

Assignment **A02 – SPARQL**

Assignment

- Create a **TTL document** with sample RDF triples within your individual topic
 - Use the Turtle notation in particular
 - Work with mutually interlinked resources of at least **3 different types** (e.g., lines, flights, tickets)
 - Use `rdf:type` properties to associate the type information
 - Insert data about at least **15 particular resources** (e.g., 3 lines, 4 flights, 8 tickets)
- Use each of the following constructs at least once
 - Object list or predicate-object list
 - Blank nodes (either using `_` prefix or brackets `[]`)
- Create expressions for exactly **5 different SPARQL queries** (SELECT query form in particular)
- Use each of the following constructs at least once
 - Basic graph pattern
 - Group graph pattern
 - Optional graph pattern (OPTIONAL)
 - Alternative graph pattern (UNION)
 - Difference graph pattern (MINUS)
 - Filter constraint (FILTER)
 - Aggregation (GROUP BY with or without HAVING clause)
 - Sorting (ORDER BY clause)

Requirements

- Both the TTL document and queries must be **well-formed** (i.e., syntactically correct)
- Put each SPARQL query expression into a standalone file (e.g., `query1.sparql`)
- Always add a comment describing the intended **query meaning in natural language**
 - Comments are written as `# comment`
- Each query expression must be evaluated to a **non-empty solution sequence**
- Both the data file and query files must contain declarations of all prefixes used (including `rdf:`)
 - Use `@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .` in your data file
 - Use `PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>` in your query file
- Do not use FROM clauses in your queries, the input data file will automatically be accessible as the default graph

Submission

- **data.ttl**: TTL document with your RDF data to be queried
- **query1.sparql, ..., query5.sparql**: files with SPARQL query expressions

Execution

- Execute the following shell command to evaluate each individual SPARQL query expression
 - `sparql --data $DataFile --query $QueryFile`
 - `$DataFile` is the input RDF document to be queried, i.e., `data.ttl`
 - `$QueryFile` is a file with query expression to be evaluated, e.g., `query1.sparql`
- Note that you need to work with our NoSQL server `nosql.kti.in.fit.cvut.cz` within this assignment
 - I.e., the Virtuoso database `https://nosql.opendata.cz/` we used during the lab cannot be used

Tools

- **IDLab Turtle Validator** – <http://ttl.summerofcode.be/>

References

- **RDF 1.1 Concepts and Abstract Syntax**
 - W3C Recommendation (25 February 2014) – <https://www.w3.org/TR/rdf11-concepts/>
- **RDF 1.1 Turtle: Terse RDF Triple Language**
 - W3C Recommendation (25 February 2014) – <https://www.w3.org/TR/turtle/>
- **SPARQL 1.1 Query Language**
 - W3C Recommendation (21 March 2013) – <https://www.w3.org/TR/sparql11-query/>