Semantic Web

Assignment 6

Dr. Jandson S Ribeiro
jandson@uni-koblenz.de

Isabelle Kuhlmann
iskuhlmann@uni-koblenz.de

Institute of Web Science and Technologies
Department of Computer Science
University of Koblenz-Landau

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Please submit your solutions to your group's OLAT folder.
Always list all group members contributing to the solution!
Do not plagiarize from others!

For all the assignment questions that require you to code, make sure to include the code in the answer sheet, along with a separate Python file.

Team Name: gamma

1. Aman Bisht (amanvista@uni-koblenz.de)
2. Muralikrishna Naripeddi (mnaripeddi@uni-koblenz.de)
3. Ndang Hesley Fonane (fonaneh@uni-koblenz.de)

1 Building an Ontology 20 points

Create an ontology in the domain of the Harry Potter Universe. You can get some useful information at https://en.wikipedia.org/wiki/Harry_Potter and https://harrypotter.fandom.com/wiki/Main_Page. Keep in mind the steps required to design an ontology.

1.1 Ontology Design 10 Points

- Go through all the steps of ontology engineering, following the simple methodology presented in the lecture.
- Document steps 1-3 by outlining the respective results.
- Design an appropriate ontology defining at least 4 concepts, their (possible) hierarchy, properties and relationships. Specify the ontology in OWL and submit the file.

Step 1

1. What is the domain that the ontology will cover?

   Harry Potter Universe

2. For what we are going to use the ontology?

   Ontology will be used for knowing about the Muggle and Wizard World.

3. Competency questions?

   a) What are the houses in School?

   b) Who performs Magic?

   c) What are the subjects taught in School?

   d) Who teaches a particular Subjects?

Step 2

1. Consider reusing existing ontologies

   People ontology we have reused.

Step 3

1. What are the terms we would like to talk about?

   Wizard, Muggle, Student, Teacher, School, House

2. What are the properties that connect those terms?

   studiesIn, teachesIn, belongsTo, taughtBy

1.2 Instantiation 5 Points

- Specify at least 8 statement with instances for your ontology. You must cover all the elements on your ontology: concepts, properties, relationships.
- Encode your statements in an RDF file. Your are free to choose the RDF format you find convenient.

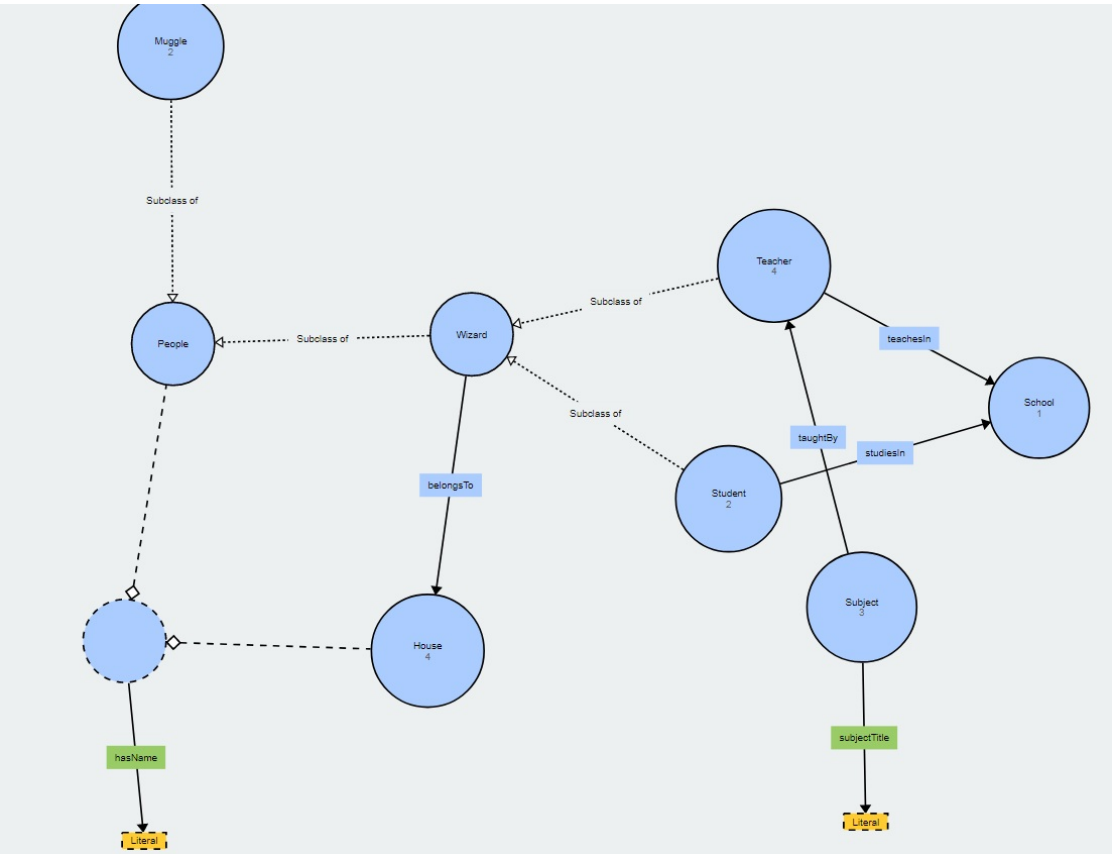
1. Harry Potter studies in Hogwarts School of Magic
2. Ron Weasley studies in Hogwarts School of Magic
3. Albus Dumbeldore teaches in Hogwarts School of Magic
4. Severus Snape teaches in Hogwarts School of Magic
5. McConagall teaches in Hogwarts School of Magic
6. Madam Rolanda Hooch teaches in Hogwarts School of Magic
7. Potions is taught by Severus Snape
8. Quidditch is taught by Madam Rolanda Hooch
9. Transfiguration is taught by McConagall
10. Harry Potter belongs to Gryffindor
11. Ron Weasley belongs to Gryffindor
12. Severus Snape belongs to Slytherin
13. No Muggle can be a Wizard
14. No Wizard can be a Muggle

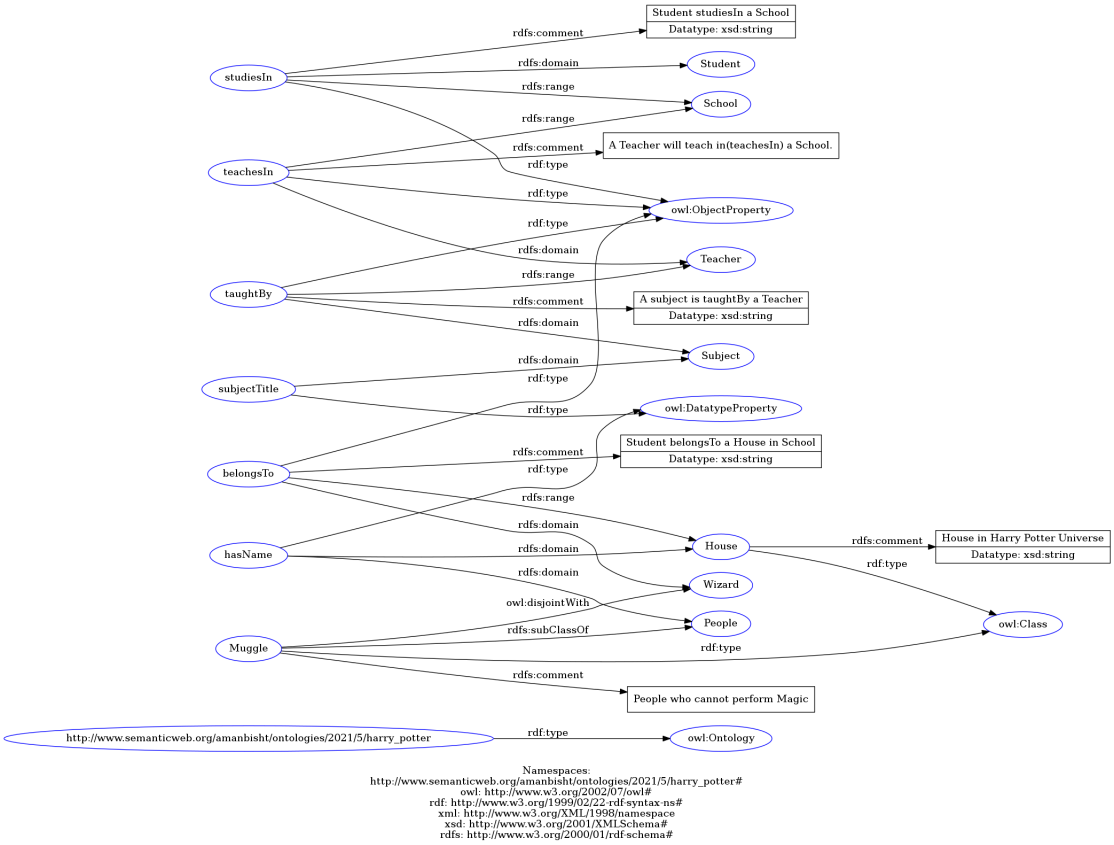
1.3 Document the Ontology 5 Points

- Make use of annotations (e.g., rdf:comment) for documenting each element (concept, property, relationship) *comprehensibly*. Add them to your OWL file.
- Create and submit a HTML documentation for the ontology (based on annotations). Make use of tools such as Protégé, WebProtégé, Parrot[1] or LODE[2]

HTML documentation can be accessed by extrating A6.rar and opening index.html file

[1] http://ontorule-project.eu/parrot/parrot
[2] http://www.essepuntato.it/lode


Muggle
2
Subclass of
People
Subclass of
Wizard
Subclass of
Teacher
4
teachesIn
School
1
Subclass of
taughtBy
studiesIn
Student
2
belongsTo
Subject
3
House
4
hasName
Literal
subjectTitle
Literal



Final hints:

- Lookup related vocabularies for reuse here : `http://lov.okfn.org/`
- You may use Protégé for building the ontology: `http://protege.stanford.edu`

Important Notes

Submission

- Solutions have to be submitted to your group's OLAT folder.
- The name of the group and the names of all participating students must be listed on each submission.
- Solution format: all solutions as *one* PDF document. Programming code has to be submitted as Python code to the OLAT folder. Upload *all* `.py` files of your program! Use `UTF-8` as the file encoding. *Other encodings will not be taken into account!*
- Check that your code compiles without errors.
- Make sure your code is formatted to be easy to read.
  - Make sure you code has consistent indentation.
  - Make sure you comment and document your code adequately in English.
  - Choose consistent and intuitive names for your identifiers.
- Do *not* use any accents, spaces or special characters in your filenames.

Acknowledgment

This pdfLaTeX template was adapted by Isabelle Kuhlmann based on the LuaLaTeX version by Lukas Schmelzeisen.

LaTeX

Use `pdflatex assignment_X.tex` to build your PDF.