'tsunami': 0, 'sig': 809, 'net': 'us', 'code': '7000aq5p', 'ids': ',us7000aq5p,', 'sources': ',us,', 'types': ',dyfi,losspager,moment-tensor,origin,phase-data,shakemap,', 'nst': None, 'dmin': 0.634, 'rms': 1.19, 'gap': 30, 'magType': 'mww', 'type': 'earthquake', 'title': 'M 5.9 - 3 km SE of Iquique, Chile'}, 'geometry': {'type': 'Point', 'coordinates': [-70.1306, -20.2349, 74.2]}, 'id': 'us7000aq5p'}, {'type': 'Feature', 'properties': {'mag': 7, 'place': '114 km NNW of Popondetta, Papua New Guinea', 'time': 1594954223017, 'updated': 1595660930309, 'tz': None, 'url': 'https://earthquake.usgs.gov/earthquakes/eventpage/us7000aq3e', 'detail': 'https://earthquake.usgs.gov/earthquakes/feed/v1.0/detail/us7000aq3e.geojson', 'felt': 100, 'cdi': 6.4, 'mmi': 6.948, 'alert': 'green', 'status': 'reviewed', 'tsunami': 1, 'sig': 818, 'net': 'us', 'code': '7000aq3e', 'ids': ',at00qdlek0,pt20199000,us7000aq3e,', 'sources': ',at,pt,us,', 'types': ',dyfi,finite-fault,general-text,ground-failure,impact-link,losspager,moment-tensor,origin,phase-data,shakemap,', 'nst': None, 'dmin': 1.663, 'rms': 1.14, 'gap': 18, 'magType': 'mww', 'type': 'earthquake', 'title': 'M 7.0 - 114 km NNW

of Popondetta, Papua New Guinea'}, 'geometry': {'type': 'Point', 'coordinates':
[147.7656, -7.8428, 79.79]}, 'id': 'us7000aq3e'}]

```python
# Connection to Mongo DB
try:
    client = MongoClient('localhost', 27017)
    print ("Connected successfully!!!")
except pymongo.errors.ConnectionFailure as e:
    print ("Could not connect to MongoDB: %s" % e )

else:
    # use database named usgs or create it if not there already
    eqdb = client.usgs
    # create collection named earthquakes or create it if not there already
    quakecoll = eqdb.earthquakes
    # add all the earthquakes to the list
    quakecoll.insert_many(quakelist)
    print("Added", len(quakelist), "to earthquakes collection in usgs database")
    # close the database connection
    client.close()
```

```
Connected successfully!!!
Added 13 to earthquakes collection in usgs database
```

```python
#search the first item from the collection
quakecoll.find_one()
```

```
{'_id': ObjectId('5f34e3b9ae19001f11c9ca89'),
 'type': 'Feature',
 'properties': {'mag': 6,
  'place': '66 km ESE of Vikindu, Tanzania',
  'time': 1597252395896,
  'updated': 1597301198286,
  'tz': None,
  'url': 'https://earthquake.usgs.gov/earthquakes/eventpage/us6000bdg8',
  'detail':
 'https://earthquake.usgs.gov/earthquakes/feed/v1.0/detail/us6000bdg8.geojson',
  'felt': 190,
  'cdi': 4.3,
  'mmi': 5.309,
  'alert': 'green',
  'status': 'reviewed',
  'tsunami': 0,
  'sig': 636,
  'net': 'us',
  'code': '6000bdg8',
  'ids': ',us6000bdg8,',
```

```
    'sources': ',us,',
    'types': ',dyfi,ground-failure,losspager,moment-tensor,origin,phase-
 data,shakemap,',
    'nst': None,
    'dmin': 5.239,
    'rms': 0.98,
    'gap': 26,
    'magType': 'mww',
    'type': 'earthquake',
    'title': 'M 6.0 - 66 km ESE of Vikindu, Tanzania'},
  'geometry': {'type': 'Point', 'coordinates': [39.8073, -7.3283, 15.49]},
  'id': 'us6000bdg8'}
```

```
[19]: results = quakecoll.find()
      for result in results:
          place = doc['properties']['place']
          unix_time_mil = doc['properties']['time'] # select unix timestamp in␣
       ↪milliseconds
          unix_time = unix_time_mil / 1000      # convert to unix in seconds
          # print the place and time, with a label to show the time is in UTC
          print('Place: ',place,' Time: ',unix_time)
```

```
Place:  114 km NNW of Popondetta, Papua New Guinea           Time:  1594954223.017
Place:  114 km NNW of Popondetta, Papua New Guinea           Time:  1594954223.017
Place:  114 km NNW of Popondetta, Papua New Guinea           Time:  1594954223.017
Place:  114 km NNW of Popondetta, Papua New Guinea           Time:  1594954223.017
Place:  114 km NNW of Popondetta, Papua New Guinea           Time:  1594954223.017
Place:  114 km NNW of Popondetta, Papua New Guinea           Time:  1594954223.017
Place:  114 km NNW of Popondetta, Papua New Guinea           Time:  1594954223.017
Place:  114 km NNW of Popondetta, Papua New Guinea           Time:  1594954223.017
Place:  114 km NNW of Popondetta, Papua New Guinea           Time:  1594954223.017
Place:  114 km NNW of Popondetta, Papua New Guinea           Time:  1594954223.017
Place:  114 km NNW of Popondetta, Papua New Guinea           Time:  1594954223.017
Place:  114 km NNW of Popondetta, Papua New Guinea           Time:  1594954223.017
Place:  114 km NNW of Popondetta, Papua New Guinea           Time:  1594954223.017
```