

Ontology Development Project

Description

Your team will design an OWL ontology for a domain of your choice. The version of OWL that your team uses should be determined by your domain specification. Your domain should be specified such that it requires either OWL DL or OWL Full. This means that several of the domain specifications must require use of advanced OWL constructs. Part of the document describing your domain must include which version of OWL was used by your team along with a justification for your decision.

The domain your team selects should be one that is familiar to all team members.

Guidelines

You must identify and define at least 75 terms for your domain. Create a glossary for these terms. You should have some instances defined as terms, but you do not have to define all instances as terms. You must sufficiently comment your ontology so it is easily understood by a new user. You must write three of your terms, including the term that will use the Boolean combination for its definition, using Description Logic.

You must describe a minimum of 12 classes, 8 object properties and 15 datatype properties. At least one class must be a Boolean combination. You will define a minimum of 50 instances, based on real data, to illustrate your ontology and its use. The instances may be defined statically or dynamically.

You will develop a minimum of 10 SPARQL queries to retrieve meaningful data for your domain. At least one query must contain a regular expression in the filter pattern. At least one query must contain an aggregate.

You will develop a program using Jena (need a Java developer) that will select data from the KB using Jena methods and a SPARQL query. The program must contain at least one of each (a Jena method and a SPARQL query). You will also add a minimum of 10 instances programmatically, with each instance containing at least one datatype property value and one object property value. The values for these instances should be read from a data file.

Your team will present your project to the class. The presentation should be 25-30 minutes. You should present an overview of your domain, the primary domain concepts, the main features of your ontology, any advanced or interesting constructs used, and a sampling of your queries.

As you are developing your ontology, document all assumptions, any scope limitations you determined, any future considerations, and any major decisions. The decisions may be how a term was implemented and why (class vs. property vs. instance; object vs. datatype property).

Grading

You will submit the following in a zip file:

- Document describing your domain
 - A brief description written in paragraph form
 - A glossary of terms
 - Include the DL representation for three terms
 - Brief description of any interesting decisions during ontology development
 - The following (can be bulleted lists)
 - Assumptions
 - Scope limitations
 - Future considerations
 - A labeled RDF graph
 - A class diagram that includes all properties
- Ontology file(s)
- SPARQL queries
- Program source code
- Any data files used, such as input for dynamically-added instances
- A short write-up / bulleted list / whatever that explains what team members worked on what parts of the project

You will be graded on the submitted data as well as the presentation.