Publication date : 05/02/2024

Course : Spatial data management in PostgreSQL and SQL Server

Practical course - 3d - 21h00 - Ref. TIA
Price : 2040 € E.T.

This course will teach you how to manipulate spatial data in relational DBMS such as PostgreSQL and SQL Server, using the PostGIS plug-in. Processing will be carried out with a mix of relational, geographic and spatio-temporal data: location, path, area evolution, etc.

Teaching objectives

At the end of the training, the participant will be able to:

- Discover GIS standards and industry norms
- Formalize spatial data in relational DBMS under PostGreSQL and SQL Server
- Discover PostGIS spatial plug-ins
- Know how to manipulate relational, geographic and spatiotemporal data

Intended audience

Geomatics developers, data architects, technical project managers wishing to integrate geometric and geographic data into an RDBMS such as PostgreSQL or SQL Server.

Prerequisites

Good knowledge of SQL, RDBMS and database design.

Practical details

Hands-on work

Creation of a GPS navigation database. Creation of a hydrological database. Positioning of limnimetry and rainfall sensors.

Course schedule

PARTICIPANTS

Geomatics developers, data architects, technical project managers wishing to integrate geometric and geographic data into an RDBMS such as PostgreSQL or SQL Server.

PREREQUISITES

Good knowledge of SQL, RDBMS and database design.

TRAINER QUALIFICATIONS

The experts leading the training are specialists in the covered subjects. They have been approved by our instructional teams for both their professional knowledge and their teaching ability, for each course they teach. They have at least five to ten years of experience in their field and hold (or have held) decision-making positions in companies.

ASSESSMENT TERMS

The trainer evaluates each participant's academic progress throughout the training using multiple choice, scenarios, hands-on work and more.
Participants also complete a placement test before and after the course to measure the skills they've developed.

1 GIS (Geographic Information Systems) norms and standards

- SQL ISO 13249-3 SQL/MM : Spatial.
- OGC (Open Geospatial Consortium) standard.
- Position of different RDBMS. Benefits of using a GIS.
- The problem of the earth's geoid (definition of geodetic data).
- Logical representation of geometric data (spaghetti, graph and topological).

2 Geometric data and OGC-compliant spatial data formalization

- Hierarchy of geometric types.
- Spatial reference identifiers (SRIDs).
- Well Known Text (WKT) and Well Known Binary (WKB) generic constructors.

Hands-on work

Geometric transformation in geography.

3 Spatial data modeling

- A look back at relational modeling and relationship normalization.
- Layering of different object natures.
- Modeling shape evolution using spatio-temporal tables.

Hands-on work

Data modeling and thinking about layers.

4 Methods for geometric types

- Common methods.
- Validation test and MakeValid function.
- Data transformation.
- Test topological relationships between objects.
- DE-9IM intersection matrix between objects.
- Methods for calculating geometric objects.

Hands-on work

Creation of primitive functions to manipulate location data.

5 Relational data and GIS

- Spatial and spatio-relational junctions.
- Spatial and spatio-temporal constraints.
- Recursive queries. Spatial views and metadata.

Hands-on work

Create constraints and triggers.

6 Spatial data management

- Indexing spatial objects. Query performance.
- Intelligent denormalization: calculated columns, indexed views, etc.
- Data integration, conversion, loading and export.

Hands-on work

Database indexing and denormalization.

TEACHING AIDS AND TECHNICAL RESOURCES

• The main teaching aids and instructional methods used in the training are audiovisual aids, documentation and course material, hands-on application exercises and corrected exercises for practical training courses, case studies and coverage of real cases for training seminars.
• At the end of each course or seminar, ORSYS provides participants with a course evaluation questionnaire that is analysed by our instructional teams.
• A check-in sheet for each half-day of attendance is provided at the end of the training, along with a course completion certificate if the trainee attended the entire session.

TERMS AND DEADLINES

Registration must be completed 24 hours before the start of the training.

ACCESSIBILITY FOR PEOPLE WITH DISABILITIES

Do you need special accessibility accommodations? Contact Mrs. Fosse, Disability Manager, at psh-accueil@orsys.fr to review your request and its feasibility.

7 Tools and peripheral servers

- Space-oriented frameworks.
- Webmapping and stand-alone solutions.
- SOLAP or BI in space (GBI).

Hands-on work
Visualization of data from different layers.

Times

Courses take place from 09:00 to 12:30 and from 14:00 to 17:30.
Participants may arrive beginning at 08:45. Breaks and lunches are complimentary.
For four- and five-day hands-on courses, sessions end at 16:00 on the last day of the course, regardless of the teaching mode..

Dates and locations

REMOTE CLASS
2026 : 17 June, 16 Sep.

PARIS LA DÉFENSE
2026 : 17 June, 16 Sep.