12.1: Practical Assignment: Develop a Domain Ontology

The aim of this practical assignment is for you to demonstrate what you have learned about the ontology languages, top-down and bottom-up ontology development, and methods and methodologies, and experiment with how these pieces fit together.

You can do this assignment in groups of two or three students. It should be mentioned in the material you will hand in who did what.

Tasks

1. Choose a subject domain of interest for which you will develop a domain ontology. For instance, computers, tourism, furniture, some hobby you may be familiar with (e.g., diving, dancing), or some other subject domain you happen to be knowledgeable about (or know someone who is).

2. Develop the domain ontology in the best possible way. You are allowed to use any resource you think is useful, be it other ontologies, non-ontological resources, tools, domain experts, etc.. If you do so (and you are encouraged to do so), then make sure to reference them in the write-up.

3. Write about 2-3 pages (excluding figures or screenshots) summarizing your work. This can include—but is not limited to—topics such as an outline of the ontology, why (or why not) you have used a foundational ontology (if so, which, why), if you could reuse a top-domain or other subject domain ontology, which non-ontological resources you have used (if any, and if so, how), if you encountered subject domain knowledge that should have been in the ontology but could not be represented due to the limitations of OWL, or perhaps a (real or imagined) purpose of the ontology and therefore a motivation for some OWL fragment, any particular reasoning services that was useful (and how and why, which deductions did you have or experimented with), any additional tools used.
Material to Hand in

Send in/upload to the course’s CMS the following items:

1. The OWL file of your ontology;
2. Imported OWL ontologies, if any;
3. The write up in pdf.

Assessment

1. Concerning the ontology: quality is more important than quantity. An ontology with more advanced constraints and appropriate reuse of foundational or general ontologies is a better illustration of what you have learned than a large bare taxonomy.
2. Concerning the ontology: it will be checked on modeling errors in the general sense (errors such as is-a vs. part-of, class vs. instance, unsatisfiable classes). Regarding the subject domain itself, it will be checked only insofar as it indicates (mis)understanding of the ontology language or reasoning services.
3. Concerning the write up: a synthesis is expected, not a diary. For instance, “We explored a, b, and c, and b was deemed to be most effective because blabla” would be fine, but not “We tried a, but that didn’t work out, then we had a go at b, which went well, then we came across c, tried it out of curiosity, but that was a dead end, so we went back to b.” In short: try to go beyond the ‘knowledge telling’ and work towards the so-called knowledge transformation.
4. Concerning the write up: while a brief description of the contents is useful, it is more important to include something about the process and motivations how you got there, covering topics such as, but not limited to, those mentioned under Tasks, item 3 (and recollect the aim of the assignment—the more you demonstrate it, the better).

Notes

In random order:

1. The assignment looks easy. It isn’t. If you start with the development of the ontology only the day or so before the deadline, there is an extremely high probability that you will fail this assignment. Your assignment will be of a higher quality if you start thinking about it some 2 weeks before the deadline, and the actual development at most one week before the deadline, and spread out the time you are working on it.
2. If you use non-English terms for the classes and properties, you should either add the English in the annotations (preferred), else lend me a dictionary if it is in a language I do not speak.
3. Use proper referencing when you use something from someone else, be it an ontology, other reused online resources (including uncommon software), textbooks, articles etc. Not doing so amounts to plagiarism.
4. Spell checkers tend to be rather useful tools.
5. Some of the mini-project topics can benefit from an experimental ontology that you know in detail, which you may want to take into consideration when choosing a subject domain or purpose so that your ontology might be reused later on.