

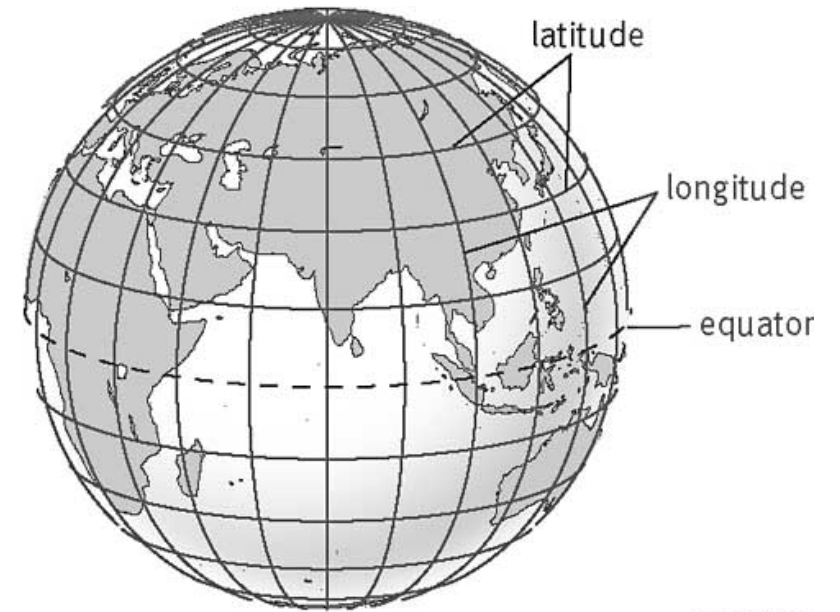
LAB6



PyMongo

Geospatial index

- pymongo.GEO2D
 - ▣ 2d
- pymongo.GEOSPHERE
 - ▣ 2dsphere



Geospatial index

□ Syntax

- ▣ `create_index([(field, index type)])`
- ▣ `index_information()`
- ▣ `drop_index([(field, index type)])`

e.g.)

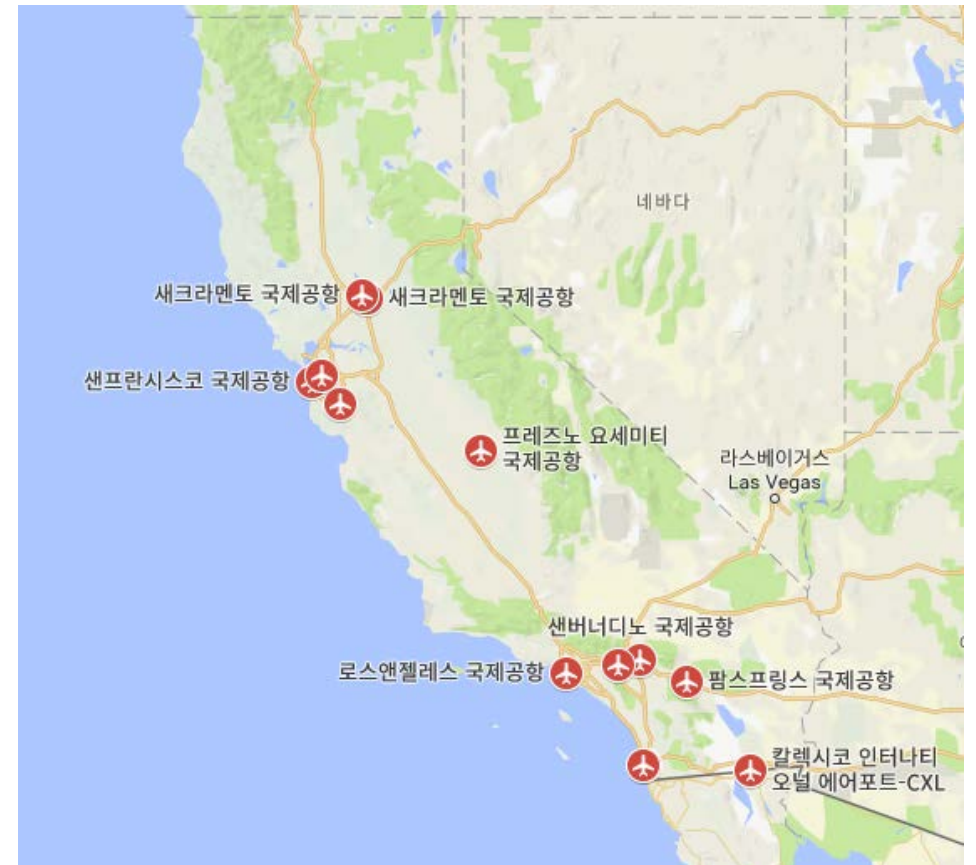
```
from pymongo import MongoClient, GEOSPHERE
db = MongoClient().geo_example
db.places.create_index([("loc", GEOSPHERE)])
```

Exercise 1

- Import `states.json` and `airports.json`
 - ▣ Database: `lab6`
 - ▣ Collection: `states` and `airports`
- Create a geospatial index (2dsphere) for the *airports* collection
- Get information on *airports* collection's indexes
- Remove the geospatial index from the *airports* collection

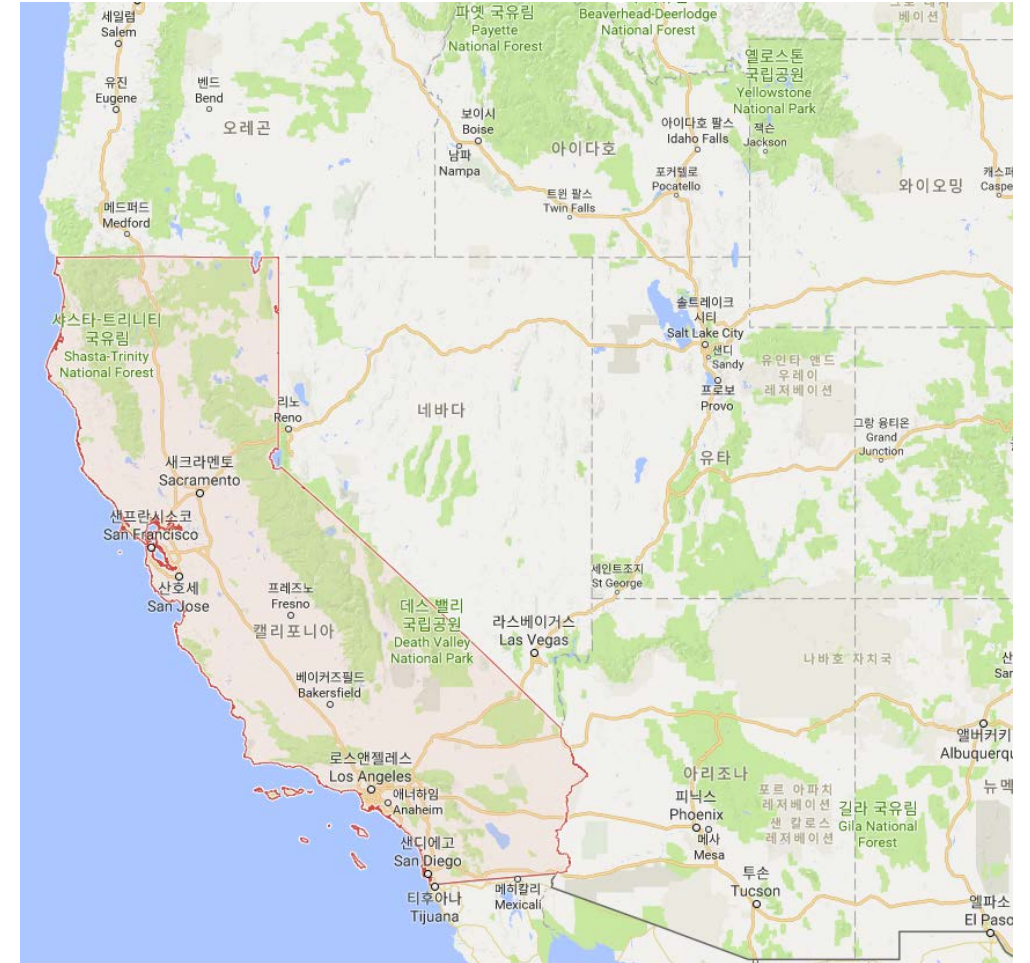
Exercise 2

- Find international airports in California
 - ▣ Get the California location first (Polygon)
 - ▣ Only show *name*, *type*, and *code* and sort by *name*
- Find the second most distance airport from SFO in California



Exercise 3

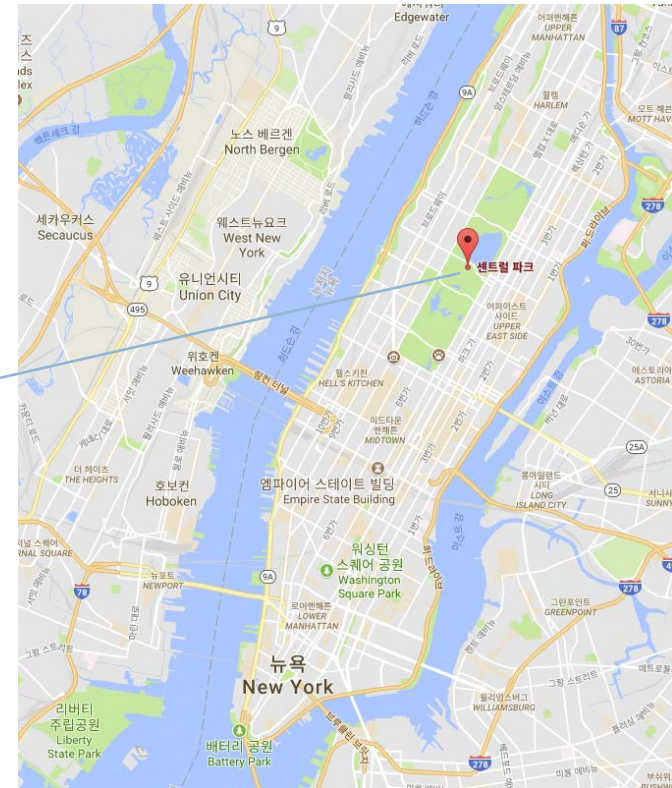
- Get all the adjacent states to California
 - ▣ Search for all the states that have coordinates that intersects with California
 - ▣ Only show *name* and *code*



Exercise 4

- Find all the international airports
 - ▣ Located at less than 20km from the reservoir in NYC Central Park
 - ▣ Only show *name* and code

Latitude: 40.782865
Longitude: -73.965355



Exercise 5 (cont')

- Print the total distance, $Q1 + Q2$
- Print the airports used

$$\text{Euclidean distance (d)} = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$



Social Networking

Wall & Newsfeed

- wall.py & newsfeed.py
- There is a function, `getPosts()`, which supports basic function.
- You may make additional functions related to wall and newsfeed concepts.

Wall & Newsfeed

- Wall.py
 - ▣ Display your posts.
 - ▣ Using a query to get your posts.
- Newsfeed.py
 - ▣ Display posts of user's followings.
 - ▣ Concern the post order.



Checklist

- Your posts are displayed in wall.
- Posts of followings are display in newsfeed
- Regards the index that processes your query efficiently