YTÜ-CE: Semantic Web Graduate Course

Homework Assignment - 2

Fall 2016

This homework assignment asks you to write in RDF Schema language, a schema document that best specify an ontology you may borrow from natural life (ex: animal ontology, plant ontology). And you are asked to do some RDF processing on the RDF instances of your schema.

1. **Details & Requirements**
   - In total, your RDF Schema should have at least 10 classes and 10 predicates. Both classes and predicates should have inheritance structure (hint: use subClassOf and subPropertyOf). As for the data types that predicate values will take, you may use default XML Shema data types or user defined data types (simple and complex data types).
   - In your RDF Schema, you must use restrictions such as domain and range restrictions.
   - You will create at least 5 different RDF instances of your RDF Schema. Each instance will be separate RDF document. Each instance should include 10 resources, each is instance of the Classes defined in your RDF Schema. Your RDF instances must cover all classes of your ontology.
   - Your RDF instances must use "rdf:resource" attribute and create relations between available resources in your instance document.
   - Your RDF instances must include an example of reification (somutlaştırma).
   - Your RDF instances must include an example of nested descriptions.
   - Your RDF instances must include simplifications studied in the class.
   - You are expected to use containers such as rdf:Bag and rdf:Alt.
   - You will use Jena (https://jena.apache.org) semantic web libraries to do some processing on your RDF instances.
   - Your may use KOMMA – RDF for Eclipse plugin for Eclipse to work on your RDF Schema. Or simply, you may use Notepad to edit your RDF Schema. KOMMA can be obtained from Eclipse Market Place. You may also use Protégé to create your RDF Schema.
   - You will use Jena libraries to read the RDF instances and write all RDF triples into one big RDF file.
   - You will implement at least three different types of SPARQL queries to query data

on your big RDF file. All queries have to be complex type SPARQL queries studied in the class. You should create separate files for your SPARQL queries and read your queries from the file.

- Only Java language is allowed.

2. **Implement your application and write a 1 page report**
   - Your report should include
     - ■ Brief explanation of your implementation and information on how to compile and run.
     - ■ Experiences and discussion.

   - How to submit
     - A. Please submit the files in .zip format with the filename corresponding to your student id.(e.g TP_StudentID.zip) via email to the assistant instructor (ytublm5151@gmail.com) Email Title : [RDFSchemaAssignment] Your Student ID, Your Name
     - Zip file should include your all source codes as an eclipse project where all the libraries are included and path to libraries are set properly.
     - **Due Date: Sunday, 13/11, 11:59PM**

3. **Bonus Points**
   - You may create a Web application that visualize the RDF Schema and RDF instances you created. For this you may use different libraries. One of them is a JavaScript library called D3 Data Driven Documents (http://d3js.org). If you did this, you should publish this online and send a link to instructor for bonus points.

4. **Late Assignment Policy**
   - A grading penalty will be applied to late assignments. (10% penalty up to the first 24 hours, 20% for 24 to 48 hours, with no credit received after that)