

# Training TR-102 Report

## Day 12

27<sup>th</sup> June, 2024

The twelfth day of the training focused on SPARQL queries and their implementation using Apache Jena Fuseki.

### SPARQL Queries

The training session included an in-depth exploration of various SPARQL query forms and clauses. Below is a summary of the SPARQL queries covered:

- **SELECT:** Used to retrieve specific variables from the data.

eg.

PREFIX foaf: <http://xmlns.com/foaf/0.1/>

SELECT ?name

WHERE {

    ?person foaf:name ?name.

}

- **WHERE:** Specifies the pattern to match in the dataset.

eg.

PREFIX foaf: <http://xmlns.com/foaf/0.1/>

SELECT ?name

WHERE {

?person foaf:name ?name.

}

- **LIMIT:** Limits the number of results returned.

eg.

PREFIX foaf: <http://xmlns.com/foaf/0.1/>

SELECT ?name

WHERE {

?person foaf:name ?name.

}

LIMIT 10

- **OFFSET:** Skips a specified number of results.

eg.

PREFIX foaf: <http://xmlns.com/foaf/0.1/>

SELECT ?name

WHERE {

?person foaf:name ?name.

}

OFFSET 5

- **ORDER BY:** Orders the results based on specified variables.

eg.

PREFIX foaf: <http://xmlns.com/foaf/0.1/>

SELECT ?name

WHERE {

    ?person foaf:name ?name.

}

ORDER BY ?name

- **FILTER:** Restricts the results to meet specified conditions.

eg.

PREFIX ex: <http://example.org/schema/>

SELECT ?person ?credit

WHERE {

    ?person ex:credit ?credit.

    FILTER(?credit > 500)

}

- **FILTER NOT EXISTS:** Ensures certain patterns do not exist in the result set.

eg.

PREFIX foaf: <http://xmlns.com/foaf/0.1/>

SELECT ?person

WHERE {

    ?person foaf:name ?name.

FILTER NOT EXISTS {

    ?person foaf:age ?age.

}

}

- **DESCRIBE:** Returns an RDF graph containing resources related to the query.

eg.

PREFIX foaf: <http://xmlns.com/foaf/0.1/>

DESCRIBE ?person

WHERE {

    ?person foaf:name "Alice".

}

- **SELECT \* WHERE:** A variant of SELECT to return all variables that match the pattern.

eg.

PREFIX ex: <http://example.org/schema/>

PREFIX foaf: <http://xmlns.com/foaf/0.1/>

SELECT \*

WHERE {

    ?subject ?predicate ?object.

}

- **OPTIONAL:** Returns results including optional patterns if they exist.

eg.

PREFIX foaf: <http://xmlns.com/foaf/0.1/>

SELECT ?person ?name ?age

WHERE {

    ?person foaf:name ?name.

    OPTIONAL { ?person foaf:age ?age. }

}

- Participants asked to perform the tasks using the SPARQL queries learnt on the dataset imported on the previous day.

## **Conclusion**

The twelfth day of the training focused on mastering SPARQL queries using Apache Jena Fuseki. Participants gained practical knowledge in querying RDF data with them. Hands-on sessions enabled them to import datasets, execute queries, and troubleshoot effectively. This session prepares participants for advanced topics in semantic web technologies.