AMBIENT-IT

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Sign up

Neo4j Training

4 days (28 hours)

Presentation

Discover Neo4j, the graph-oriented database that teaches you how to model, query and analyze your graph data using the Cypher language.

You'll discover how to structure graphs from tabular files, load data into Neo4j, and perform queries to explore patterns, detect communities or build recommendation engines.

You'll also learn how to integrate Neo4j into a modern analytical pipeline.

By the end of this course, you'll be able to handle Neo4j efficiently, run your first graph analyses and exploit the potential of connected data in your projects.

As with all our training courses, it will be run on my latest version of the tool: Neo4j.

Objectives

- Understand the fundamentals of graph-oriented databases
- Model and query a graph using the Cypher language
- Import and structure data from CSV files
- Apply graph data science algorithms for relational analysis
- Visualize and exploit results using Neo4j, Python or BI tools

Target audience

- Data analysts
- Data scientists

- Data managers

Prerequisites

- Basic knowledge of data analysis
- Basic knowledge of SQL
- Knowledge of CSV file manipulation

Neo4j training program

Introduction to graph databases

- Understanding the limits of relational databases for connected data
- Property graph model: nodes, relations, properties
- NoSQL vs. Graph Database
- Neo4j architecture and operation
- Typical use cases (fraud, recommendation, networks, IAM)

Getting started with Neo4j and Cypher

- Discovering Neo4j Desktop, Browser and Aura Free
- Structure of a graph: labels, relationship types, properties
- Cypher language: basic syntax
- Filters, conditions and multiple matches
- Workshop: Querying a mini social graph with Cypher

Creating, updating and deleting data

- Adding nodes and relationships
- Updating or enriching data
- Clean deletion
- Merging existing structures without duplication
- Uniqueness constraints and best structuring practices

Modeling a business graph

- From relational model to graph: identifying entities and their links
- Use case-centric graph design: user journey, transactions, network
- Properties or relationships? Choosing the right granularity
- Naming, typing and graph readability
- Indexes and constraints: speeding up queries and guaranteeing quality

Loading data into Neo4j

- Using LOAD CSV to import tabular files
- Upstream data preparation (cleaning, formatting)
- Dynamic creation of nodes and relationships from CSV files
- Use of transactions and batch mode
- Workshop: Importing a customer-product graph from a CSV dataset

Advanced queries and graph manipulation

- Using WITH, COLLECT, UNWIND for intermediate transformations
- Multi-level relational paths: friends of friends, multiple paths
- Path searches: shortest path, loops, cycles
- Aggregations and groupings for exploratory synthesis
- Workshop: Extracting suspicious cycles or relational patterns in a transactional graph

Graph visualization and exploration

- Using Neo4j Browser and Bloom to explore graphs
- Building customized visualizations
- Exporting results in CSV or JSON
- Introduction to complementary tools: GraphXR, Gephi, etc.
- Integration with Power BI or Tableau via Neo4j BI Connector

Introduction to Graph Data Science

- Introduction to the Graph Data Science Library
- Concepts: graph projections, memory, pipelines
- Using CALL gds.graph.project and gds.graph.drop
- Examples of use: influence, communication, recommendations
- Workshop: Create a graph projection and measure user centrality

Advanced GDS algorithms for Data Science

- Community detection: Louvain, Label Propagation
- Similarity calculations: Jaccard, Cosine, Node similarity
- Shortest paths: Dijkstra, A*
- Path-based recommendation flows
- Workshop: Applying Louvain and similarity to recommend products or relationships

Integration with Python and analytics tools

- Connecting to Neo4j from Python: neo4j and py2neo drivers
- Running Cypher queries from a Jupyter notebook
- Load results into Pandas for further analysis
- Export GDS algorithms for modeling or machine learning
- Workshop: Run a Cypher query from a Python notebook and visualize results

Companies concerned

This training course is aimed at both individuals and companies, large or small, wishing to train their teams in a new advanced IT technology, or to acquire specific business knowledge or modern methods.

Positioning on entry to training

Positioning at the start of training complies with Qualiopi quality criteria. As soon as registration is finalized, the learner receives a self-assessment questionnaire which enables us to assess his or her estimated level of proficiency in different types of technology, as well as his or her expectations and personal objectives for the forthcoming course, within the limits imposed by the selected format. This questionnaire also enables us to anticipate any connection or security difficulties within the company (intra-company or virtual classroom) which could be problematic for the follow-up and smooth running of the training session.

Teaching methods

Practical training: 60% hands-on, 40% theory. Training material distributed in digital format to all participants.

Organization

The course alternates theoretical input from the trainer, supported by examples, with brainstorming sessions and group work.

Validation

At the end of the session, a multiple-choice questionnaire is used to check that skills have been correctly acquired.

Certification

A certificate will be awarded to each trainee who completes the training course.