Chapter 2. Federated Databases (4: NoSQL MongoDB, JSON Doc format; Neo4J, Graph format)

Federated Database Object Study Case: source directory structure

- Support Software and configuration
  - fdbo_study_case/support/2_AccessModel_NoSQL
- Data Source Simulation Scripts
  - fdbo_study_case/1_DataSources
- Integration Structures
  - fdbo_study_case/2_AccessModel_NoSQL

PREPARE Source Data and Integration Context

- Install MongoDB(6) and Neo4J(2025): native or docker containers.
- Create Source Data Collections in ***MongoDB***
  - Studio 3T (localhost:27017)
    - [Add database: mds]
    - [IntelliShell] Run script: fdbo_study_case/1_DataSources/*16_DS_MongoDB_JSON_Locations.js*
- Create Source Data Graphs (nodes and relationships) in ***Neo4J***
  - Neo4J Browser (http://localhost:7474/browser/ with neo4j username and password) or DBeaver (neo4j JDBC connection: jdbc:neo4j:bolt://localhost:7687/)
    - Run script: fdbo_study_case/1_DataSources/*18_DS_Neo4J_Locations.cypher*
- Configure RestHeart Service for MongoDB (using http port 8081)
  - Download and install RESTHeart
    - Edit configuration file: conf-override.conf
      - in */http-listener* configuration check parameters: *host* and *port*;
      - in */mclient/connection-string* check MongoDB connection URL;
      - in */mongo/mongo-mounts* check
        - what parameter: bound to Mongo database name;
        - where parameter: bound to REST-URL database name.;
    - OS Shell/Command prompt: Run and test RestHeart
      - fdbo_study_case/support/2_AccessModel_NoSQL/restheart/*restheart-start-conf-override.txt*
        - *java -jar restheart.jar -o conf-override.conf*
    - Check RestHeart service
      - http://localhost:8081/mds/Locations
        - Username: admin with Password: secret

- Test Neo4J Query API REST Service for Neo4J
    - REST Client (Postman)
        - POST Query
            - URL: http://localhost:7474/db/neo4j/query/v2
            - Authorization
                - Auth Type: Basic Auth
                - Username: neo4j
                - Password: …
            - Body

```
{ "statement": "MATCH (city:City) -[r:LOCATED_IN]-> (departament:Departament)
RETURN city.idCity, city.cityName, city.postalCode, departament.idDepartament,
departament.departamentName, departament.countryName" }
```

CASE STUDY 1: ORCL FDB MongoDB JSON Collections

- Create Integration Views on FDBO schema
    - SQL Developer (Connect with FDBO)
        - fdbo_study_case/2_AccessModel/**28_AM_JSON_MongoDB_View.sql**
        - In case of using ORCL and MongoDB in docker containers see
            - *28_AM_JSON_MongoDB_View_Docker.sql*

CASE STUDY 2: ORCL FDB Neo4J Graphs

- Create Integration Views on FDBO schema
    - SQL Developer (Connect with FDBO)
        - fdbo_study_case/2_AccessModel/**28_AM_JSON_Neo4J_View.sql**
        - In case of using ORCL and Neo4J in docker containers see
            - *28_AM_JSON_Neo4J_View_Docker.sql*
    - SQL Developer (Connect with FDBO)
        - fdbo_study_case/2_AccessModel/**29_AM_JSON_NoSQL_View.sql**
