Knowledge Engineering and Semantic Web

Exercise Sheet: 1

Will be discussed on: April 23,2024

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QUESTIONS: Please don't hesitate to ask any questions. Questions help you and your peers.
PRINT: Please consider the environment before printing the exercise.

1 Review questions

1. Which ones could be considered as main reasons for development of semantic data web?
   (a) Creation of huge amounts of information and data
   (b) Standardization of data for transferring
   (c) Machine readability of data
   (d) Meaningfulness of data

2. Which ones could be considered as motivations for development of semantic data web in future?
   (a) Human readability of data
   (b) Integration of data from heterogeneous resources
   (c) Intelligent information retrieval
   (d) Syntactical standardization of information

3. Choose the correct statements with respect to web standardization:
   (a) Acronym URI, identifies the unique location of each resource.
   (b) The identity of resource could be defined uniquely by URL.
   (c) Acronym RDF stands for Resource Description Framework, which is standardized by W3C
   (d) Data is accessible only by protocol HTTPS in web of data.
   (e) URI is more general than IRI.

4. What is correct about RDF representation of information?
   (a) Facts are represented by triples
   (b) Blank nodes can be used just as objects.
   (c) Predicates could be literal or URI
   (d) Literals can stands in the position of subject.
   (e) The RDFa makes it possible have meaningful RDF triples.

2 Consider the following XML snippet

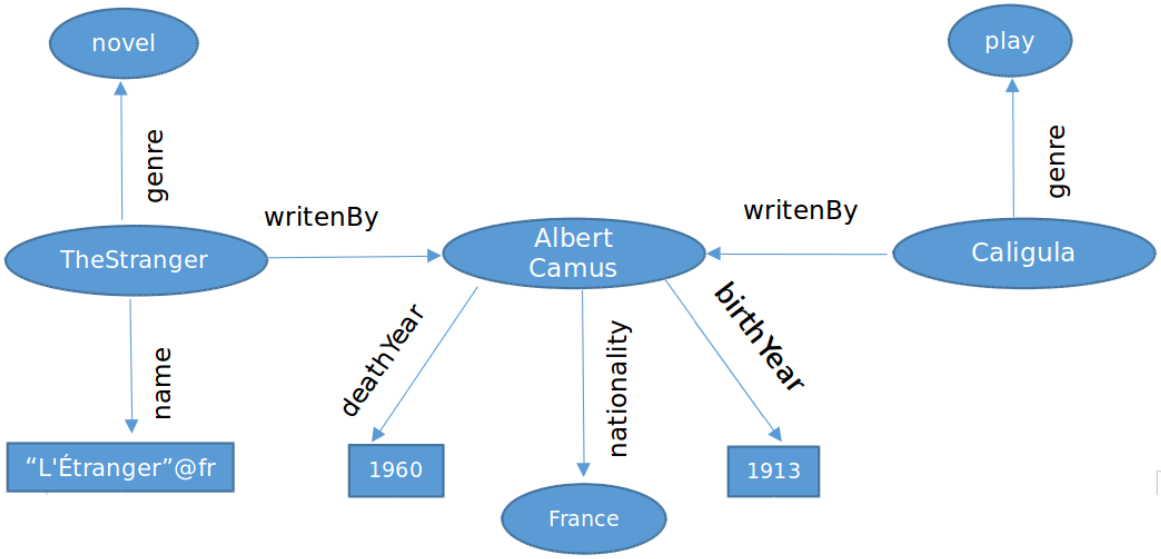
```
<person>
   <name>Averell Dalton</name>
   <robbed> Commerce Bank </robbed>
   <arrestedBy>
      <person>
         <name>Lucky Luke </name>
      </person>
    </arrestedBy>
</person>
```

```
<bank>
   <name> Commerce Bank </name>
   <location>
      <city >
         <name>Bonn</name>
      </city>
   </location>
</bank>
```

1. Try to explain it in your own words.

2. Transform the XML description into a graph (nodes and links). Use circles or ovals for resource nodes. Use rectangle for literals or datatype values.

3 Consider the following knowledge graph



1. Count the number of triples and indicate the URIs and literals.
2. Write each triple as a simple fact in one sentence of natural language.
3. (optional) Rewrite the extracted facts in the last section in XML representation.
4. (optional) Consider that we don't have the URI of book "The Stranger", how can we show the respective information?

4 Assume a familiar subject, such as your family or LUH

1. Create a knowledge graph with at least 10 triples about it.
2. (optional) Write the triples of your knowledge graph in turtle representation.