UNIVERSITE LIBRE DE BRUXELLES 12 May 2021
Ecole Polytechnique

INFO-H509: XML and Web Technologies
Project 4: RDF, RDFS, OWL, and SPARQL

Introduction

This assignment consists of two parts. In the first part, you are asked to formulate certain situations in RDFS and OWL. In the second part you are asked to write SPARQL queries. Both parts are related to the AIDA Knowledge Graph.

Part 1: RDFS and OWL

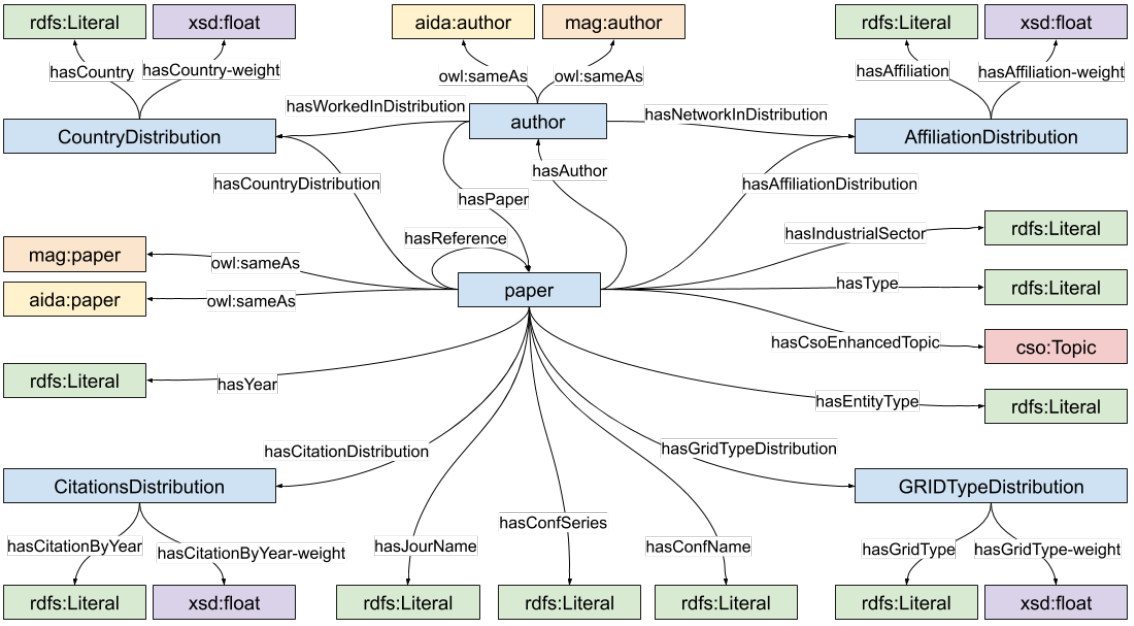

Figure 1: RDF Schema for AIDA35K

Consider the RDF schema for AIDA35K shown in Figure 1. You are asked to express this schema using RDFS and/or OWL statements. You should explain all design choices you make. As a starting point, you may refer to the AIDA schema located at `https://aida.kmi.open.ac.uk/ontology`.

Part 2: SPARQL

Note: For this part, you need to have installed GraphDB Free edition and imported the AIDA35 graph; instructions are provided in a separate document at UV.

You are asked to write SPARQL queries to formulate the following queries.

1. Return all unique affiliations present in the graph.
2. Count the distinct CSO topics present in the graph.
3. Find the 10 CSO topics that have the highest number of papers; present the topics in descending order of popularity, and for each topic show its name and number of papers.
4. Find papers of the conference series 'iswc', count their references (citations), and present them in decrease order of their count.
5. Find all authors that have an Affiliation with ULB, and present them along with their papers.

6. Execute a remote service call to the Microsoft Academic Knowledge Graph SPARQL endpoint (`https://makg.org/sparql`) and retrieve the abstract for the paper with URI `https://makg.org/entity/1642143707`. Note that the query should run on your local GraphDB SPARQL endpoint, and not on the remote MAKG endpoint.

7. Find all papers that have an Affiliation with ULB, and for each one retrieve its abstract from the remote MAKG SPARQL endpoint. Note that a paper with URI `http://aida.kmi.open.ac.uk/aida35k/resource/p_1642143707` in AIDA corresponds to the paper with URI `https://makg.org/entity/1642143707` in MAKG. Therefore, you would need to manipulate strings in SPARQL, and so you might want to look up the following functions: 'STR', 'URI', 'CONCAT', 'REPLACE'.

Submission

This assignment contributes 5/20 to the overall grade.

This assignment is to be made in groups of two persons. You are asked to form the groups via the activity "Groups for Assignment 3" on UV.

You are asked to submit, per group, (a) one text file containing the answers to both parts (RDF triples, and the SPARQL queries), and (b) a short report (in English) containing all your hypotheses and design choices made, when necessary.
This report and the text file have to be uploaded as a zip file to "Assignment 4" on UV by **June 4, 2021**.