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Technische Universität Braunschweig

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http://www.ifis.cs.tu-bs.de

Karl Neumann, Sarah Tauscher

Exercises for Spatial Databases and GIS

Sheet 5 (until 07.12.2012)

Exercise 1 (Core SQL / Point-in-Polygon)

Point(id: *Integer*, x: *Integer*, y: *Integer*)
Polygon(id: *Integer*, pos: *Integer*, pointId: *Integer*)

Given the relations above, construct one SQL query that retrieves for one polygon all points, which are not points of the polygon, but lie within the polygon.

Exercise 2 (Approximations)

1. Which topological relations may occur between two spatial objects if the given topological relation exists between their conservative/ progressive approximations?
   a) Disjoint
   b) Equal
   c) Contains
   d) Overlap
2. Why do spatial indexes usually use a conservative approximation?
3. Under which circumstances would a progressive approximation be more suitable than a conservative one?

Exercise 3 (R-tree)

1. Insert the orange rectangle on the picture overleaf into the given r-tree. Use the algorithm with linear complexity to determine the seeds.
2. How can you judge the quality of a r-tree?

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