

Semantic Web: Lab 2

OWL Ontology Building

This lab is to help to get you familiar with the process of defining an ontology for a domain. Ontology is an important concept for Semantic Web, for which W₃C has published OWL and OWL 2 as the standard languages. An ontology is to encode pieces of background knowledge for a domain, and they are saved in the format .owl, guaranteeing a great information sharing among different applications. The description logics based semantics equips OWL and OWL2 with a sound unambiguous meaning to prevent mis-interpretations among different users of these data. Note that, we use the terminologies “property”, “role”, and “attribute” interchangeable to mean a binary relation.

Excise 1. This exercise is to understand a typical ontology browser for the biomedical ontology Snomed CT.

Go to the webpage <http://browser.ihtsdotools.org>, and click “Go browsing International edition” to enter the latest version of Snomed CT browser page. On the left, you can see the list of concepts defined in this ontology, by clicking on a concept, you will get information about it on the right column. You can search a concept by its id, and you can click on “Summary” and “Diagram” to figure out its information. Can you write down the description logic formats for the following concepts?

- 131148009(Bleeding),
- 284666000(Trophic life form),
- 844005(Behavior finding),
- 420395004

For example, $262832002 = 30171000 \sqcap \exists 363698007.23451007 \sqcap \exists 116676008.35566002$.

Excise 2. Creation of the ontology (with Protégé and/or OWL API)

1. Download Protégé from <http://protege.stanford.edu/>.
2. Run Protégé (from terminal: `path-protege/run.sh`)
3. Import an existing ontology into Protégé (e.g. the pizza ontology protege.stanford.edu/ontologies/pizza/pizza.owl)
4. Verify the ontological elements (concepts, properties, instances, axioms) in the ontology
5. Consider the university study scenario, in particular the D2K Examination Regulation (attached) and create a new OWL ontology that encodes the study scenario.