Lab05

Due date: March 10th, 2025

Submission: In word document, with screenshot of your sql commands and the result

Total points: 9 pts

Objectives:

1. Get familiar with spatial queries using PostGIS
2. Develop skills in spatial joins, grouping, filtering, and ordering data based on distance calculations

Exercise 01 (1.5pts):

Identify airports that have fewer than 3 navigation aids within 100 km (100,000 meters).

1. Left join is used to combine airports with navaids based on spatial condition
2. Group the results by airport name and its geogmetry
3. Filter the results to include only airports that have fewer than 3 nearby navigation aids

Exercise 02 (.15pts):

Finding the Top 5 Airports with the Most Nearby Navigation Aids within 50 km Radius.

1. Left join is used to match each airport with navigation aids that are within 50 km of the airport.
2. Group the airport to get its own count of nearby naviaids
3. ORDER BY clause sorts the results in descending order based on the number of nearby navigation aids

Exercise 03 (1.5pts):

Find the Last 10 Airport with the Fewest Nearby Navigation Aids within 50 km

1. Left Join is used to match each airport with navigation aids that are within 50km of the airport.
2. Group the airport to get its own count of nearby naviaids
3. ORDER BY clause sorts the results in ascending order based on the number of nearby navigation aids

Exercise 04 (.15pts):

Find the 3 closest airports from Worcester (-75.8008, 42.2610), ensuring that they are at least 90 km away

1. Find the airports that are closest to Worcester but are at least 90km away by using ST_Distance(), converting the distance to an 'geography' object (ensuring that ST_Distance() calculates distances using the Earth's curvature)
2. Sort the result in ascending order and select the top 3 rows

Exercise 05 (3pts):

Finding the 5 Closest Navigation Aids to the Farthest Navigation Aid of Boston Airport

1. Find the navigation aid that is farthest from "Bedds_NDB_US" (i.e., the most distant navigation aid).
2. Using that farthest navigation aid, find the 5 closest navigation aids to it.
3. Return the following details for each navigation aid:
    a) Identifier (ident)
    b) Name (name)
    c) Distance from the farthest navigation aid (dist, in kilometers)
4. Sort the results in ascending order by distance (dist), showing the 5 closestnavigation aids.