Spatiotemporal Data Management and Analytics

Question Set Day 1: An Introduction to Spatial Databases

Semester 3, 2020

Question 1: Let us consider a set of locations in a map, where each location can be represented by its ID and its longitude and latitude. How do you store such data in a Relational DBMS? If our query is to find the nearest location to a given location, how do you process this query in the relational DBMS based on your design? Is it possible to write an SQL query to do that?

Question 2: How can you store the above information using spatial data type POINT? With this design, how do you write an SQL query to find the nearest location to a given query point (using spatial data types and predicates)?

Question 3: Consider possible ways to execute the neighbour query above, and identify places where query execution time be reduced. Will any types of indexing structures in the relational DBMS, such as B-Tree, Bitmap and hash tables, help to reduce the amount of data to fetched and checked?