#### **Imports**

```
In [502]: import pandas as pd
from pandas import DataFrame, Series
import json
```

#### Loading json file

```
In [503]: list_of_issues_dict_data = [json.loads(line) for line in open('SPM587SP18issue
s.json')]
In [504]: issues_df = DataFrame(list_of_issues_dict_data)
```

## Converting the dataframe object into json records

```
In [505]: s = issues_df.to_json(orient='records')
```

#### Loading the json records into variable

```
In [506]: cont = json.loads(s)
```

# Importing Elasticsearch and helpers of elastic search

```
In [507]: from elasticsearch import Elasticsearch, helpers
In [508]: es = Elasticsearch()
```

# Inserting the data into Elastic Search (Bulk Insertion)

```
In [509]: actions =[]
          for data in cont:
              y=data['labels']
              dd = dict()
              for x in y:
                   splt = x.split(':')
                   l=len(splt)
                   if 1 == 2:
                       dd.update({splt[0]:splt[1]})
              data['Longitude'] = str(dd.get('Longitude'))
              data['Latitude'] = str(dd.get('Latitude'))
              action = {
                   " index": "issues",
                   __type": "issue",
                   "_id" : data['issue_number'],
                   "_source": data
              }
              actions.append(action)
              helpers.bulk(es,actions)
In [510]: pooja = cont[0]
          print(pooja['labels'])
          dd = {k:v for k,v in (x.split(':') for x in pooja['labels']) }
          ['Category:Inquiry', 'DetectionPhase:Field', 'OriginationPhase:Coding', 'Prio
          rity:High', 'Status:inProgress']
In [511]: | dd['Category']
Out[511]: 'Inquiry'
```

## Qurey to fetch all the data from elastic Search

In [513]: len(doc)
 result\_without\_condition

Out[513]: {'\_scroll\_id': 'DnF1ZXJ5VGhlbkZldGNoBQAAAAAAADiFlZwYWNVc0FfUnhDZy0tVnNIbX VFZ2cAAAAAAAAAXZWcGFjVXNBX1J4Q2ctLVZzSG11RWdnAAAAAAAAAAQWVnBhY1VzQV9SeENn LS1Wc0htdUVnZwAAAAAAAD1F1ZwYWNVc0FfUnhDZy0tVnNIbXVFZ2cAAAAAAAAAA5hZWcGFjVX NBX1J4Q2ctLVZzSG11RWdn', '\_shards': {'failed': 0, 'skipped': 0, 'successful': 5, 'total': 5}, 'hits': {'hits': [{'\_id': '24', '\_index': 'issues', ' score': 1.0, \_ '\_source': {'Author': 'HSP18SCM69D', 'Latitude': '41.891551', 'Longitude': '-87.607375', 'State': 'open', 'closed at': None, 'created at': '2018-04-09', 'issue number': 24, 'labels': ['Address:600 E GRAND AVE', 'Category:Inquiry', 'DetectionPhase:Coding', 'Latitude:41.891551', 'Longitude:-87.607375', 'OriginationPhase:Documentation', 'Priority:Major', 'Status:pendingReview']}, '\_type': 'issue'}, {' id': '22', \_index': 'issues', '\_score': 1.0, '\_source': {'Author': 'HSP18SCM69D', 'Latitude': '40.170101', 'Longitude': '-92.177847', 'State': 'open', 'closed at': None, 'created at': '2018-04-09', 'issue number': 22, 'labels': ['Address:233 W JACKSON', 'Category:Bug', 'DetectionPhase:Field', 'Latitude:40.170101', 'Longitude: -92.177847', 'OriginationPhase:Coding', 'Priority:High', 'Status:Completed']}, ' type': 'issue'}, {'\_id': '19', index': 'issues', \_score': 1.0, '\_source': {'Author': 'HSP18SCM69D', 'Latitude': '41.883772', 'Longitude': '-87.625962', 'State': 'open', 'closed\_at': None, 'created at': '2018-04-09', 'issue number': 19, 'labels': ['Address:119 NORTH WABASH', 'Category:Bug', 'DetectionPhase:Testing', 'Latitude:41.883772',

```
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'Status:Approved']},
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   'DetectionPhase:Design',
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   'Longitude:-87.646804',
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   'Priority: Medium',
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```

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```

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 '_source': {'Author': 'HSP18SCM69D',
  'Latitude': '41.883772',
  'Longitude': '-87.625962',
  'State': 'open',
  'closed at': None,
```

```
'created at': '2018-04-09',
  'issue_number': 31,
  'labels': ['Address:119 NORTH WABASH',
   'Category:Bug',
   'DetectionPhase:Design',
   'Latitude:41.883772',
   'Longitude:-87.625962',
   'OriginationPhase:Field',
   'Priority:Low',
   'Status:inProgress']},
 ' type': 'issue'},
{'_id': '23',
  _index': 'issues',
  _score': 1.0,
 '_source': {'Author': 'HSP18SCM69D',
  'Latitude': '41.883772',
  'Longitude': '-87.625962',
  'State': 'open',
  'closed at': None,
  'created_at': '2018-04-09',
  'issue_number': 23,
  'labels': ['Address:119 NORTH WABASH',
   'Category: Enhancement',
   'DetectionPhase:Testing',
   'Latitude:41.883772',
   'Longitude:-87.625962',
   'OriginationPhase:Design',
   'Priority:Low',
   'Status:inProgress']},
 '_type': 'issue'},
{'_id': '17',
  _index': 'issues',
  _score': 1.0,
 '_source': {'Author': 'HSP18SCM69D',
  'Latitude': '41.880982',
  'Longitude': '-87.630553',
  'State': 'open',
  'closed_at': None,
  'created_at': '2018-04-09',
  'issue_number': 17,
  'labels': ['Address:23 S CLARK',
   'Category: Enhancement',
   'DetectionPhase:Design',
   'Latitude:41.880982',
   'Longitude:-87.630553',
   'OriginationPhase:Design',
   'Priority:High',
   'Status:Completed']},
 '_type': 'issue'},
{'_id': '11',
  index': 'issues',
  score': 1.0,
 '_source': {'Author': 'HSP18SCM69D',
  'Latitude': '41.891551',
  'Longitude': '-87.607375',
  'State': 'open',
  'closed at': None,
```

```
'created_at': '2018-04-09',
                'issue_number': 11,
                'labels': ['Address:600 E GRAND AVE',
                 'Category:Bug',
                 'DetectionPhase:Testing',
                 'Latitude:41.891551',
                 'Longitude:-87.607375',
                 'OriginationPhase:Testing',
                 'Priority:Critical',
                 'Status:Approved']},
               '_type': 'issue'}],
             'max_score': 1.0,
             'total': 255},
            'timed_out': False,
            'took': 13}
In [514]: sid = result without condition[' scroll id']
           scroll_size = result_without_condition['hits']['total']
           scroll size
Out[514]: 255
In [515]:
          print (sid)
          print (scroll_size)
```

```
In [516]: final location ll = []
          while(scroll size > 0):
              for doc in result without condition['hits']['hits']:
                                                                                      #It
          erating each results of the qurey
                  location_ll = []
                   results = doc['_source']['labels']
                  for x in results:
                      rr1 = x.split(':')
                      if rr1[0]== "Latitude":
                          lat val = float(rr1[1])
                          location_ll.append(lat_val )
                      if rr1[0]== "Longitude":
                          lon val = float(rr1[1])
                          location ll.append(lon val )
                  if (len(location_ll)==2):
                      final_location_ll.append(location_ll)
                                       #Appending Latitude and Longitude into the list
              result without condition = es.scroll(scroll id = sid, scroll = '2m')
              sid = result_without_condition['_scroll_id']
             #Changing the scroll-id
              scroll_size = len(result_without_condition['hits']['hits'])
          final_location_ll
```

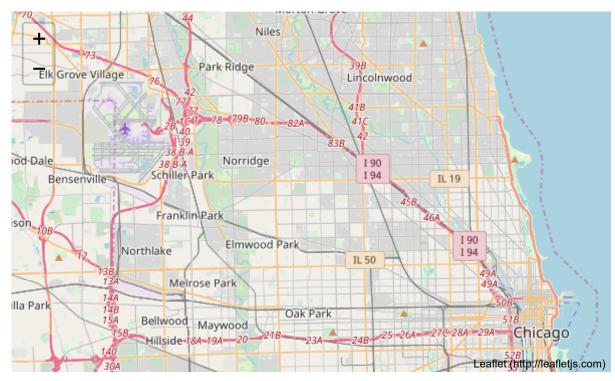
```
Out[516]: [[41.891551, -87.607375],
            [40.170101, -92.177847],
            [41.883772, -87.625962],
            [41.917164, -87.686965],
            [41.878693, -87.638924],
            [41.838897, -87.646804],
            [41.858415, -87.660926],
            [41.89302, -87.631556],
            [41.878693, -87.638924],
            [41.847095, -87.616767],
            [41.847095, -87.616767],
            [41.847095, -87.616767],
            [41.877817, -87.631247],
            [41.89323, -87.617419],
            [41.847095, -87.616767],
            [41.877846, -87.631296],
            [41.838897, -87.646804],
            [41.838897, -87.646804],
            [41.847095, -87.616767],
            [41.877846, -87.631296],
            [41.878693, -87.638924],
            [41.89323, -87.617419],
            [41.883772, -87.625962],
            [41.917164, -87.686965],
            [41.883772, -87.625962],
            [41.917164, -87.686965],
            [41.880982, -87.630553],
            [41.917164, -87.686965],
            [41.89323, -87.617419],
            [40.170101, -92.177847],
            [41.883772, -87.625962],
            [41.883772, -87.625962],
            [41.880982, -87.630553],
            [41.847095, -87.616767],
            [41.838897, -87.646804],
            [41.89302, -87.631556],
            [41.847095, -87.616767],
            [41.809739, -87.607105],
            [41.847441, -87.679408],
            [41.847095, -87.617419],
            [41.847095, -87.616767],
            [41.89302, -87.631556],
            [41.847095, -87.616767],
            [41.877817, -87.631247],
            [41.877846, -87.631296],
            [41.951072, -88.119872],
            [41.89302, -87.631556],
            [41.853136, -87.63316],
            [41.891551, -87.607375],
            [41.880982, -87.630553],
            [41.883772, -87.625962],
            [40.170101, -92.177847],
            [41.877817, -87.631247],
            [41.877817, -87.631247],
            [41.853136, -87.63316],
            [41.877817, -87.631247],
            [41.880982, -87.630553],
```

```
[41.853136, -87.63316],
[41.847441, -87.679408],
[41.852623, -87.611958],
[41.847095, -87.616767],
[41.877817, -87.631247],
[41.89302, -87.631556],
[41.877846, -87.631296],
[41.879094, -87.813483],
[42.004828, -87.67314],
[41.858415, -87.67314],
[42.004828, -87.67314],
[41.858415, -87.660926],
[41.89302, -87.631556],
[41.89302, -87.631556],
[41.838897, -87.646804],
[41.847095, -87.616767],
[41.853136, -87.63316],
[41.917164, -87.686965],
[41.891551, -87.607375],
[41.883772, -87.625962],
[41.877817, -87.631247],
[41.89323, -87.617419],
[41.883772, -87.625962],
[41.877817, -87.631247],
[41.925573, -87.649249],
[41.852623, -87.611958],
[41.852623, -87.611958],
[41.847095, -87.616767],
[41.877817, -87.631247],
[41.89302, -87.631556],
[41.878693, -87.638924],
[41.878693, -87.638924],
[41.852623, -87.611958],
[41.877817, -87.631247],
[41.879094, -87.813483],
[41.877817, -87.631247],
[38.591142, -89.984312],
[41.852623, -87.611958],
[41.891551, -87.607375],
[41.877817, -87.631247],
[41.89323, -87.617419],
[41.917164, -87.686965],
[41.877817, -87.631247],
[41.880982, -87.630553],
[41.89323, -87.617419],
[41.853136, -87.63316],
[41.852623, -87.611958],
[41.877846, -87.631296],
[41.877817, -87.631247],
[41.847095, -87.616767],
[41.809739, -87.607375],
[41.847441, -87.631247],
[41.877948, -87.634926],
[41.847095, -87.616767],
[41.847095, -87.616767],
[38.542048, -89.984333],
[41.883772, -87.625962],
```

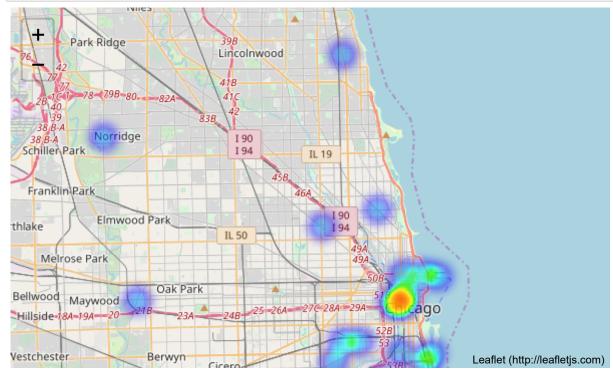
```
[41.847095, -87.616767],
            [41.847095, -87.616767],
            [41.877846, -87.631296],
            [41.879094, -87.813483],
            [41.847095, -87.616767],
            [41.847095, -87.616767],
            [41.883772, -87.625962],
            [41.877846, -87.631296],
            [41.96245, -87.837132],
            [41.847095, -87.616767],
            [41.852623, -87.611958],
            [41.877817, -87.631247],
            [41.852623, -87.611958],
            [41.777989, -87.664548],
            [41.853136, -87.63316],
            [40.170101, -92.177847],
            [41.89323, -87.617419],
            [41.880982, -87.630553],
            [40.170101, -92.177847],
            [41.883772, -87.625962],
            [41.883772, -87.625962],
            [41.880982, -87.630553],
            [41.891551, -87.607375]]
In [517]: print ("Filtered records for all match : ", len(final_location_ll))
          Filtered records for all match :
                                               137
In [518]:
          import folium
           from folium import plugins
           print(folium.__version__)
          0.5.0
```

<folium.folium.Map object at 0x0000020D23CD0780>

Out[519]:







## **Query 1 for DetectionPhase is Field AND Priority is Critical**

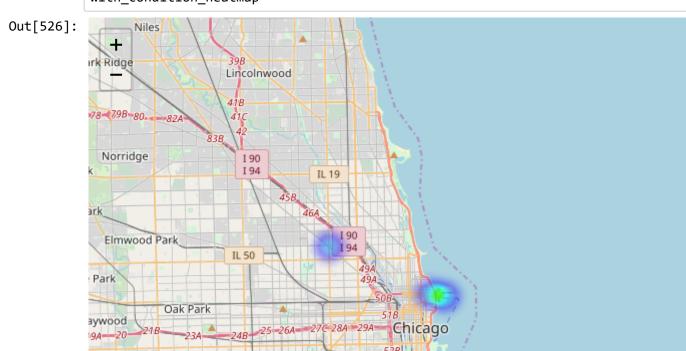
Out[521]: 5

In [522]: result\_with\_condition

Out[522]: {' scroll id': 'DnF1ZXJ5VGhlbkZldGNoBQAAAAAAAADnFlZwYWNVc0FfUnhDZy0tVnNIbX VFZ2cAAAAAAAAA6BZWcGFjVXNBX1J4Q2ctLVZzSG11RWdnAAAAAAAAAAOkWVnBhY1VzQV9SeENn LS1Wc0htdUVnZwAAAAAAAADqFlZwYWNVc0FfUnhDZy0tVnNIbXVFZ2cAAAAAAAAAAAACxZWcGFjVX NBX1J4Q2ctLVZzSG11RWdn', '\_shards': {'failed': 0, 'skipped': 0, 'successful': 5, 'total': 5}, 'hits': {'hits': [{'\_id': '12', '\_index': 'issues', 'score': 2.680638, \_source': {'Author': 'HSP18SCM69D', 'Latitude': '41.893230', 'Longitude': 'None', 'State': 'open', 'closed at': None, 'created\_at': '2018-04-09', 'issue number': 12, 'labels': ['Address:645 N MCCLURG CT', 'Category:Inquiry', 'DetectionPhase:Field', 'Latitude:41.893230', 'OriginationPhase:Coding', 'Priority:Critical', 'Status:Approved']}, ' type': 'issue'}, {'\_id': '52', index': 'issues', \_score': 1.9169197, '\_source': {'Author': 'HSP18SCM69D', 'Latitude': '41.893230', 'Longitude': '-87.617419', 'State': 'open', 'closed at': None, 'created at': '2018-04-09', 'issue number': 52, 'labels': ['Address:645 N MCCLURG CT', 'Category:Inquiry', 'DetectionPhase:Field', 'Latitude:41.893230', 'Longitude: -87.617419', 'OriginationPhase:Field', 'Priority:Critical', 'Status:inProgress']}, ' type': 'issue'}, {'\_id': '26', \_index': 'issues', 'score': 1.9169197, \_source': {'Author': 'HSP18SCM69D', 'Latitude': '41.917164', 'Longitude': '-87.686965', 'State': 'open', 'closed at': None, 'created\_at': '2018-04-09', 'issue number': 26, 'labels': ['Address:1951 N WESTERN AVE', 'Category: Enhancement', 'DetectionPhase:Field', 'Latitude:41.917164', 'Longitude:-87.686965',

```
'OriginationPhase:Requirements',
                 'Priority:Critical',
                 'Status:Approved']},
               '_type': 'issue'},
              {' id': '38',
               '_index': 'issues',
'_score': 1.63692,
               '_source': {'Author': 'HSP18SCM69D',
                'Longitude': '-87.607375',
                'State': 'open',
                'closed_at': None,
                'created at': '2018-04-09',
                'issue_number': 38,
                'labels': ['Address:600 E GRAND AVE',
                 'Category: Enhancement',
                 'DetectionPhase:Field',
                 'Latitude:41.891551',
                 'Longitude:-87.607375',
                 'OriginationPhase:Documentation',
                 'Priority:Critical',
                 'Status:Approved']},
               '_type': 'issue'}],
             'max_score': 2.680638,
             'total': 4},
            'timed_out': False,
            'took': 2}
In [523]: sid = result with condition[' scroll id']
           scroll_size = result_with_condition['hits']['total']
           scroll_size
Out[523]: 4
```

```
In [524]: final_location_ll = []
          while(scroll size > 0):
              for doc in result_with_condition['hits']['hits']:
                                                                                   #It
          erating each results of the qurey
                  location 11 = []
                  results = doc['_source']['labels']
                  for x in results:
                      rr1 = x.split(':')
                      if rr1[0]== "Latitude":
                          lat val = float(rr1[1])
                          location ll.append(lat val )
                      if rr1[0]== "Longitude":
                          lon val = float(rr1[1])
                          location ll.append(lon val )
                  if (len(location_ll)==2):
                      final location ll.append(location ll)
                                      #Appending Latitude and Longitude into the list
              result with condition = es.scroll(scroll id = sid, scroll = '2m')
              sid = result_with_condition['_scroll_id']
             #Changing the scroll-id
              scroll size = len(result with condition['hits']['hits'])
          final location ll
Out[524]: [[41.89323, -87.617419], [41.917164, -87.686965], [41.891551, -87.607375]]
In [525]: print ("Filtered records for query 1 : ", len(final_location_ll))
          Filtered records for query 1:
```



# **Query 2 for DetectionPhase is Field AND Status is Completed**

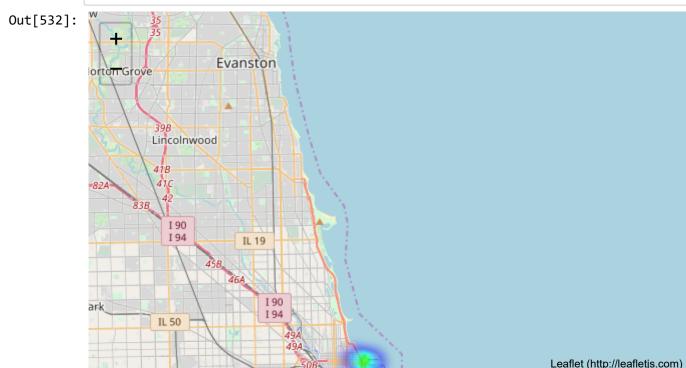
Leaflet (http://leafletjs.com)

In [528]: result\_with\_condition\_query2

Out[528]: {'\_scroll\_id': 'DnF1ZXJ5VGhlbkZldGNoBQAAAAAAAADsFlZwYWNVc0FfUnhDZy0tVnNIbX VFZ2cAAAAAAAAA7RZWcGFjVXNBX1J4Q2ctLVZzSG11RWdnAAAAAAAAAAA04WVnBhY1VzQV9SeENn LS1Wc0htdUVnZwAAAAAAAADwFlZwYWNVc0FfUnhDZy0tVnNIbXVFZ2cAAAAAAAAAA7xZWcGFjVX NBX1J4Q2ctLVZzSG11RWdn', '\_shards': {'failed': 0, 'skipped': 0, 'successful': 5, 'total': 5}, 'hits': {'hits': [{'\_id': '22', '\_index': 'issues', 'score': 4.4232726, \_source': {'Author': 'HSP18SCM69D', 'Latitude': '40.170101', 'Longitude': '-92.177847', 'State': 'open', 'closed at': None, 'created\_at': '2018-04-09', 'issue number': 22, 'labels': ['Address:233 W JACKSON', 'Category:Bug', 'DetectionPhase:Field', 'Latitude:40.170101', 'Longitude: -92.177847', 'OriginationPhase:Coding', 'Priority:High', 'Status:Completed']}, '\_type': 'issue'}, {' id': '42', \_index': 'issues', score': 4.1702557, '\_source': {'Author': 'HSP18SCM69D', 'Latitude': '41.891551', 'Longitude': '-87.607375', 'State': 'open', 'closed at': None, 'created at': '2018-04-09', 'issue number': 42, 'labels': ['Address:600 E GRAND AVE', 'Category: Enhancement', 'DetectionPhase:Field', 'Latitude:41.891551' 'Longitude:-87.607375', 'OriginationPhase:Requirements', 'Priority:High', 'Status:Completed']}, ' type': 'issue'}, {'\_id': '13', index': 'issues', \_score': 3.223109, '\_source': {'Author': 'HSP18SCM69D', 'Latitude': '41.893230', 'Longitude': '-87.617419', 'State': 'open', 'closed\_at': None, 'created at': '2018-04-09', 'issue number': 13, 'labels': ['Address:645 N MCCLURG CT', 'Category: Enhancement', 'DetectionPhase:Field', 'Latitude:41.893230',

```
'Longitude:-87.617419',
                 'OriginationPhase:Coding',
                 'Priority:High',
                 'Status:Completed']},
               '_type': 'issue'},
              {'_id': '51',
                _index': 'issues',
               '_score': 2.5170636,
                _source': {'Author': 'HSP18SCM69D',
                'Latitude': '41.853136',
                'Longitude': '-87.633160',
                'State': 'open',
                'closed at': None,
                'created_at': '2018-04-09',
                'issue_number': 51,
                'labels': ['Address:2525 S Martin Luther King Drive',
                 'Category:Inquiry',
                 'DetectionPhase:Field',
                 'Latitude:41.853136',
                 'Longitude:-87.633160',
                 'OriginationPhase:Testing',
                 'Priority:High',
                 'Status:Completed']},
               '_type': 'issue'}],
             'max_score': 4.4232726,
             'total': 4},
            'timed_out': False,
            'took': 2}
In [529]: | sid = result_with_condition_query2['_scroll_id']
           scroll_size = result_with_condition_query2['hits']['total']
           scroll size
Out[529]: 4
```

```
In [530]:
          final location ll = []
          while(scroll size > 0):
              for doc in result_with_condition_query2['hits']['hits']:
              #Iterating each results of the qurey
                  location 11 = []
                  results = doc['_source']['labels']
                  for x in results:
                      rr1 = x.split(':')
                      if rr1[0]== "Latitude":
                          lat val = float(rr1[1])
                          location ll.append(lat val )
                      if rr1[0]== "Longitude":
                          lon val = float(rr1[1])
                          location ll.append(lon val )
                  if (len(location_ll)==2):
                      final location ll.append(location ll)
                                       #Appending Latitude and Longitude into the list
              result with condition query2 = es.scroll(scroll id = sid, scroll = '2m'
              sid = result_with_condition_query2['_scroll_id']
                    #Changing the scroll-id
              scroll size = len(result with condition query2['hits']['hits'])
          final_location_ll
Out[530]: [[40.170101, -92.177847],
           [41.891551, -87.607375],
           [41.89323, -87.617419],
           [41.853136, -87.63316]]
In [531]: print ("Filtered records for query 2 : ", len(final_location_ll))
          Filtered records for query 2:
```



## **Query 3 for DetectionPhase is Field AND Priority is Critical AND Status is Approved**

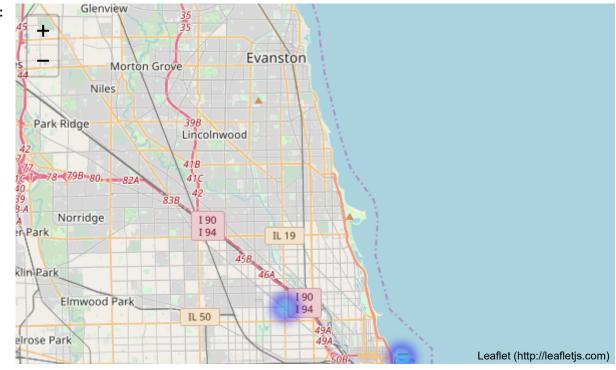
In [534]: result\_with\_condition\_query3

Out[534]: {'\_scroll\_id': 'DnF1ZXJ5VGhlbkZldGNoBQAAAAAAAADxFlZwYWNVc0FfUnhDZy0tVnNIbX VFZ2cAAAAAAAAABhZWcGFjVXNBX1J4Q2ctLVZzSG11RWdnAAAAAAAAAAPMWVnBhY1VzQV9SeENn LS1Wc0htdUVnZwAAAAAAAD1FlZwYWNVc0FfUnhDZy0tVnNIbXVFZ2cAAAAAAAAAABBZWcGFjVX NBX1J4Q2ctLVZzSG11RWdn', '\_shards': {'failed': 0, 'skipped': 0, 'successful': 5, 'total': 5}, 'hits': {'hits': [{'\_id': '12', '\_index': 'issues', 'score': 3.1718001, \_source': {'Author': 'HSP18SCM69D', 'Latitude': '41.893230', 'Longitude': 'None', 'State': 'open', 'closed at': None, 'created\_at': '2018-04-09', 'issue number': 12, 'labels': ['Address:645 N MCCLURG CT', 'Category:Inquiry', 'DetectionPhase:Field', 'Latitude:41.893230', 'OriginationPhase:Coding', 'Priority:Critical', 'Status:Approved']}, ' type': 'issue'}, {'\_id': '26', index': 'issues', \_score': 2.7237563, '\_source': {'Author': 'HSP18SCM69D', 'Latitude': '41.917164', 'Longitude': '-87.686965', 'State': 'open', 'closed at': None, 'created at': '2018-04-09', 'issue number': 26, 'labels': ['Address:1951 N WESTERN AVE', 'Category: Enhancement', 'DetectionPhase:Field', 'Latitude:41.917164', 'Longitude:-87.686965', 'OriginationPhase:Requirements', 'Priority:Critical', 'Status:Approved']}, ' type': 'issue'}, {'\_id': '38', index': 'issues', '\_score': 2.4814277, \_ '\_source': {'Author': 'HSP18SCM69D', 'Latitude': '41.891551', 'Longitude': '-87.607375', 'State': 'open', 'closed at': None, 'created\_at': '2018-04-09', 'issue number': 38, 'labels': ['Address:600 E GRAND AVE', 'Category: Enhancement', 'DetectionPhase:Field', 'Latitude:41.891551', 'Longitude:-87.607375',

```
In [536]:
          final_location_ll = []
          while(scroll size > 0):
              for doc in result_with_condition_query3['hits']['hits']:
           #Iterating each results of the gurey
                  location 11 = []
                  results = doc['_source']['labels']
                  for x in results:
                      rr1 = x.split(':')
                      if rr1[0]== "Latitude":
                          lat val = float(rr1[1])
                          location ll.append(lat val )
                      if rr1[0]== "Longitude":
                          lon val = float(rr1[1])
                          location ll.append(lon val )
                  if (len(location 11)==2):
                      final location ll.append(location ll)
                                       #Appending Latitude and Longitude into the list
              result with condition query3 = es.scroll(scroll id = sid, scroll = '2m')
              sid = result with condition_query3['_scroll_id']
                 #Changing the scroll-id
              scroll_size = len(result_with_condition_query3['hits']['hits'])
          final_location_ll
Out[536]: [[41.917164, -87.686965], [41.891551, -87.607375]]
In [537]: print ("Filtered records for query 3 : ", len(final_location_ll))
          Filtered records for query 3: 2
```

## For generating HeatMap records fetched based on Query 3

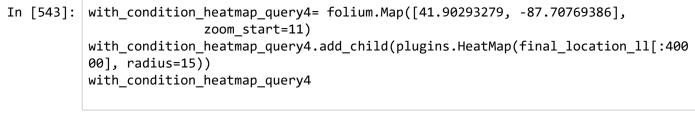
Out[538]:

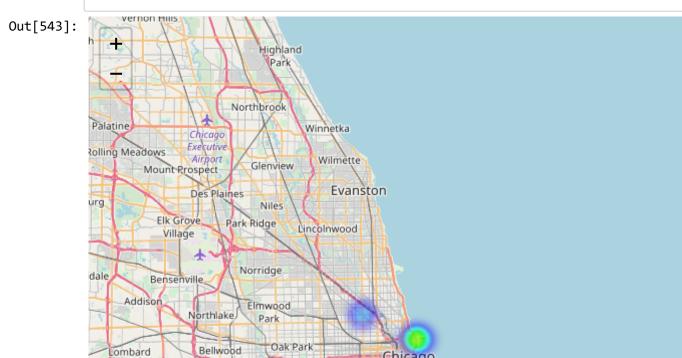


# Query 4 for DetectionPhase is Field AND Priority is Critical or High AND Status is Approved or inProgress

```
In [540]: sid = result_with_condition_query4['_scroll_id']
scroll_size = result_with_condition_query4['hits']['total']
scroll_size
Out[540]: 24
```

```
In [541]:
          final_location_ll = []
          while(scroll size > 0):
              for doc in result_with_condition_query4['hits']['hits']:
           #Iterating each results of the gurey
                   location 11 = []
                   results = doc['_source']['labels']
                  for x in results:
                       rr1 = x.split(':')
                       if rr1[0]== "Latitude":
                          lat val = float(rr1[1])
                           location ll.append(lat val )
                       if rr1[0]== "Longitude":
                          lon_val = float(rr1[1])
                          location ll.append(lon val )
                  if (len(location 11)==2):
                       final location ll.append(location ll)
                                       #Appending Latitude and Longitude into the list
              result with condition query4 = es.scroll(scroll id = sid, scroll = '2m')
              sid = result with condition query4[' scroll id']
                 #Changing the scroll-id
              scroll size = len(result with condition query4['hits']['hits'])
          final_location_ll
Out[541]: [[41.89323, -87.617419],
           [41.853136, -87.63316],
           [41.917164, -87.686965],
           [41.891551, -87.607375]]
In [542]: print ("Filtered records for query 4 : ", len(final_location_ll))
          Filtered records for query 4:
```





Query 5 for Create Folium HeatMap for all locations that got at least 5 issues create for the same location (latitude, Longitude)

Chicago

Lombard

Leaflet (http://leafletjs.com)

```
Out[544]: {' shards': {'failed': 0, 'skipped': 0, 'successful': 5, 'total': 5},
            aggregations': {'latitude': {'buckets': [{'doc_count': 5,
                'key': '40.170101',
                'longitude': {'buckets': [{'doc_count': 5, 'key': '-92.177847'}],
                 'doc count error upper bound': 0,
                 'sum_other_doc_count': 0}},
               {'doc_count': 5,
                'kev': '41.877846',
                'longitude': {'buckets': [{'doc count': 5, 'key': '-87.631296'}],
                 'doc count error upper bound': 0,
                 'sum other doc count': 0}},
               {'doc_count': 5,
                'key': '41.878693',
                'longitude': {'buckets': [{'doc count': 5, 'key': '-87.638924'}],
                 'doc count error upper bound': 0,
                 'sum_other_doc_count': 0}},
               {'doc count': 5,
                'key': '41.891551',
                'longitude': {'buckets': [{'doc_count': 5, 'key': '-87.607375'}],
                 'doc count error upper bound': 0,
                 'sum other doc count': 0}},
               {'doc count': 6,
                'key': '41.853136',
                'longitude': {'buckets': [{'doc_count': 6, 'key': '-87.633160'}],
                 'doc_count_error_upper_bound': 0,
                 'sum other doc count': 0}},
               {'doc count': 6,
                'key': '41.917164',
                'longitude': {'buckets': [{'doc count': 6, 'key': '-87.686965'}],
                 'doc_count_error_upper_bound': 0,
                 'sum_other_doc_count': 0}},
               {'doc count': 7,
                'key': '41.880982',
                'longitude': {'buckets': [{'doc_count': 7, 'key': '-87.630553'}],
                 'doc_count_error_upper_bound': 0,
                 'sum_other_doc_count': 0}},
               {'doc count': 7,
                'key': '41.893020',
                'longitude': {'buckets': [{'doc count': 6, 'key': '-87.631556'}],
                 'doc count error upper bound': 0,
                 'sum_other_doc_count': 0}},
               {'doc count': 7,
                'key': '41.893230',
                'longitude': {'buckets': [{'doc count': 7, 'key': '-87.617419'}],
                 'doc count error upper bound': 0,
                 'sum other doc count': 0}},
               {'doc_count': 8,
                'key': '41.852623',
                'longitude': {'buckets': [{'doc_count': 8, 'key': '-87.611958'}],
                 'doc count error upper bound': 0,
                 'sum other doc count': 0}}],
              'doc count error upper bound': 0,
              'sum_other_doc_count': 44}},
            'hits': {'hits': [], 'max score': 0.0, 'total': 137},
            'timed out': False,
            'took': 19}
```

```
In [546]:
           with_condition_heatmap_quer5 = folium.Map([41.9029,-87.7070],zoom_start=11)
           print("Filtered records for query 5 : ",len(list_query_5))
           Filtered records for query 5:
In [547]:
           with_condition_heatmap_quer5.add_child(plugins.HeatMap(list_query_5[:40000], r
           adius=15))
           with condition heatmap quer5
Out[547]:
                             Lincolnwood
           Norridge
                               I 94
                                          IL 19
           Elmwood Park
                              IL 50
                    Oak Park
           boov
                  Berwyn
                           Cicero
                                                                              Leaflet (http://leafletjs.com)
```