Semantic Web

Assignment 4

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Some of the tasks may require you to do additional research extending the lecture. Please keep the citation rules in mind.

For all the assignment questions that require you to write a code, make sure to include the code in the answer sheet, along with a separate python file. Where screen shots are required, please add them in the answers directly and not as separate files.

Team Name: XXXX
Team Members: XXXX

1 Managing RDF

1.1 Consider the following scenario:

John Snow (http://example.org/#John_Snow) is 40 years old and he gives lectures (http://example.org/#John_Snow_lectures) at the university of Koblenz-Landau (http://example.org/#Uni_Koblenz_Landau). He also contributes to the courses Semantic Web (http://example.org/#Semantic_Web), Web Science (http://example.org/#Web_Science), and Big Data (http://example.org/#Big_Data). He has a friend Sansa Stark (http://example.org/#Sansa_Stark) who studies at the same university, and participates in his lectures. His lectures actually have a pretty high attendance. He says (http://example.org/#says) that Sansa likes to discuss (http://example.org/#likes_toDiscuss) how linked data is changing *the way* people *use and think* of (http://example.org/#use_thinkOf) the Web.

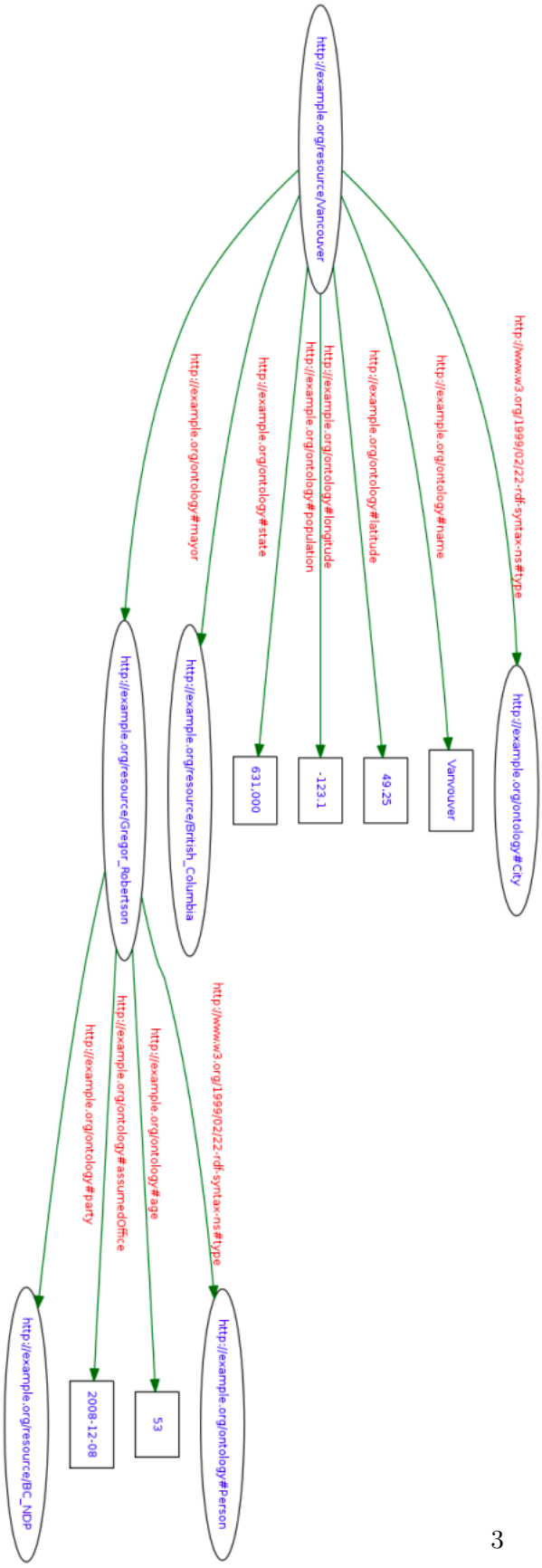
Translate the above scenario into a visual RDF graph representation using the graphical notation presented in the lecture. Some hints regarding the representation are already given to you in the task. Pay attention to the tricky part written in italic.

1.2 Consider the RDF graph representation on the page 3.

Translate the graph into RDF/XML document. Make sure your XML is valid. Submit your XML in a separate file.

Start:

```
<?xml version="1.0" encoding="utf-8"? >
<rdf:RDF xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns"
         xmlns:xo="http://example.org/ontology">
```


http://example.org/resource/Vancouver
http://www.w3.org/1999/02/22-rdf-syntax-ns#type
http://example.org/ontology#City
http://example.org/ontology#name
Vancouver
http://example.org/ontology#latitude
49.25
http://example.org/ontology#longitude
-123.1
http://example.org/ontology#population
631,000
http://example.org/ontology#state
http://example.org/resource/British_Columbia
http://example.org/ontology#mayor
http://example.org/resource/Gregor_Robertson
http://www.w3.org/1999/02/22-rdf-syntax-ns#type
http://example.org/ontology#Person
http://example.org/ontology#age
53
http://example.org/ontology#assumedOffice
2008-12-08
http://example.org/ontology#party
http://example.org/resource/BC_NDP

2 Python Programming

In this task you shall write a code in Python for loading and analysing RDF data from DBpedia. Your code must get the description of Berlin (`http://dbpedia.org/data/Berlin.rdf`). You can use library `RDFLib` to parse RDF file. You must write a function with the signature relatedTo(propertyURI) that prints all the resources that relates to Berlin via the URI propertyURI. For instance, relatedTo("`http://dbpedia.org/property/namedAfter`") should print `http://dbpedia.org/resource/422_Berolina`. Provide the Python code in an external file.

Important Notes

Submission

- Solutions have to be submitted to the OLAT repository Submission in the respected folder.
- The name of the group and the names of all participating students with matriculation numbers 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 repository. 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

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LaTeX

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