Semantic Web - Lab 3

1 Initialization

Download the following data into your mydata directory : G-Alice.ttl, G-Bob.ttl and G-Persons.ttl.
Download the following queries : qmg1.txt, qmg2.txt, qmg3.txt, qmg4.txt, qmg5.txt and qfed1.txt.

2 Querying multiple RDF graphs

In this section, you will use the datasets : G-Alice.ttl, G-Bob.ttl and G-Persons.ttl.

Example. To load multiple graphs using arq, with G-Alice.ttl as a named graph and G-Bob.ttl as a default graph :

```
arq --namedgraph=. . . /G-Alice.ttl --graph=. . . /G-Bob.ttl --query=. . . /tp2/multigraph/qmg1
```

1. Execute the queries qmg1, qmg2 and qmg3 in each of the three following settings and comment the obtained results :
   (a) G-Alice.ttl as the default graph and G-Bob.ttl as a named graph.
   (b) G-Bob.ttl as the default graph and G-Alice.ttl as a named graph.
   (c) Both G-Bob.ttl and G-Alice.ttl as named graphs.
2. Execute the query qmg4 and explain the obtained result.
3. Give the nicknames (foaf :nick) of all the persons known by Alice.
4. Answer to the previous question using both the graphs G-Bob and G-persons. Comment the obtained result.

3 Query a remote dataset

In this section, you will query a remote RDF dataset available at `http://dbpedia.org/data/The_Beatles.rdf`.

Example. To execute a query on remote dataset :

```
arq --data http ://dbpedia.org/data/The_Beatles.rdf --query test.sparql
```

You can use the following prefixes in your queries :

```
PREFIX dbo : <http ://dbpedia.org/ontology/>
PREFIX dbp : <http ://dbpedia.org/resource/>
```

1. List all the properties (predicates) of the ressource dbp :The_Beatles.
2. Count the number of Wiki pages external links (dbo :wikiPageExternalLink) associated with the ressource dbp :The_Beatles.
3. Count the numbers of record labels (dbo :recordLabel) which are not Apple Records (dbp :Apple_Records).

4. Give the home town (dbo :hometown) of the artist which is the author (dbo :artist) of *Carnival of Light* (dbp :Carnival_of_Light).
5. Run the following command and comment the obtained result :

```
arq --query=.../qmg5.txt
```

4 Query a remote endpoint

In this section, you learn how to send remote queries to the DBpedia SPARQL endpoint.

```
rsparql --service http://dbpedia.org/sparql --query test.sparql
```

1. Find 50 concepts in the DBPedia dataset.
2. Give the names (foaf :name) of members (dbo :bandMember) of bandnames playing Jazz music.
3. List all the properties of dbpedia whose subject is Alan Turing.
4. Give the list of the doctoral students of the doctoral advisor of Alan Turing.

5 Federated queries

1. Run the query qfed1 using the following command line :
   ```
   sparql --query =/mypath/qfed1
   ```
   Explain how the query qfed1 is executed.
2. Give the timezone and the name of the Mayor of the home town of the artist author of dbp :Carnival_of_Light in the dataset `http://dbpedia.org/data/The_Beatles.rdf`. The the timezone (dbo :timeZone) and the name of the Mayor (dbo :leaderName) can be retrieved from the DBpedia Sparql endpoint.
3. Extend your previous query in order to get in addition the citation titles of the home town of the artist author of dbp :Carnival_of_Light . The citation titles (<http ://yago-knowledge.org/resource/hasCitationTitle>) can be retrieved from the YAGO [1] SPARQL endpoint (`<https://linkeddata1.calcul.u-psud.fr/sparql>`).

6 Data quality

This exercice deals with the data quality issue [2]. Besides the standard English DBpedia, there is another version of DBpedia, called the Live DBpedia. The motivation behind the development of Live DBpedia is to have a continuous synchronization between DBpedia and Wikipedia. On the other hand, the standard DBpedia is updated approximately twice a year. As a consequence, data over Live DBpedia is more timely than that over DBpedia.

— Formulate a query that will return the countries where the presidents in DBpedia and Live DBpedia differ.

— Formulate a query that will return the ratio of out-of-date presidents (if the presidents of countries in DBpedia are not equal to corresponding values in Live DBpedia) to up-to-date presidents (if the presidents of countries in DBpedia are equal to corresponding values in Live DBpedia). Hint : As a reference on how DBpedia and Live DBpedia represent a presidency, you might have a look at the resource of President of Indonesia over DBpedia and Live DBpedia

1. `https://www.mpi-inf.mpg.de/departments/databases-and-information-systems/research/yago-naga/yago/`
2. This exercice is taken from `www.inf.unibz.it/~nutt/Teaching/SemTechs1415/SemTechsCW/?`.