CSE 511 – Project Phase 1

Group15

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The goal of this project is to extract data and perform spatial queries using user-defined functions. We use Scala to implement these functions.

**Problem Description:** There are two user-defined functions which we must develop ST\_Contains and ST\_Within . We use these functions to run four spatial queries -

1. Range Query – This query is used to find all the points P located within a rectangle R.
2. Range Join Query – This is used to find all possible point,rectangle pairs such that the point is within the rectangle. We utilize points P and rectangles R.
3. Distance Query – We have a fixed point P and a distance D. Here we need to find all possible points in the radius of D from P.
4. Distance Join Query – Here we have two sets of points P1 and P2, and a given distance D. This query is used to find a set of points (p1,p2) where p1 is part of P1 and p2 is part of P2 such that the distance between p1 and p2 is less than or equal to D.

**ST\_Contains :** This function takes two input parameters. One input parameter is a point, and another is the diagonal ends of a rectangle. It checks if the given point is within the rectangle or not.

**ST\_Within** : There are 3 arguments passed to this function. Two points p1 and p2, and a distance D.

This function is used to check if the distance between the points p1 and p2 is less than or equal to D.

Testing our code:

Below are the steps to run the code and test its functionality: