

# Semantic Web handout including: lecture questions and practical sessions

In this document, you must provide your answers to the questions asked during the course and to the questions of the practical sessions; everything in one document. The questions of the course have been repeated here; do not delete the questions but provide your answer to each question just below the question. You can use screenshots when appropriate as an answer to a question. At the end, you must generate and submit only one final PDF file based on this template. In questions where you are asked to create, invent or use your own data, make sure they are different from other student's.

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## Day 01: questions from the course.

### Q1.1 Practice XML replace missing parts

```
<art_book>
  <short_title>Architecture Now</short_title>
  <first_author>Jodidio, Philip</first_author>
  <ID isbn10="3822840912"/>
</art_book>
```

### Q1.2 Provide 10 first lines

Get 10 first lines of the five results for:

<http://www.wikidata.org/entity/Q23014205>  
<http://www.wikidata.org/entity/Q23014205.json>  
<http://www.wikidata.org/entity/Q23014205.rdf>  
<http://www.wikidata.org/entity/Q23014205.ttl>  
<http://www.wikidata.org/entity/Q23014205.nt>

<http://www.wikidata.org/entity/Q23014205>

```
<!D
OC
TY
PE
htm
l>
<html class="client-nojs" lang="en" dir="ltr">
<head>
<meta charset="UTF-8"/>
<title>Fabien Gandon - Wikidata</title>
<script>document.documentElement.className = document.documentElement.className.replace(/(^|\s)client-nojs(\s|$)/, "$1client-js$2");</script>
<script>(window.RLQ=window.RLQ||[]).push(function(){mw.config.set({"wgCanonicalNamespace": "", "wgCanonicalSpecialPageName":false,"wgNamespaceNumber":0,"wgPageName":"Q23014205","wgTitle":"Q23014205","wgCurRevisionId":818593402,"wgRevisionId":818593402,"wgArticleId":25028548,"wgIsArticle":true,"wgIsRedirect":false,"wgAction":"view","wgUserName":null,"wgUserGroups":["*"],"wgCategories":[],"wgBreakFrames":false,"wgPageContentLanguage":"en","wgPageContentModel":"wikibase-item","wgSeparatorTransformTable":["","",""], "wgDigitTransformTable":["","",""], "wgDateFormatType":"dmy","wgMonthNames":
```

<http://www.wikidata.org/entity/Q23014205.json>

```
{"entities": {"Q23014205": {"pageid": 25028548, "ns": 0, "title": "Q23014205", "lastrevid": 818593402, "modified": "2018-12-24T07:42:39Z", "type": "item", "id": "Q23014205", "labels": {"fr": {"language": "fr", "value": "Fabien Gandon"}, "en": {"language": "en", "value": "Fabien Gandon"}, "br": {"language": "br", "value": "Fabien Gandon"}, "de": {"language": "de", "value": "Fabien Gandon"}, "af": {"language": "af", "value": "Fabien Gandon"}, "an": {"language": "an", "value": "Fabien Gandon"}, "ast": {"language": "ast", "value": "Fabien Gandon"}, "bar": {"language": "bar", "value": "Fabien Gandon"}, "bm": {"language": "bm", "value": "Fabien Gandon"}, "ca": {"language": "ca", "value": "Fabien Gandon"}, "co": {"language": "co", "value": "Fabien Gandon"}, "cs": {"language": "cs", "value": "Fabien Gandon"}, "cy": {"language": "cy", "value": "Fabien Gandon"}, "da": {"language": "da", "value": "Fabien Gandon"}, "de-at": {"language": "de-at", "value": "Fabien Gandon"}, "de-ch": {"language": "de-ch", "value": "Fabien Gandon"}, "en-ca": {"language": "en-ca", "value": "Fabien Gandon"}, "en-gb": {"language": "en-gb", "value": "Fabien Gandon"}, "eo": {"language": "eo", "value": "Fabien Gandon"}, "es": {"language": "es", "value": "Fabien Gandon"}, "et": {"language": "et", "value": "Fabien Gandon"}, "eu": {"language": "eu", "value": "Fabien Gandon"}, "fi": {"language": "fi", "value": "Fabien Gandon"}, "frc": {"language": "frc", "value": "Fabien Gandon"}, "frp": {"language": "frp", "value": "Fabien Gandon"}, "fur": {"language": "fur", "value": "Fabien Gandon"}, "ga": {"language": "ga", "value": "Fabien Gandon"}, "gd": {"language": "gd", "value": "Fabien Gandon"}, "gl": {"language": "gl", "value": "Fabien Gandon"}, "gsw": {"language": "gsw", "value": "Fabien Gandon"}, "hr": {"language": "hr", "value": "Fabien Gandon"}, "hu": {"language": "hu", "value": "Fabien Gandon"}, "ia": {"language": "ia", "value": "Fabien Gandon"}}}
```

Gandon"}, "id": {"language": "id", "value": "Fabien Gandon"}, "ie": {"language": "ie", "value": "Fabien Gandon"}, "io": {"language": "io", "value": "Fabien Gandon"}, "it": {"language": "it", "value": "Fabien Gandon"}, "jam":

<http://www.wikidata.org/entity/Q23014205.rdf>

```
<?xml version="1.0"?>
<rdf:RDF xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:xsd="http://www.w3.org/2001/XMLSchema#"
xmlns:ontolex="http://www.w3.org/ns/lemon/ontolex#"
xmlns:dct="http://purl.org/dc/terms/"
xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
xmlns:owl="http://www.w3.org/2002/07/owl#"
xmlns:wikibase="http://wikiba.se/ontology#"
xmlns:wds="http://www.wikidata.org/entity/statement/"
xmlns:wdata=https://www.wikidata.org/wiki/Special:EntityData/
```

<http://www.wikidata.org/entity/Q23014205.ttl>

```
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .
@prefix xsd: <http://www.w3.org/2001/XMLSchema#> .
@prefix ontolex: <http://www.w3.org/ns/lemon/ontolex#> .
@prefix dct: <http://purl.org/dc/terms/> .
@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#> .
@prefix owl: <http://www.w3.org/2002/07/owl#> .
@prefix wikibase: <http://wikiba.se/ontology#> .
@prefix wds: <http://www.wikidata.org/entity/statement/> .
@prefix wdata: <https://www.wikidata.org/wiki/Special:EntityData> .
@prefix skos: <http://www.w3.org/2004/02/skos/core#> .
```

<http://www.wikidata.org/entity/Q23014205.nt>

```
<https://www.wikidata.org/wiki/Special:EntityData/Q23014205>
<http://www.w3.org/1999/02/22-rdf-syntax-ns#type>
<http://schema.org/Dataset> .
<https://www.wikidata.org/wiki/Special:EntityData/Q23014205>
<http://schema.org/about>
<http://www.wikidata.org/entity/Q23014205> .
<https://www.wikidata.org/wiki/Special:EntityData/Q23014205>
<http://creativecommons.org/ns#license>
<http://creativecommons.org/publicdomain/zero/1.0/> .
<https://www.wikidata.org/wiki/Special:EntityData/Q23014205>
```

### Q1.3 DBpedia

1. Find “London” on DBpedia.org; e.g. Google: “london site:dbpedia.org”  
make sure you are on the English chapter (dbpedia.org) as there are many others (fr.dbpedia.org, de.dbpedia.org)
2. Find dbp:populationDemonym and give its value
3. Find rdf:type and click on value yago:WikicatCapitalsInEurope
4. Find “Vienna” and get its URI  
(careful: with content negotiation and redirection, the URL of the page you are currently viewing may be different from the URI of the resource it describes)
5. Access to Vienna and find its native name?

Question 2 : dbp:populationDemonym Value is Londoner

Question 4: URI (by copy paste the address in web browser before clicking) is  
<http://dbpedia.org/resource/Vienna>

Question 5: Native name of Vienna is Vindobona

### Q1.4 WHO.IS?

1. contact for inria.fr
2. contact for fabien.info
3. contact for lemonde.fr

Question 1: inria.fr : florian.dufour@inria.fr

Question 2 : Fabien info : Gdpr effect - crypted  
[a1713050792963b24d53cc05f053805a-819330@contact.gandi.net](mailto:a1713050792963b24d53cc05f053805a-819330@contact.gandi.net)

Question 3 : Lemonde.fr : domain\_names@lemonde.fr

### Q1.5 CURL

1Ten first lines:

```
curl -o uniprot.html -L -H "Accept: text/html" http://purl.uniprot.org/uniprot/P43121
http://dbpedia.org/resource/Paris
```

```
curl -o uniprot-rdf-xml.txt -L -H "Accept: application/rdf+xml" http://purl.uniprot.org/uniprot/P43121
```

2. Ten first lines for HTML and RDF <http://ns.inria.fr/fabien.gandon#me>
3. Ten first lines for HTML and RDF for ‘Vienna’ on Dbpedia
4. Ten first lines for the “URI of the name of Victor Hugo” in the Library of Congress:  
<http://id.loc.gov/authorities/names/n79091479>
5. Ten first lines for HTML and RDF  
<http://purl.uniprot.org/uniprot/P43121>
6. What is the topic and format of data obtained with  
`curl -o json.txt -L -H "Accept: application/json" https://www.wikidata.org/wiki/Special:EntityData/Q551861`
7. What is the topic and format of data obtained with  
`curl -o turtle.txt -L -H "Accept: text/turtle" http://dx.doi.org/10.1007/3-540-45741-0_18`

**1.a HTML - <http://dbpedia.org/resource/Paris>**

```
<?xml version="1.0"
encoding="UTF-8" ?>
<!DOCTYPE html PUBLIC "-//W3C//DTD
XHTML+RDFa 1.0//EN"
"http://www.w3.org/MarkUp/DTD/xhtml-
rdfa-1.dtd">
<html
xmlns="http://www.w3.org/1999/xhtml"

xmlns:dbpprop="http://dbpedia.org/property/"
 xmlns:foaf="http://xmlns.com/foaf/0.1/"
 version="XHTML+RDFa 1.0"
 xml:lang="en"
>
```

**1.bRDF - <http://dbpedia.org/resource/Paris>**

```
<?xml version="1.0" encoding="utf-8" ?>
<rdf:RDF
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:owl="http://www.w3.org/2002/07/owl#"
  xmlns:dbo="http://dbpedia.org/ontology/"
  xmlns:dct="http://purl.org/dc/terms/"
  xmlns:foaf="http://xmlns.com/foaf/0.1/"
  xmlns:geo="http://www.w3.org/2003/01/geo/wgs84_pos#"
  xmlns:prov="http://www.w3.org/ns/prov#"
```

**2.a HTML <http://ns.inria.fr/fabien.gandon#me>**

```
<?xml version="1.0" encoding="utf-8" ?>
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Strict//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-
strict.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
<meta http-equiv="Content-Type" content="text/html; charset=utf-8" />
<title>FOAF profile of Fabien GANDON</title>
</head>
<body>
<h1>FOAF profile of Fabien GANDON</h1>
<p>You may have been redirected here by your browser.</p>
```

## **2.b RDF <http://ns.inria.fr/fabien.gandon#me>**

```
<?xml version='1.0' encoding='utf-8' ?>
<rdf:RDF
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:rdflib="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:foaf="http://xmlns.com/foaf/0.1/"
  xml:base="http://ns.inria.fr/fabien.gandon">

  <foaf:PersonalProfileDocument rdf:about="">
    <foaf:maker rdf:resource="#me"/>
    <foaf:primaryTopic rdf:resource="#me"/>
```

## **3.a HTML - <http://dbpedia.org/page/Vienna>**

```
<?xml version="1.0" encoding="UTF-8" ?>
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML+RDFa 1.0//EN" "http://www.w3.org/MarkUp/DTD/xhtml-rdfa-1.dtd">
<html xmlns="http://www.w3.org/1999/xhtml"
      xmlns:dbpprop="http://dbpedia.org/property/"
      xmlns:foaf="http://xmlns.com/foaf/0.1/"
      version="XHTML+RDFa 1.0"
      xml:lang="en"
>
```

## **3.b RDF - <http://dbpedia.org/page/Vienna>**

```
<?xml version="1.0" encoding="UTF-8" ?>
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML+RDFa 1.0//EN" "http://www.w3.org/MarkUp/DTD/xhtml-rdfa-1.dtd">
<html xmlns="http://www.w3.org/1999/xhtml"
      xmlns:dbpprop="http://dbpedia.org/property/"
      xmlns:foaf="http://xmlns.com/foaf/0.1/"
      version="XHTML+RDFa 1.0"
      xml:lang="en"
>
```

## **4 URI - <http://id.loc.gov/authorities/names/n79091479>**

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML+RDFa 1.0//EN"
  "http://www.w3.org/MarkUp/DTD/xhtml-rdfa-1.dtd">

<html version="XHTML+RDFa 1.0" xmlns="http://www.w3.org/1999/xhtml
      xmlns:madsrdf="http://www.loc.gov/mads/rdf/v1#" xmlns:ri="http://id.loc.gov/ontologies/RecordInfo#"
      xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#" xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
      xmlns:skos="http://www.w3.org/2004/02/skos/core#"
      xmlns:skosxl="http://www.w3.org/2008/05/skos-xl#" xmlns:owl="http://www.w3.org/2002/07/owl#"
      xmlns:cs="http://www.w3.org/2003/06/sw-vocab-status/ns#" xmlns:dcterms="http://purl.org/dc/terms/">

<head>
```

<title>Hugo, Victor, 1802-1885 - LC Linked Data Service: Authorities and Vocabularies | Library of Congress</title>

<meta name="description" content=" The Linked Data Service provides access to commonly found standards and vocabularies promulgated by the Library of Congress. This includes data values and the controlled vocabularies that house them. Datasets available include LCSH, BIBFRAME, LC Name Authorities, LC Classification, MARC codes, PREMIS vocabularies, ISO language codes, and more."/>

<link rel="schema.DC" href="http://purl.org/dc/elements/1.1/">

<link rel="dc.relation.isPartOf" href="//www.loc.gov/" title="Library of Congress"/>

<meta name="dc.title" content=" LC Linked Data Service: Authorities and Vocabularies (Library of Congress)"/>

<meta name="dc.contributor" content="The Library of Congress"/>

### **5a - HTML - <http://purl.uniprot.org/uniprot/P43121>**

<!DOCTYPE html SYSTEM "about:legacy-compat">

<html xmlns="http://www.w3.org/1999/xhtml" lang="en" xml:lang="en"><head><title>MCAM - Cell surface glycoprotein MUC18 precursor - Homo sapiens (Human) - MCAM gene &amp; protein</title><meta content="IE=edge" http-equiv="X-UA-Compatible"/><meta content="text/html; charset=UTF-8" http-equiv="Content-Type"/><meta content="width=device-width, initial-scale=1" name="viewport"/><link href="/" rel="home"/><link href="https://creativecommons.org/licenses/by/4.0/" rel="license"/><link type="image/vnd.microsoft.icon" href="/favicon.ico" rel="shortcut icon"/><link href="/uniprot.min.css2019\_02" type="text/css" rel="stylesheet"/><script type="text/javascript">

var BASE = '/';

var ua = window.navigator.userAgent;

var directory = (~ua.indexOf('MSIE ') || ~ua.indexOf('Trident/')) === 0 ? "non-ie" : "ie";

</script><script src="/scripts/frontier/d3/d3.v3.min.js" type="text/javascript"></script><script src="/js-compr.js2019\_02" type="text/javascript"></script><script type="text/javascript">

uniprot.namespace = 'uniprot';

uniprot.releasedate = '2019\_02';

</script><script type="text/javascript">

;

### **5b - RDF - <http://purl.uniprot.org/uniprot/P43121>**

<?xml version='1.0' encoding='UTF-8'?>

<rdf:RDF xml:base="http://purl.uniprot.org/uniprot/" xmlns="http://purl.uniprot.org/core/" xmlns:dcterms="http://purl.org/dc/terms/" xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#" xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#" xmlns:owl="http://www.w3.org/2002/07/owl#" xmlns:skos="http://www.w3.org/2004/02/skos/core#" xmlns:bibo="http://purl.org/ontology/bibo/" xmlns:foaf="http://xmlns.com/foaf/0.1/" xmlns:void="http://rdfs.org/ns/void#" xmlns:sd="http://www.w3.org/ns/sparql-service-description#" xmlns:faldo="http://biohackathon.org/resource/faldo#">

<owl:Ontology rdf:about="http://purl.uniprot.org/uniprot/">

```

<owl:imports rdf:resource="http://purl.uniprot.org/core/" />
</owl:Ontology>

<rdf:Description rdf:about="http://purl.uniprot.org/uniprot/P43121">
<rdf:type rdf:resource="http://purl.uniprot.org/core/Protein"/>
<reviewed rdf:datatype="http://www.w3.org/2001/XMLSchema#boolean">true</reviewed>
<created rdf:datatype="http://www.w3.org/2001/XMLSchema#date">>1995-11-01</created>
<modified rdf:datatype="http://www.w3.org/2001/XMLSchema#date">>2019-02-13</modified>

```

## **6- Topic & Format? - <https://www.wikidata.org/wiki/Special:EntityData/Q551861>**

```
{"entities":{"Q551861":{"pageid":519992,"ns":0,"title":"Q551861","lastrevid":861390580,"modified":"2019-02-19T20:54:54Z","type":"item","id":Q551861,"labels":{"pt":{"language":"pt","value":"Xavier Dolan"},"de":{"language":"de","value":"Xavier Dolan"},"pl":{"language":"pl","value":"Xavier Dolan"},"be":{"language":"be","value":"\u041a\u0441\u0430\u045e\u0435\u0414\u0430\u043b\u0430\u043d"}, "fr":{"language":"fr","value":"Xavier Dolan"}, "ru":{"language":"ru","value":"\u041a\u0441\u0430\u043d\u0432\u044c\u0435\u0414\u043e\u043b\u0430\u043d"}, "es":{"language":"es","value":"Xavier Dolan"}, "en":{"language":"en","value":"Xavier Dolan"}, "uk":{"language":"uk","value":"\u041a\u0441\u0430\u043d\u0432\u0454"}}}
```

<https://www.wikidata.org/wiki/Q551861>

**Xavier Dolan (Q551861)**

Canadian film director, actor, voice actor and screenwriter

[edit](#)

**In more languages** [Configure](#)

Language	Label	Description	Also known as
English	Xavier Dolan	Canadian film director, actor, voice actor and screenwriter	
French	Xavier Dolan	acteur, réalisateur et scénariste canadien	Xavier Dolan-Tadros
Spanish	Xavier Dolan	No description defined	
German	Xavier Dolan	Kanadischer Filmregisseur, Schauspieler, Synchronsprecher und Drehbuchautor	Xavier Dolan-Tadros

All entered languages

**Statements**

instance of	human	<a href="#">edit</a>
		<a href="#">+ add value</a>

**Image**



[edit](#)

**Format : JSON format**

**Topic : wikidata page of Xavier Dolan**

## **7- Topic & Format? - [http://dx.doi.org/10.1007/3-540-45741-0\\_18](http://dx.doi.org/10.1007/3-540-45741-0_18)**

```

<http://dx.doi.org/10.1007/3-540-45741-0_18>
<http://prismstandard.org/namespaces/basic/2.1/doi>
    "10.1007/3-540-45741-0_18" ;
<http://prismstandard.org/namespaces/basic/2.1/endingPage>
    "217" ;
<http://prismstandard.org/namespaces/basic/2.1/starttingPage>
    "202" ;
<http://purl.org/dc/terms/creator>

```

<<http://id.crossref.org/contributor/fabien-gandon-1wnxnwwzotyr7>> ,  
<<http://id.crossref.org/contributor/rose-dieng-kuntz-1wnxnwwzotyr7>> ;  
<<http://purl.org/dc/terms/date>>

Format : Turtle format

Topic : Personnal data of Fabien Gandon

Q1.6 Recall five best practices of linked open data



Best Practices are :

- 1 – On the web
- 2 – Machine readable format
- 3 – Non-proprietary format
- 4 – RDF standards
- 5 – Linked RDF

Q1.7 Spotlight demo

Reproduce the demo:

1. Copy a text from Wikipedia (e.g. Muse Band page)
2. Find the DBpedia Spotlight service page
3. Paste the text and run the detection
4. Try with other texts and copy-paste one of the results you get.

Question 3 : Paste Muse band page

The logo for DBpedia Spotlight features the words "DBpedia" and "Spotlight" in a stylized blue font. Above the text is a graphic of a cluster of orange and yellow circles, some connected by lines, resembling a brain or a network. A yellow beam of light emanates from the right side of the cluster towards the text area.

Confidence:  Language: English  
 n-best candidates

Muse est un groupe de rock britannique, originaire de Teignmouth, dans le Devon, en Angleterre. Apparu sur la scène musicale en 1994, le trio est composé de Matthew Bellamy (chant, guitare, piano), Christopher Wolstenholme (basse, harmonica, chant, chœurs) et Dominic Howard (batterie, percussions). Muse compte huit albums studio depuis ses débuts qui sont Showbiz (1999), Origin of Symmetry (2001), Absolution (2003), Black Holes and Revelations (2006), The Resistance (2009), The 2d Law (2012), album qui prend la première place des classements dans plusieurs pays tels que le Royaume-Uni et la France, Drones (2015) et enfin Simulation Theory (2018). Ils sont également auteurs de quatre DVD live à leur actif qui incluent Hullabaloo (2002), Absolution Tour (2005), HAARP (2008), et le Live at Rome Olympic Stadium (2013).

#### Question 4 : Text on Soccer Red Card

The screenshot shows the DBpedia Spotlight interface. At the top, there is a logo with the text "DBpedia Spotlight". Below the logo, there are several input fields and buttons: "Confidence:" with a slider set to 0.5, "Language:" set to English, a checkbox for "n-best candidates", a "SELECT TYPES..." button, and an "ANNOTATE" button. The main area contains a text snippet about the invention of the red card during the 1966 World Cup. At the bottom right of the text area is a "BACK TO TEXT" button.

The red card was invented after the 1966 World Cup. In the particularly tense quarter - final between Argentina and hosts England, referee Rudolf Kreitlein expels Argentine captain and defender Antonio Ubaldo Rattin. The referee signals him to leave the field, but the player refuses to go out. The result is long minutes of confusion during which the match is interrupted. Rattin will eventually leave, but the governing body will ask the referee Ken Aston to find a solution to this problem, which he will do inspired by the traffic light: "yellow: attention, then red: stop" 1

[BACK TO TEXT](#)

## Day 02: questions from the course on RDF.

**Q2.0** What is the mathematical structure built by the RDF triples?

(give the type of structure and its definition/explanation)

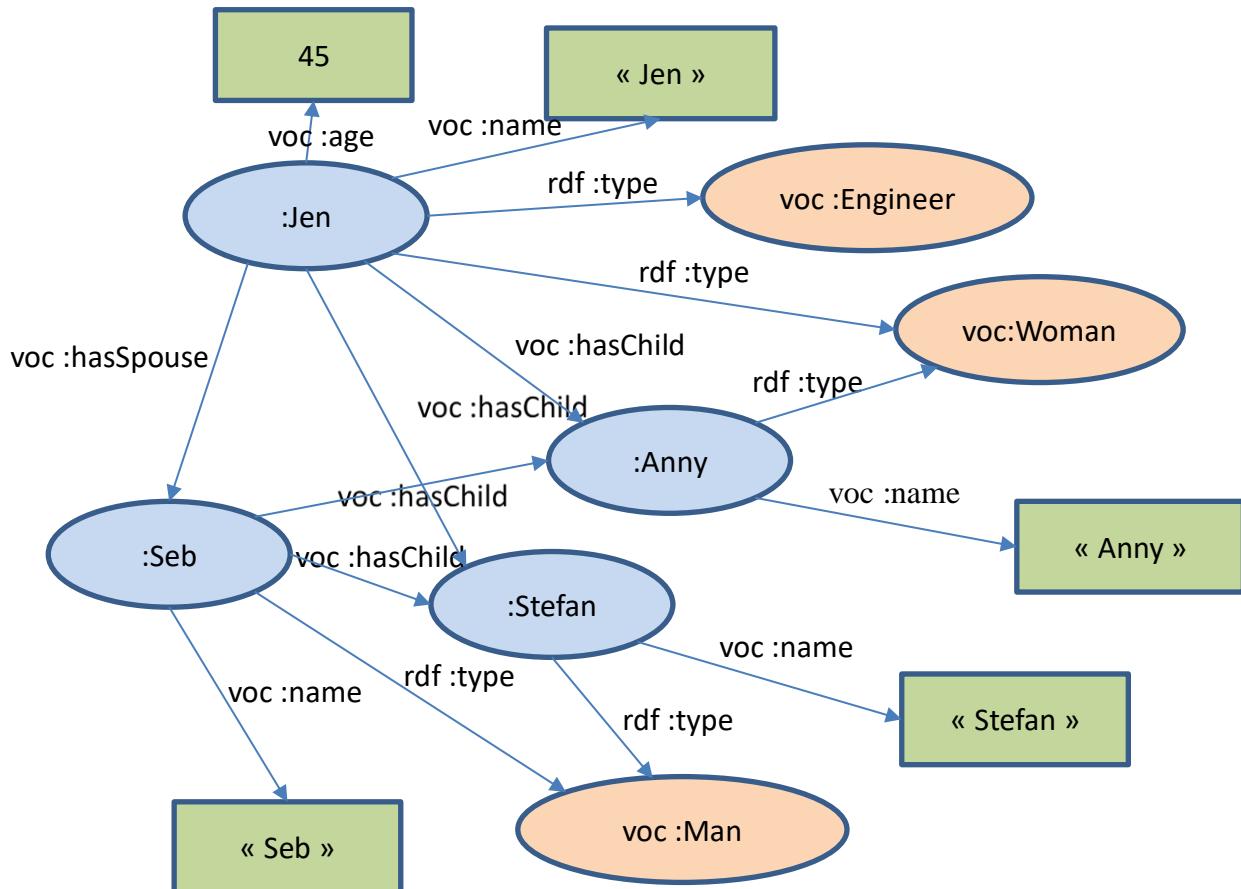
The mathematical Structure is a model for directed labeled Multigraphs (with one direction : one Beginning and one End)

**Q2.1** Fill the blanks

"Jen is an engineer woman, 45-year old, married to Seb who is a man with whom she had two children: Anny who is a woman and Stefan who is a man". For each person we also explicitly specify the name

To fill the blanks we use the values: :Seb, :Stefan, voc:name, voc:hasChild, voc:age, voc:hasSpouse, rdf:type, voc:Engineer, voc:Man, "Jen", "Seb", "Anny", "Stefan"

For each person we also explicitly specify the name



## Q2.2 Fill the blanks (RDF/XML)

```
<?xml version="1.0" encoding="UTF-8"?>
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE rdf:RDF [    <!ENTITY vocab "http://www.unice.fr/voc">      <!ENTITY
xsd "http://www.w3.org/2001/XMLSchema#"> ]>
<rdf:RDF xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:voc="&vocab;#" fa>
<rdf:Description rdf:about="#Jen">
  <voc:name>Jen</voc:name>
  <voc:age
rdf:datatype="http://www.w3.org/2001/XMLSchema#integer">45</voc:age>
  <voc:hasSpouse rdf:resource="#Seb"></voc:hasSpouse >
  <voc:hasChild rdf:resource="#Stefan"></voc:hasChild>
  <voc:hasChild>
    <rdf:Description rdf:about="#Anny">
      <voc:name>Anny</voc:name>
      <rdf:type rdf:resource ="&vocab;#Woman"></rdf:type>
    </rdf:Description>
  </voc:hasChild>
  <rdf:type rdf:resource="&vocab;#Engineer"></rdf:type >
</AAA>
<voc:Man rdf:about="#Seb">
  <voc:name>Seb</voc:name>
  <voc:hasChild rdf:resource="#Stefan"></voc:hasChild>
  <voc:hasChild rdf:resource="#Anny"></voc:hasChild>
</voc:Man >
<voc:Man rdf:about="#Stefan">
  <voc:name>Stefan</voc:name>
</voc:Man>
</rdf:RDF>
```

## Q2.3 Fill the blanks (N3/Turtle)

```
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .
@prefix voc: <http://www.unice.fr/voc#> .
@prefix xml: <http://www.w3.org/XML/1998/namespace> .
@prefix xsd: <http://www.w3.org/2001/XMLSchema#> .
<http://www.unice.fr/data#Jen> a voc:Engineer , voc:Woman ;
  voc:age "45"^^xsd:string ;
  voc:hasChild <http://www.unice.fr/data#Anny>,
<http://www.unice.fr/data#Stefan> ;
  voc:hasSpouse <http://www.unice.fr/data#Seb> ;
  voc:name "Jen" .
<http://www.unice.fr/data#Seb> a voc:Man ;
  voc:hasChild <http://www.unice.fr/data#Anny>,
  <http://www.unice.fr/data#Stephan> ;
  voc:name "Seb" .
<http://www.unice.fr/data#Anny> a voc:Woman ;
  voc:name "Anny" .
<http://www.unice.fr/data#Stefan> a voc:Man ;
  voc:name "Stefan" .
```

## Q2.4 Visit me please

Get the RDF data from: <http://ns.inria.fr/fabien.gandon#me>

1. Get the RDF data from: <http://ns.inria.fr/fabien.gandon#me>
2. What is the syntax used?
3. Validate it and see the graph:  
<http://www.w3.org/RDF/Validator/>
4. Translate into Turtle/N3:  
<http://rdf-translator.appspot.com/>  
<http://www.easymd.org/converter>
5. Visualize it also with:  
<http://cltl.nl/visualrdf/>  
<http://www.easymd.org/converter> (PNG, SVG)
6. Adapt to your data and do it again

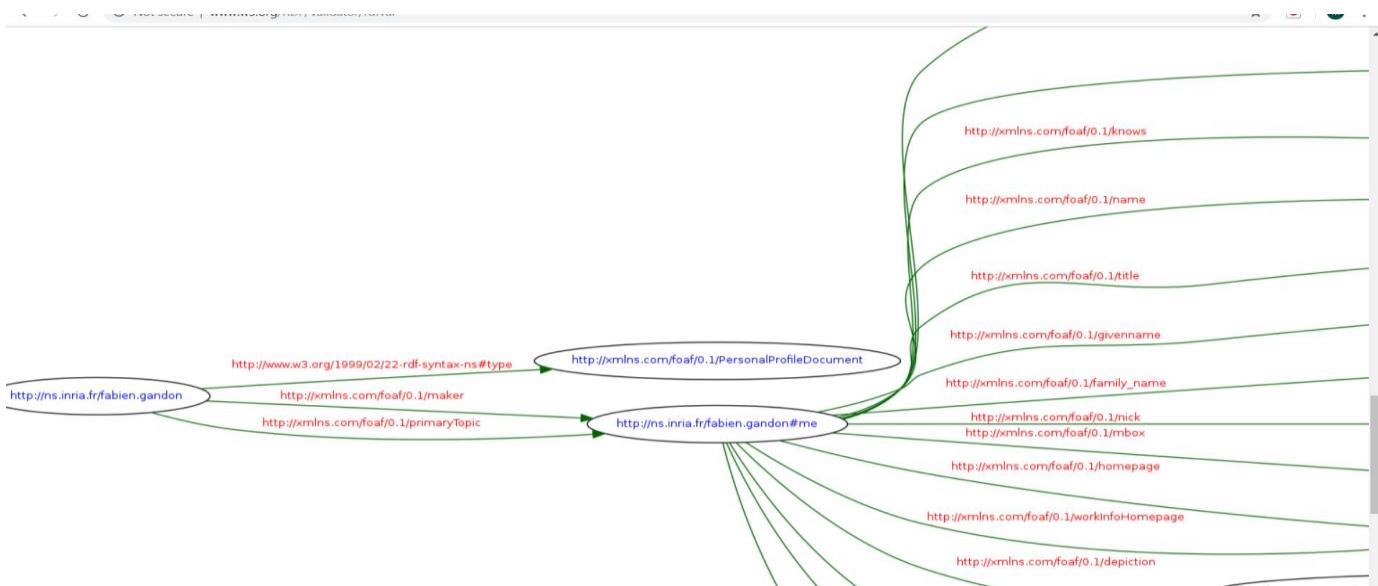
## Question 2 – After copying the URI in the rdf Validator – the syntax used is RDF/XML

22:	genid:A14929	<a href="http://www.w3.org/1999/02/22-rdf-syntax-ns#type">http://www.w3.org/1999/02/22-rdf-syntax-ns#type</a>	<a href="http://xmlns.com/foaf/0.1/Person">http://xmlns.com/foaf/0.1/Person</a>
23:	<a href="http://ns.inria.fr/fabien.gandon#me">http://ns.inria.fr/fabien.gandon#me</a>	<a href="http://xmlns.com/foaf/0.1/knows">http://xmlns.com/foaf/0.1/knows</a>	genid:A14929
24:	genid:A14929	<a href="http://xmlns.com/foaf/0.1/name">http://xmlns.com/foaf/0.1/name</a>	"Catherine Faron-Zucker"
25:	genid:A14929	<a href="http://xmlns.com/foaf/0.1/mbox">http://xmlns.com/foaf/0.1/mbox</a>	<a href="mailto:faron@polytech.unice.fr">mailto:faron@polytech.unice.fr</a>
26:	genid:A14929	<a href="http://www.w3.org/2000/01/rdf-schema#seeAlso">http://www.w3.org/2000/01/rdf-schema#seeAlso</a>	<a href="http://www.i3s.unice.fr/~faron/">http://www.i3s.unice.fr/~faron/</a>

The original RDF/XML document

```
1: <?xml version="1.0" encoding="utf-8" ?>
2: <rdf:RDF
3:   xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
4:   xmlns:foaf="http://xmlns.com/foaf/0.1#"
5:   xmlns:xmlns="http://www.w3.org/2000/01/rdf-schema#"
6:   xmlns:base="http://ns.inria.fr/fabien.gandon"
7:
8:   <foaf:PersonalProfileDocument rdf:about=""
9:     <foaf:maker rdf:resource="#me"/>
10:    <foaf:primaryTopic rdf:resource="#me"/>
11:   <foaf:PersonalProfileDocument/>
12:
13:   <foaf:Person rdf:id="me">
14:
15:     <foaf:name>Fabien Gandon</foaf:name>
16:     <foaf:title></foaf:title>
17:     <foaf:givenName></foaf:givenName>
18:     <foaf:familyName></foaf:familyName>
19:     <foaf:nick>Fabien</foaf:nick>
20:
21:     <foaf:mbox rdf:resource="mailto:fabien.gandon@inria.fr">
22:     <foaf:homepage rdf:resource="http://fabien.info"/>
23:     <foaf:depiction rdf:resource="http://www-sop.inria.fr/members/Fabien.Gandon/common/FabienGandonBackground.jpg"/>
24:     <foaf:phone rdf:resource="tel:0493877888"/>
25:
26:     <foaf:workplaceHomepage rdf:resource="http://www.inria.fr"/>
27:     <foaf:infoHomepage rdf:resource="http://fabien.info"/>
28:     <foaf:schoolHomepage rdf:resource="http://www.insa-rouen.fr"/>
29:
30:     <foaf:knows>
31:       <foaf:Person>
32:         <foaf:name>Olivier Corby</foaf:name>
33:         <foaf:mbox rdf:resource="mailto:olivier.corby@inria.fr"/>
34:         <rdfs:seeAlso rdf:resource="http://www-sop.inria.fr/members/Olivier.Corby"/>
35:       </foaf:Person>
36:     </foaf:knows>
37:
38:     <foaf:knows>
39:       <foaf:Person>
40:         <foaf:name>Catherine Faron-Zucker</foaf:name>
41:         <foaf:mbox rdf:resource="mailto:faron@polytech.unice.fr"/>
42:         <rdfs:seeAlso rdf:resource="http://www.i3s.unice.fr/~faron"/>
43:       </foaf:Person>
44:     </foaf:knows>
45:
46:   </foaf:Person>
47:
48: </rdf:RDF>
```

## Question 3 – By using the rdf Validator – we can have a look on the rdf graph for visualization



#### Question 4 – By using the rdf Translator – we can translate the RDF/xml in Turtle/N3

http://ns.inria.fr/fabien.gandon#me

Submit

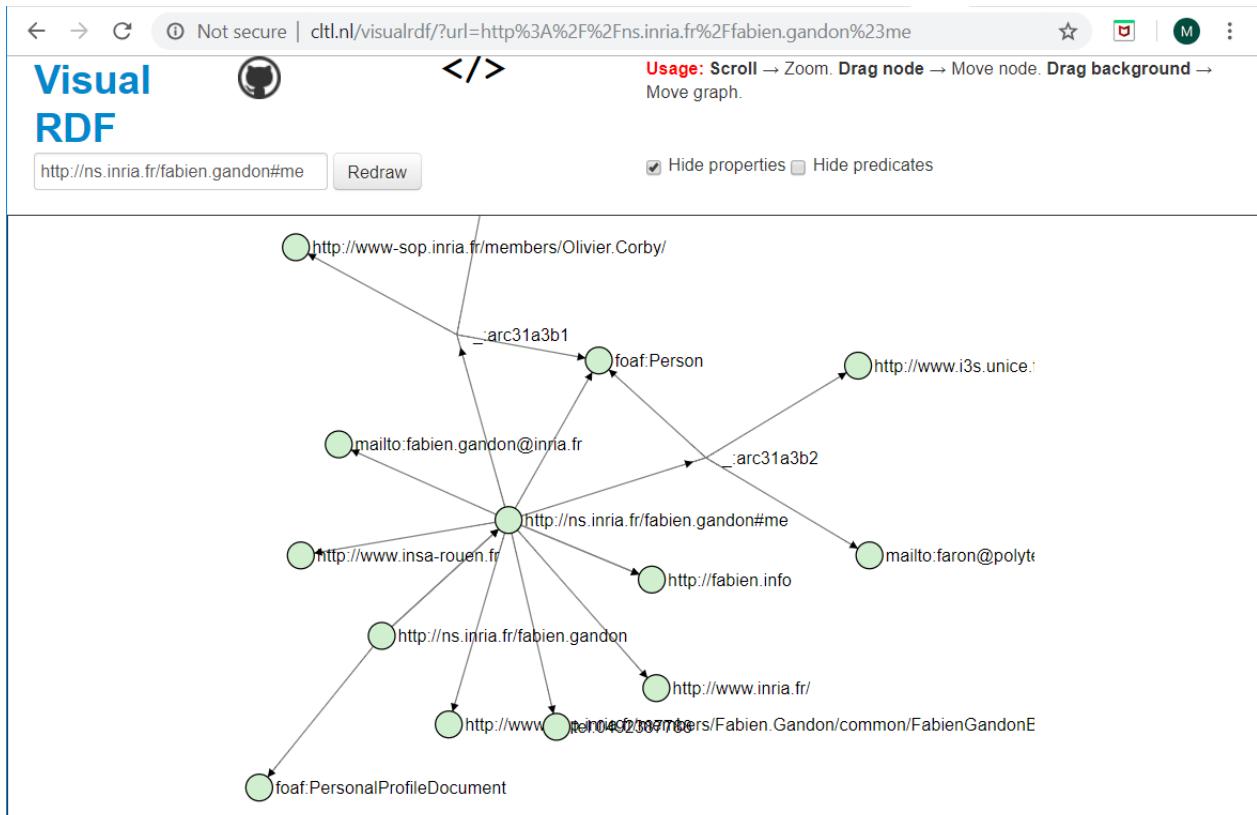
Input ... automatically ▾ Output N3 ▾

```
@prefix foaf: <http://xmlns.com/foaf/0.1/> .
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .
@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#> .
@prefix xml: <http://www.w3.org/XML/1998/namespace> .
@prefix xsd: <http://www.w3.org/2001/XMLSchema#> .

<http://ns.inria.fr/fabien.gandon> a foaf:PersonalProfileDocument ;
    foaf:maker <http://ns.inria.fr/fabien.gandon#me> ;
    foaf:primaryTopic <http://ns.inria.fr/fabien.gandon#me> .

<http://ns.inria.fr/fabien.gandon#me> a foaf:Person ;
    foaf:depiction <http://www-sop.inria.fr/members/Fabien.Gandon/common/FabienGandonBackground.jpg> ;
    foaf:family_name "Gandon" ;
    foaf:givenname "Fabien" ;
    foaf:homepage <http://fabien.info> ;
    foaf:knows [ a foaf:Person ;
        rdfs:seeAlso <http://www.i3s.unice.fr/~faron/> ;
        foaf:mbox <mailto:faron@polytech.unice.fr> ;
        foaf:name "Catherine Faron-Zucker" ],
      [ a foaf:Person ;
        rdfs:seeAlso <http://www-sop.inria.fr/members/Olivier.Corby/> ;
        foaf:mbox <mailto:olivier.corby@inria.fr> ;
        foaf:name "Olivier Corby" ] ;
    foaf:mbox <mailto:fabien.gandon@inria.fr> ;
    foaf:name "Fabien Gandon" ;
    foaf:nick "Bafien" ;
    foaf:phone <http://ns.inria.fr/tel:0492387788> ;
    foaf:schoolHomepage <http://www.insa-rouen.fr> ;
    foaf:title "Dr" ;
    foaf:workInfoHomepage <http://fabien.info> ;
    foaf:workplaceHomepage <http://www.inria.fr/> .
```

#### Question 5 – By using Visual RDF – we can visualize it



## Question 6 – Adapt to my personal data

### - My Foaf – Triples of data model

Triples of the Data Model			
Number	Subject	Predicate	Object
1	file:///base/data/home/apps/s%7Erdf-translator/2.408516547054015808/	http://xmlns.com/foaf/0.1/primaryTopic	file:///base/data/home/apps/s%7Erdf-translator/2.408516547054015808/#me
2	file:///base/data/home/apps/s%7Erdf-translator/2.408516547054015808/	http://www.w3.org/1999/02/22-rdf-syntax-ns#syntax	http://xmlns.com/foaf/0.1/PersonalProfileDocument
3	file:///base/data/home/apps/s%7Erdf-translator/2.408516547054015808/	http://webns.net/mvc/errorReportsTo	mailto:leigh@ldodds.com
4	file:///base/data/home/apps/s%7Erdf-translator/2.408516547054015808/	http://xmlns.com/foaf/0.1/maker	file:///base/data/home/apps/s%7Erdf-translator/2.408516547054015808/#me
5	file:///base/data/home/apps/s%7Erdf-translator/2.408516547054015808/	http://webns.net/mvc/generatorAgent	http://www.ldodds.com/foaf/foaf-a-matic
6	file:///base/data/home/apps/s%7Erdf-translator/2.408516547054015808/#me	http://purl.org/vocab/relationship/employedBy	http://DSTI/xxxxxx/foaf.html#Cindy
7	file:///base/data/home/apps/s%7Erdf-translator/2.408516547054015808/#me	http://xmlns.com/foaf/0.1/family_name	"Caillon"
8	file:///base/data/home/apps/s%7Erdf-translator/2.408516547054015808/#me	http://purl.org/vocab/relationship/worksWith	http://DSTI/xxxxxx/foaf.html#Patrick
9	file:///base/data/home/apps/s%7Erdf-translator/2.408516547054015808/#me	http://xmlns.com/foaf/0.1/givenname	"Mickael"
10	file:///base/data/home/apps/s%7Erdf-translator/2.408516547054015808/#me	http://www.w3.org/1999/02/22-rdf-syntax-ns#syntax	http://xmlns.com/foaf/0.1/Person
11	file:///base/data/home/apps/s%7Erdf-translator/2.408516547054015808/#me	http://purl.org/vocab/relationship/hasMet	http://DSTI/xxxxxx/foaf.html#Fabien
12	file:///base/data/home/apps/s%7Erdf-translator/2.408516547054015808/#me	http://xmlns.com/foaf/0.1/title	"Mr"
13	file:///base/data/home/apps/s%7Erdf-translator/2.408516547054015808/#me	http://xmlns.com/foaf/0.1/nick	"Mike"
14	file:///base/data/home/apps/s%7Erdf-translator/2.408516547054015808/#me	http://purl.org/vocab/relationship/neighborOf	http://DSTI/xxxxxx/foaf.html#Maher
15	file:///base/data/home/apps/s%7Erdf-translator/2.408516547054015808/#me	http://xmlns.com/foaf/0.1/mbox_sha1sum	"163727a1218e4fac3246476d8179bad32896ceb1"
16	file:///base/data/home/apps/s%7Erdf-translator/2.408516547054015808/#me	http://purl.org/vocab/relationship/friendOf	http://DSTI/xxxxxx/foaf.html#Nadjat
17	file:///base/data/home/apps/s%7Erdf-translator/2.408516547054015808/#me	http://xmlns.com/foaf/0.1/name	"Mickael Caillon"

### ▪ My Foaf in RDF / XML

#### The original RDF/XML document

```

1: <?xml version="1.0" encoding="UTF-8"?>
2: <rdf:RDF
3:   xmlns:admin="http://webns.net/mvcb/"
4:   xmlns:foaf="http://xmlns.com/foaf/0.1/"
5:   xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
6:   xmlns:rel="http://purl.org/vocab/relationship/"
7: >
8:   <rdf:Description rdf:about="file:///base/data/home/apps/s%7Erdf-translator/2.408516547054015808/">
9:     <foaf:primaryTopic rdf:resource="file:///base/data/home/apps/s%7Erdf-translator/2.408516547054015808/#me"/>
10:    <rdf:type rdf:resource="http://xmlns.com/foaf/0.1/PersonalProfileDocument"/>
11:    <admin:errorReportsTo rdf:resource="mailto:leigh@ldodds.com"/>
12:    <foaf:maker rdf:resource="file:///base/data/home/apps/s%7Erdf-translator/2.408516547054015808/#me"/>
13:    <admin:generatorAgent rdf:resource="http://www.ldodds.com/foaf/foaf-a-matic"/>
14:  </rdf:Description>
15:  <rdf:Description rdf:about="file:///base/data/home/apps/s%7Erdf-translator/2.408516547054015808/#me">
16:    <rel:employedBy rdf:resource="http://DSTI/xxxxxx/foaf.html#Cindy"/>
17:    <foaf:family_name>Caillon</foaf:family_name>
18:    <rel:worksWith rdf:resource="http://DSTI/xxxxxx/foaf.html#Patrick"/>
19:    <foaf:givenname>Mickael</foaf:givenname>
20:    <rdf:type rdf:resource="http://xmlns.com/foaf/0.1/Person"/>
21:    <rel:hasMet rdf:resource="http://DSTI/xxxxxx/foaf.html#Fabien"/>
22:    <foaf:title>Mr</foaf:title>
23:    <foaf:nick>Mike</foaf:nick>
24:    <rel:neighborOf rdf:resource="http://DSTI/xxxxxx/foaf.html#Maher"/>
25:    <foaf:mbox_sha1sum>163727a1218e4fac3246476d8179bad32896ceb1</foaf:mbox_sha1sum>
26:    <rel:friendOf rdf:resource="http://DSTI/xxxxxx/foaf.html#Nadjat"/>
27:    <foaf:name>Mickael Caillon</foaf:name>
28:  </rdf:Description>
29: </rdf:RDF>
30:

```

## - My Foaf in N3



```

@prefix admin: <http://webns.net/mvcb/> .
@prefix foaf: <http://xmlns.com/foaf/0.1/> .
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .
@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#> .
@prefix rel: <http://purl.org/vocab/relationship/> .
@prefix xml: <http://www.w3.org/XML/1998/namespace> .
@prefix xsd: <http://www.w3.org/2001/XMLSchema#> .

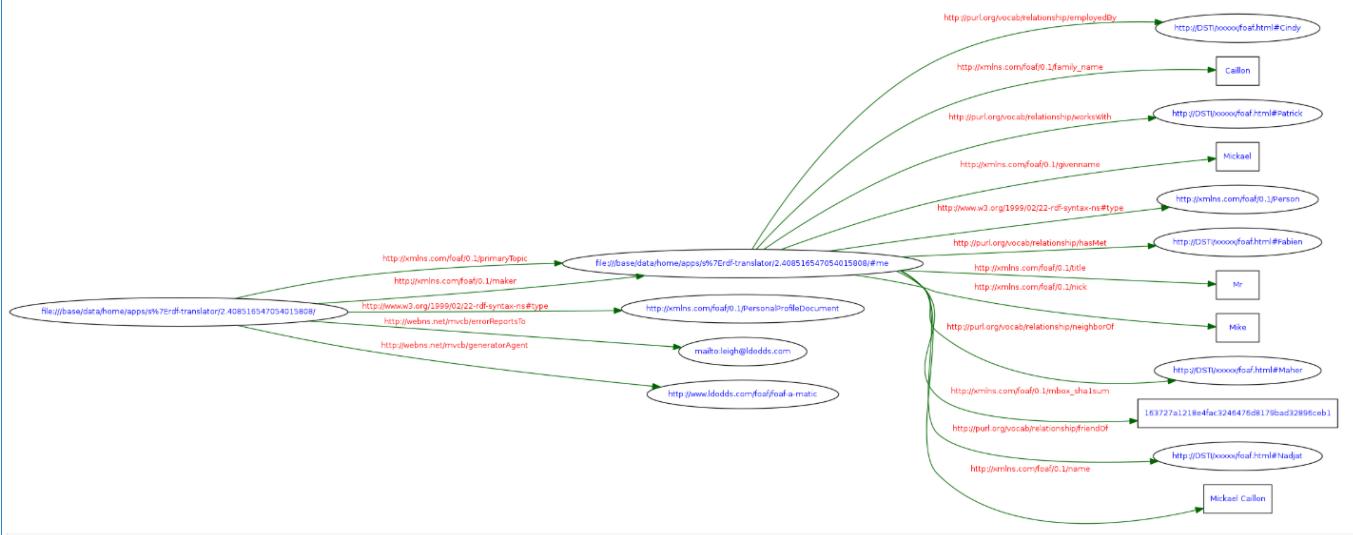
<file:///base/data/home/apps/s%7Erdf-translator/2.408516547054015808/> a foaf:PersonalProfileDocument ;
    admin:errorReportsTo <mailto:leigh@ldodds.com> ;
    admin:generatorAgent <http://www.ldodds.com/foaf/foaf-a-matic> ;
    foaf:maker <file:///base/data/home/apps/s%7Erdf-translator/2.408516547054015808/#me> ;
    foaf:primaryTopic <file:///base/data/home/apps/s%7Erdf-translator/2.408516547054015808/#me> .

<file:///base/data/home/apps/s%7Erdf-translator/2.408516547054015808/#me> a foaf:Person ;
    rel:employedBy <http://DSTI/xxxxxx/foaf.html#Cindy> ;
    rel:friendOf <http://DSTI/xxxxxx/foaf.html#Nadjat> ;
    rel:hasMet <http://DSTI/xxxxxx/foaf.html#Fabien> ;
    rel:neighborOf <http://DSTI/xxxxxx/foaf.html#Maher> ;
    rel:worksWith <http://DSTI/xxxxxx/foaf.html#Patrick> ;
    foaf:family_name "Caillon" ;
    foaf:givenname "Mickael" ;
    foaf:mbox_sha1sum "163727a1218e4fac3246476d8179bad32896ceb1" ;
    foaf:name "Mickael Caillon" ;
    foaf:nick "Mike" ;
    foaf:title "Mr" .

```

## - Graph of my data model

Graph of the data model



### **Q2.5 what is the meaning of this RDF? What is this description saying?**

```
<?xml version="1.0"?>
<rdf:RDF xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:exs="http://example.org/schema#">
  <rdf:Description rdf:about="http://example.org/doc.html">
    <rdf:type rdf:resource="http://example.org/schema#Report"/>
    <exs:theme rdf:resource="http://example.org#Music"/>
    <exs:theme rdf:resource="http://example.org#History"/>
    <exs:nbPages
      rdf:datatype="http://www.w3.org/2001/XMLSchema#int">23</exs:nbPages>
  </rdf:Description>
</rdf:RDF>
```

#### **Answer - RDF Meaning**

- It's a XML file – rdf syntax
- Description of the node “Doc” :
  - o which is from type Report
  - o It concerns themes Music and History
  - o With a number of pages = 23 (integer)

### **Q2.6 Visit to Victor Hugo**

1. See HTML data from:  
<http://id.loc.gov/authorities/names/n79091479.html>
2. Get RDF data from:  
<http://id.loc.gov/authorities/names/n79091479.rdf>
3. What is the syntax?
4. Translate into Turtle/N3:  
<http://rdf-translator.appspot.com/>
5. Any remark about the values of the properties of Victor Hugo?

#### **Question 2 : Translation HTML in order to obtain RDF**

```
<rdf:RDF xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#">
  <madsrdf:PersonalName
    rdf:about="http://id.loc.gov/authorities/names/n79091479">
    <xmlns:madsrdf="http://www.loc.gov/mads/rdf/v1#">
      <rdf:type rdf:resource="http://www.loc.gov/mads/rdf/v1#Authority"/>
      <madsrdf:authoritativeLabel xml:lang="en">Hugo, Victor, 1802-
        1885</madsrdf:authoritativeLabel>
      <madsrdf:elementList rdf:parseType="Collection">
        <madsrdf:FullNameElement>
          <madsrdf:elementValue xml:lang="en">Hugo, Victor,</madsrdf:elementValue>
        </madsrdf:FullNameElement>
        <madsrdf:DateNameElement>
```

#### **Question 3 : The syntax use is XML**

#### Question 4 : Translation in Turtle / N3

URI    Input Field

http://id.loc.gov/authorities/names/n79091479.rdf

Submit

Input ... automatically ▾ Output N3 ▾

```
@prefix cs: <http://purl.org/vocab/changeset/schema#> .  
@prefix identifiers: <http://id.loc.gov/vocabulary/identifiers/> .  
@prefix madsrdf: <http://www.loc.gov/mads/rdf/v1#> .  
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .  
@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#> .  
@prefix ri: <http://id.loc.gov/ontologies/RecordInfo#> .  
@prefix skos: <http://www.w3.org/2004/02/skos/core#> .  
@prefix skosxl: <http://www.w3.org/2008/05/skos-xl#> .  
@prefix xml: <http://www.w3.org/XML/1998/namespace#> .  
@prefix xsd: <http://www.w3.org/2001/XMLSchema#> .  
  
<http://id.loc.gov/authorities/subjects/sh86005256> a madsrdf:Authority,  
    madsrdf:DeprecatedAuthority ;  
    rdfs:label "sh86005256" .  
  
<http://id.loc.gov/rwo/agents/n79091479> a <http://id.loc.gov/ontologies/bibframe/Person>,  
    madsrdf:RWO,  
    <http://xmlns.com/foaf/0.1/Person> ;  
    rdfs:label "Hugo, Victor, 1802-1885" ;  
    madsrdf:associatedLanguage <http://id.loc.gov/vocabulary/languages/fre> ;  
    madsrdf:birthDate [ a skos:Concept ;  
        rdfs:label "(edtf) 1802" ] ;  
    madsrdf:deathDate [ a skos:Concept ;  
        rdfs:label "(edtf) 1885" ] ;
```

#### **Question 5 : main remark – Victor Hugo properties have not been translated in English**

**Q2.7** What is the syntax of the following RDF statement? What does it mean?

```
@prefix dcterms: <http://purl.org/dc/terms/>.  
GRAPH <http://inria.fr/topics/algebra>  
{  
    <http://inria.fr/rr/doc.html>  
    dcterms:subject  
    <http://data.bnf.fr/ark:/12148/cb121105993> .  
}
```

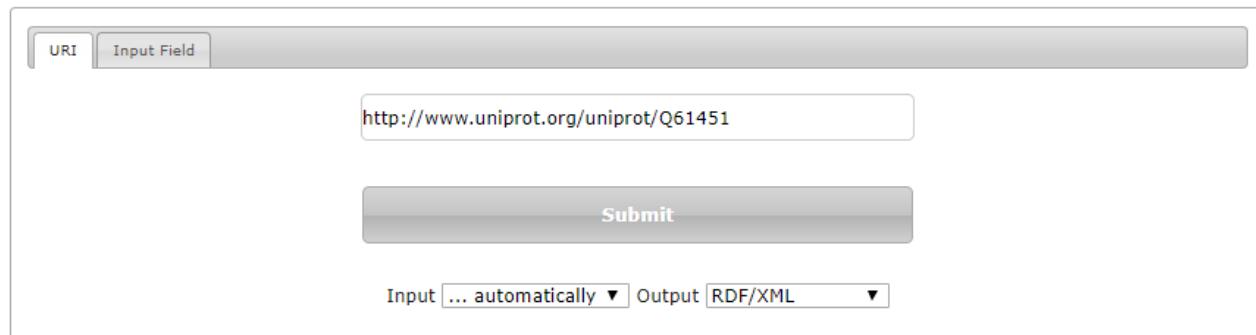
#### **Answer - RDF Meaning**

- Line 1 : prefix creation “dcterms” associated to “http://purl.org/dc/terms/ »
- Line 2 : naming of the Graph <http://inria.fr/topics/algebra>
- Line 3 : inside the graph we have a triple : “resource “doc” has for subject “http://data.bnf.fr/ark:/12148/cb121105993 »

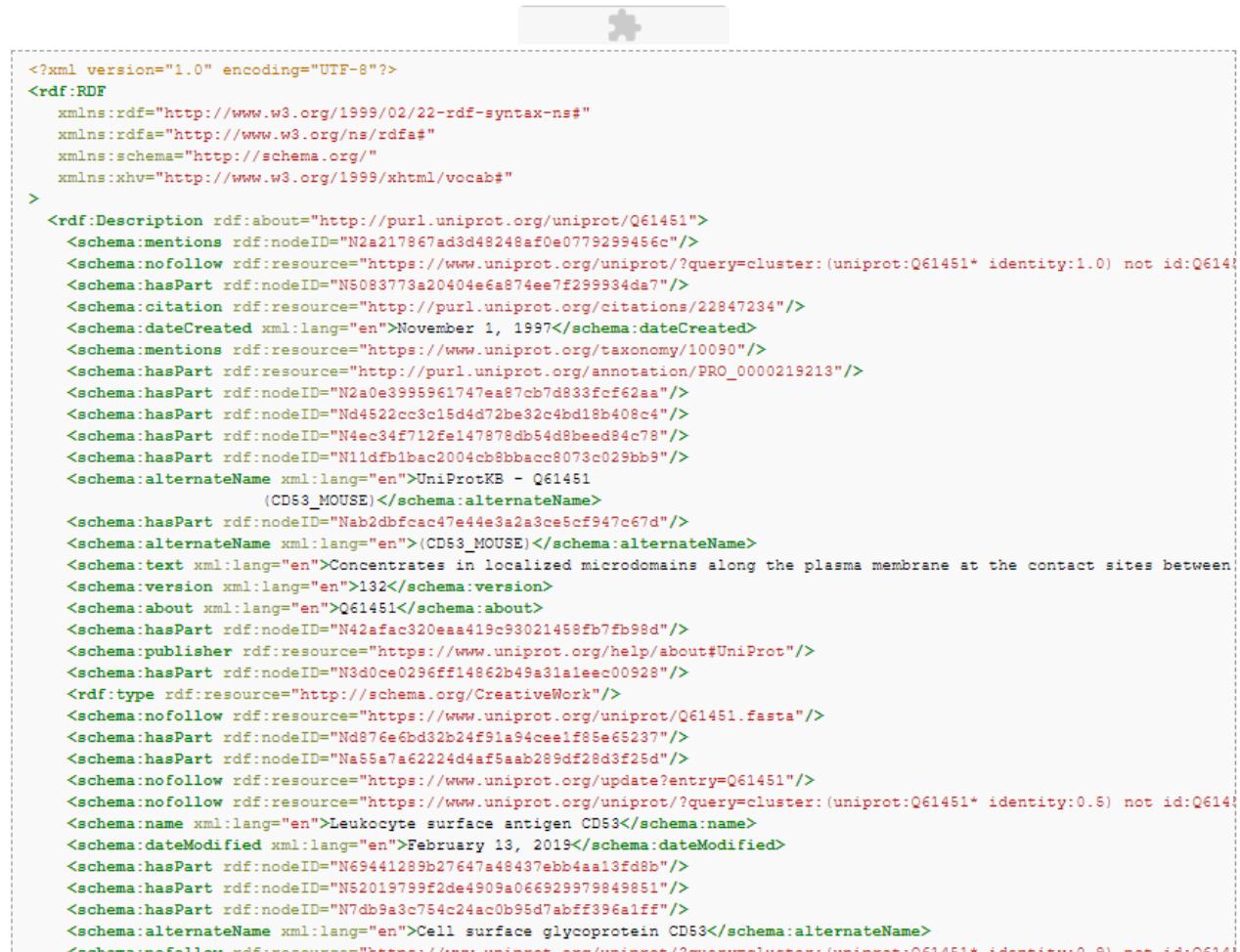
## Q2.8 Visit Leukocyte surface antigen CD53

1. See HTML data from:  
<http://www.uniprot.org/uniprot/Q61451>
2. Get RDF data from:  
<http://www.uniprot.org/uniprot/Q61451.rdf>
3. What is the syntax?
4. Translate into Turtle/N3:  
<http://rdf-translator.appspot.com/>
5. Any remark about the structure of the data?

**Question 3 : After entering the HTML in the translator we obtain data in Xml/RDF**



The screenshot shows the RDF Translator application interface. At the top, there are two tabs: "URI" and "Input Field". Below them is a text input field containing the URL "http://www.uniprot.org/uniprot/Q61451". Underneath the input field is a large "Submit" button. At the bottom of the interface, there are two dropdown menus: "Input" set to "... automatically" and "Output" set to "RDF/XML".



The screenshot displays the RDF output in XML format. The XML code is as follows:

```
<?xml version="1.0" encoding="UTF-8"?>
<rdf:RDF
    xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
    xmlns:rdfa="http://www.w3.org/ns/rdfa#"
    xmlns:schema="http://schema.org/"
    xmlns:xhv="http://www.w3.org/1999/xhtml/vocab#"
>
<rdf:Description rdf:about="http://purl.uniprot.org/uniprot/Q61451">
    <schema:mentions rdf:nodeID="N2a217867ad3d48248af0e0779299456c"/>
    <schema:nofollow rdf:resource="https://www.uniprot.org/uniprot/?query=cluster:(uniprot:Q61451* identity:1.0) not id:Q61451" />
    <schema:hasPart rdf:nodeID="N5083773a20404e6a874ee7f299934da7"/>
    <schema:citation rdf:resource="http://purl.uniprot.org/citations/22847234"/>
    <schema:dateCreated xml:lang="en">November 1, 1997</schema:dateCreated>
    <schema:mentions rdf:resource="https://www.uniprot.org/taxonomy/10090"/>
    <schema:hasPart rdf:resource="http://purl.uniprot.org/annotation/PRO_0000219213"/>
    <schema:hasPart rdf:nodeID="N2a0e3995961747ea87cb7d833fcf62aa"/>
    <schema:hasPart rdf:nodeID="Nd4522cc3c15d4d72be32c4bd18b408c4"/>
    <schema:hasPart rdf:nodeID="N4ec34f712fe147878db54d8beed84c78"/>
    <schema:hasPart rdf:nodeID="N11dfb1bac2004cb8bbacc8073c029bb9"/>
    <schema:alternateName xml:lang="en">UniProtKB - Q61451
        (CD53_MOUSE)</schema:alternateName>
    <schema:hasPart rdf:nodeID="Nab2dbfcac47e44e3a2a3ce5cf947c67d"/>
    <schema:alternateName xml:lang="en">(CD53_MOUSE)</schema:alternateName>
    <schema:text xml:lang="en">Concentrates in localized microdomains along the plasma membrane at the contact sites between
    <schema:version xml:lang="en">132</schema:version>
    <schema:about xml:lang="en">Q61451</schema:about>
    <schema:hasPart rdf:nodeID="N42afac320eaa419c93021458fb7fb98d"/>
    <schema:publisher rdf:resource="https://www.uniprot.org/help/about#UniProt"/>
    <schema:hasPart rdf:nodeID="N3d0ce0296ff14862b49a31a1ee00928"/>
    <rdf:type rdf:resource="http://schema.org/CreativeWork"/>
    <schema:nofollow rdf:resource="https://www.uniprot.org/uniprot/Q61451.fasta"/>
    <schema:hasPart rdf:nodeID="Nd876e6bd32b24f91a94cee1f85e65237"/>
    <schema:hasPart rdf:nodeID="Na55a7a62224d4af5aab289df28d3f25d"/>
    <schema:nofollow rdf:resource="https://www.uniprot.org/update?entry=Q61451"/>
    <schema:nofollow rdf:resource="https://www.uniprot.org/uniprot/?query=cluster:(uniprot:Q61451* identity:0.5) not id:Q61451" />
    <schema:name xml:lang="en">Leukocyte surface antigen CD53</schema:name>
    <schema:dateModified xml:lang="en">February 13, 2019</schema:dateModified>
    <schema:hasPart rdf:nodeID="N69441289b27647a48437ebd4a13fdbb"/>
    <schema:hasPart rdf:nodeID="N52019799f2de4909a066929979849851"/>
    <schema:hasPart rdf:nodeID="N7db9a3c754c24ac0b85d7abff396a1ff"/>
    <schema:alternateName xml:lang="en">Cell surface glycoprotein CD53</schema:alternateName>
    <schema:nofollow rdf:resource="https://www.uniprot.org/uniprot/?query=cluster:(uniprot:Q61451* identity:0.9) not id:Q61451" />
```

#### Question 4 : Translation in N3

URI    Input Field

Input ... automatically ▾ Output N3 ▾



```
@prefix : <http://purl.uniprot.org/core/> .
@prefix bibo: <http://purl.org/ontology/bibo/> .
@prefix dcterms: <http://purl.org/dc/terms/> .
@prefix faldo: <http://biohackathon.org/resource/faldo#> .
@prefix foaf: <http://xmlns.com/foaf/0.1/> .
@prefix owl: <http://www.w3.org/2002/07/owl#> .
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .
@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#> .
@prefix sd: <http://www.w3.org/ns/sparql-service-description#> .
@prefix skos: <http://www.w3.org/2004/02/skos/core#> .
@prefix void: <http://rdfs.org/ns/void#> .
@prefix xml: <http://www.w3.org/XML/1998/namespace> .
@prefix xsd: <http://www.w3.org/2001/XMLSchema#> .

<http://purl.uniprot.org/uniprot/> a owl:Ontology ;
owl:imports : .
```

Question 5 : Remark regarding data structure – there's a step of verification / identification of the gene in this experiment by doing attribution and secure traceability

---

# Day 02: Answers to the practical session on RDF.

## Software requirements

- A real text editor (e.g. Notepad++, Gedit, Sublime Text, Emacs, etc.)
- The RDF XML online validation service by W3C: <https://www.w3.org/RDF/Validator/>
- The RDF online translator: <http://rdf-translator.appspot.com/>
- The SPARQL Corese engine: <http://wimmics.inria.fr/corese>

## Create RDF

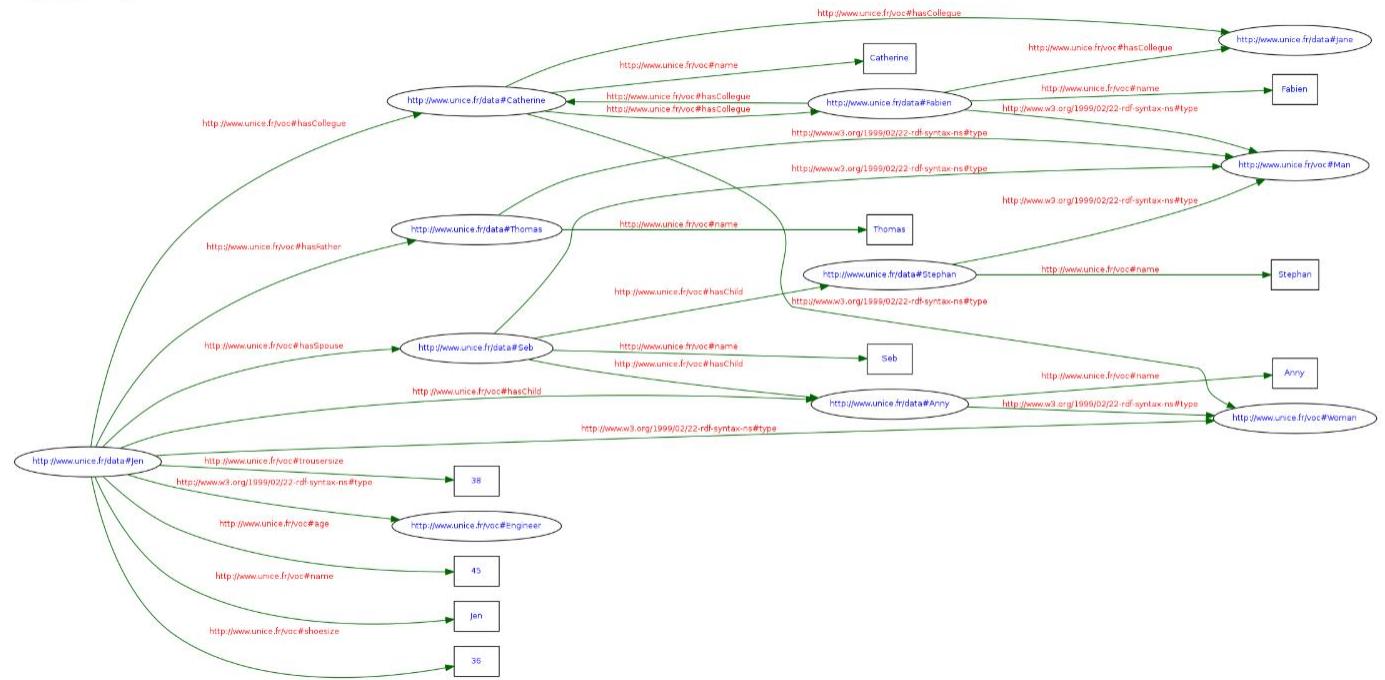
Read carefully the following statements:

"Jen is a 45-year old woman and she has a shoe size of 36 and trouser size of 38. She is, married to Seb who is a man with whom she had two children: Anny who is a woman and Stefan who is a man. Jen is also an engineer and Catherine and Fabien are her colleagues. Jen's father is a man named Thomas"

1. Use your text editor and write the above statements in RDF in N3 syntax inventing your own vocabulary. Save you file as "Jen.ttl"
2. Use your favorite text or XML editor and write the above statements in RDF in XML syntax reusing the same vocabulary "Jen.rdf"
3. Use the RDF XML online validation service to validate your XML and see the triples <https://www.w3.org/RDF/Validator/>
4. In the validator use the option to visualize the graph
5. Use the RDF online translator to validate your N3 and translate it into RDF/XML: <http://rdf-translator.appspot.com/>
6. Compare your RDF/XML with the result of the N3 translation
7. Translate in other formats to see the results.

## Graph

Graph of the data model



### Code of validated RDF in N3 syntax:

```
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .  
@prefix voc: <http://www.unice.fr/voc#> .  
@prefix xml: <http://www.w3.org/XML/1998/namespace> .  
@prefix xsd: <http://www.w3.org/2001/XMLSchema#> .  
  
<http://www.unice.fr/data#Jen> a voc:Engineer , voc:Woman ;  
    voc:age "45"^^xsd:string ;  
    voc:hasChild <http://www.unice.fr/data#Anny>, <http://www.unice.fr/data#Stephan> ;  
    voc:hasColleague <http://www.unice.fr/data#Catherine>, <http://www.unice.fr/data#Fabien> ;  
    voc:hasSpouse <http://www.unice.fr/data#Seb> ;  
    voc:shoesize "36"^^xsd:string ;  
    voc:trousersize "38"^^xsd:string ;  
    voc:hasFather <http://www.unice.fr/data#Thomas> ;  
    voc:name "Jen".  
  
<http://www.unice.fr/data#Seb> a voc:Man ;  
    voc:hasChild <http://www.unice.fr/data#Anny>,  
        <http://www.unice.fr/data#Stephan> ;  
    voc:name "Seb".  
  
<http://www.unice.fr/data#Anny> a voc:Woman ;  
    voc:name "Anny".  
  
<http://www.unice.fr/data#Stefan> a voc:Man ;  
    voc:name "Stefan".  
  
<http://www.unice.fr/data#Catherine> a voc:Woman ;  
    voc:name "Catherine" ;  
    voc:hasColleague <http://www.unice.fr/data#Fabien>, <http://www.unice.fr/data#Jane> .  
  
<http://www.unice.fr/data#Fabien> a voc:Man ;  
    voc:name "Fabien" ;  
    voc:hasColleague <http://www.unice.fr/data#Catherine>, <http://www.unice.fr/data#Jane> .  
  
<http://www.unice.fr/data#Thomas> a voc:Man ;  
    voc:name "Thomas" .
```

## Code of validated RDF in XML syntax:

```
<?xml version="1.0" encoding="UTF-8"?>

<rdf:RDF

  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:voc="http://www.unice.fr/voc#"

>

<rdf:Description rdf:about="http://www.unice.fr/data#Fabien">

  <voc:hasColleague rdf:resource="http://www.unice.fr/data#Jane"/>
  <voc:hasColleague rdf:resource="http://www.unice.fr/data#Catherine"/>
  <voc:name>Fabien</voc:name>
  <rdf:type rdf:resource="http://www.unice.fr/voc#Man"/>
</rdf:Description>

<rdf:Description rdf:about="http://www.unice.fr/data#Seb">

  <voc:name>Seb</voc:name>
  <voc:hasChild rdf:resource="http://www.unice.fr/data#Stephan"/>
  <rdf:type rdf:resource="http://www.unice.fr/voc#Man"/>
  <voc:hasChild rdf:resource="http://www.unice.fr/data#Anny"/>
</rdf:Description>

<rdf:Description rdf:about="http://www.unice.fr/data#Jen">

  <voc:hasChild rdf:resource="http://www.unice.fr/data#Anny"/>
  <voc:hasChild rdf:resource="http://www.unice.fr/data#Stephan"/>
  <voc:hasFather rdf:resource="http://www.unice.fr/data#Thomas"/>
  <voc:hasColleague rdf:resource="http://www.unice.fr/data#Catherine"/>
  <voc:trousersize rdf:datatype="http://www.w3.org/2001/XMLSchema#string">38</voc:trousersize>
  <voc:shoesize rdf:datatype="http://www.w3.org/2001/XMLSchema#string">36</voc:shoesize>
  <voc:name>Jen</voc:name>
  <voc:age rdf:datatype="http://www.w3.org/2001/XMLSchema#string">45</voc:age>
<rdf:type rdf:resource="http://www.unice.fr/voc#Woman"/>
<rdf:type rdf:resource="http://www.unice.fr/voc#Engineer"/>
  <voc:hasColleague rdf:resource="http://www.unice.fr/data#Fabien"/>
  <voc:hasSpouse rdf:resource="http://www.unice.fr/data#Seb"/>
</rdf:Description>

<rdf:Description rdf:about="http://www.unice.fr/data#Thomas">
  <rdf:type rdf:resource="http://www.unice.fr/voc#Man"/>
  <voc:name>Thomas</voc:name>
```

```

</rdf:Description>

<rdf:Description rdf:about="http://www.unice.fr/data#Catherine">
  <rdf:type rdf:resource="http://www.unice.fr/voc#Woman"/>
  <voc:hasColleague rdf:resource="http://www.unice.fr/data#Jane"/>
  <voc:hasColleague rdf:resource="http://www.unice.fr/data#Fabien"/>
  <voc:name>Catherine</voc:name>
</rdf:Description>

<rdf:Description rdf:about="http://www.unice.fr/data#Stephan">
  <voc:name>Stephan</voc:name>
  <rdf:type rdf:resource="http://www.unice.fr/voc#Man"/>
</rdf:Description>

<rdf:Description rdf:about="http://www.unice.fr/data#Anny">
  <rdf:type rdf:resource="http://www.unice.fr/voc#Woman"/>
  <voc:name>Anny</voc:name>
</rdf:Description>

</rdf:RDF>

```

### Example of translation in other Format “Microdata”

```

<div>

  <div itemtype="http://www.unice.fr/voc#Engineer" itemid="http://www.unice.fr/data#Jen" itemscope>
    <link itemprop="hasChild" href=" http://www.unice.fr/data#Stephan" />
    <div itemprop="hasColleague" itemtype="http://www.unice.fr/voc#Woman" itemid="http://www.unice.fr/data#Catherine" itemscope>
      <meta itemprop="name" content="Catherine" />
      <link itemprop="hasColleague" href="http://www.unice.fr/data#Jane" />
      <div itemprop="hasColleague" itemtype="http://www.unice.fr/voc#Man" itemid="http://www.unice.fr/data#Fabien" itemscope>
        <meta itemprop="name" content="Fabien" />
        <link itemprop="hasColleague" href="http://www.unice.fr/data#Jane" />
        <link itemprop="hasColleague" href="http://www.unice.fr/data#Catherine" />
      </div>
    </div>
    <link itemprop="http://schema.org/additionalType" href="http://www.unice.fr/voc#Woman" />
    <div itemprop="hasSpouse" itemtype="http://www.unice.fr/voc#Man" itemid="http://www.unice.fr/data#Seb" itemscope>

```

```
<div itemprop="hasChild" itemtype="http://www.unice.fr/voc#Woman">  
  itemid="http://www.unice.fr/data#Anny" itemscope>  
    <meta itemprop="name" content="Anny" />  
  </div>  
  
<div itemprop="hasChild" itemtype="http://www.unice.fr/voc#Man">  
  itemid="http://www.unice.fr/data#Stephan" itemscope>  
    <meta itemprop="name" content="Stephan" />  
  </div>  
  
  <meta itemprop="name" content="Seb" />  
  </div>  
  
  <meta itemprop="trousersize" content="38" />  
  
<div itemprop="hasFather" itemtype="http://www.unice.fr/voc#Man">  
  itemid="http://www.unice.fr/data#Thomas" itemscope>  
    <meta itemprop="name" content="Thomas" />  
  </div>  
  
  <meta itemprop="age" content="45" />  
  <link itemprop="hasChild" href="http://www.unice.fr/data#Anny" />  
  <meta itemprop="shoesize" content="36" />  
  <link itemprop="hasColleague" href=" http://www.unice.fr/data#Fabien" />  
  <meta itemprop="name" content="Jen" />  
  </div>  
</div>
```

## Query your data

Download the Corese.jar library and start it as a standalone application: On Window double-click the file ".jar". If it does not work or on other platforms, run the command " java -jar -Dfile.encoding=UTF8 " followed by the name of the ".jar" archive. Notice that you need java on your machine and proper path configuration.

This interface provides two tabs: (1) one to load input files and see traces of execution, and (2) the default tab to start loading or writing queries and see their result. Load the annotations contained in the file "Jen.rdf" you created and validated before. The interface contains a default SPARQL query:

```
Select ?x ?t where { ?x rdf:type ?t}
```

The SPARQL language will be presented in the next course. Just know that this query can find all of the resources referred to in the data you loaded and their types. Launch the query and check the results.

## Print screen

The screenshot shows the Corese 3.2 interface with a query results table. The table has three columns: ?x, ?y, and ?p. The ?x column lists various URIs, many of which are part of the 'fridata#Jen' dataset. The ?y column lists properties such as 'http://www.unice.fr/voc#age', 'http://www.unice.fr/voc#hasChild', and 'http://www.unice.fr/voc#hasSpouse'. The ?p column lists values like '45', 'http://www.unice.fr/voc#hasColleague', and 'http://www.unice.fr/voc#name'. The table also includes rows for 'http://www.w3.org/1999/02/22-rdf-syntax-ns#Property' and 'http://www.w3.org/1999/02/22-rdf-syntax-ns#Type'.

?x	?y	?p
http://www.unice.fridata#Jen	http://www.unice.fr/voc#age	45
http://www.unice.fridata#Jen	http://www.unice.fr/voc#hasChild	http://www.unice.fridata#Stephan
http://www.unice.fridata#Jen	http://www.unice.fr/voc#hasChild	http://www.unice.fridata#Anny
http://www.unice.fridata#Fabien	http://www.unice.fr/voc#hasChild	http://www.unice.fridata#Stephan
http://www.unice.fridata#Fabien	http://www.unice.fr/voc#hasColleague	http://www.unice.fridata#Catherine
http://www.unice.fridata#Fabien	http://www.unice.fr/voc#hasColleague	http://www.unice.fridata#Aline
http://www.unice.fridata#Aline	http://www.unice.fr/voc#hasColleague	http://www.unice.fridata#Fabien
http://www.unice.fridata#Aline	http://www.unice.fr/voc#hasColleague	http://www.unice.fridata#Catherine
http://www.unice.fridata#Aline	http://www.unice.fr/voc#hasColleague	http://www.unice.fridata#Jane
http://www.unice.fridata#Aline	http://www.unice.fr/voc#hasColleague	http://www.unice.fridata#Catherine
http://www.unice.fridata#Aline	http://www.unice.fr/voc#hasColleague	http://www.unice.fridata#Fabien
http://www.unice.fridata#Aline	http://www.unice.fr/voc#hasColleague	http://www.unice.fridata#Thomas
http://www.unice.fridata#Aline	http://www.unice.fr/voc#hasColleague	http://www.unice.fridata#Stephan
http://www.unice.fridata#Aline	http://www.unice.fr/voc#hasColleague	http://www.unice.fridata#Fabien
http://www.unice.fridata#Aline	http://www.unice.fr/voc#hasColleague	http://www.unice.fridata#Stephan
http://www.unice.fridata#Aline	http://www.unice.fr/voc#hasColleague	Catherine
http://www.unice.fridata#Fabien	http://www.unice.fr/voc#hasName	Fabien
http://www.unice.fridata#Fabien	http://www.unice.fr/voc#hasName	Thomas
http://www.unice.fridata#Fabien	http://www.unice.fr/voc#hasName	Jen
http://www.unice.fridata#Fabien	http://www.unice.fr/voc#hasName	Stephan
http://www.unice.fridata#Fabien	http://www.unice.fr/voc#hasName	Anny
http://www.unice.fridata#Fabien	http://www.unice.fr/voc#hasName	Stephan
http://www.unice.fridata#Fabien	http://www.unice.fr/voc#hasName	36
http://www.unice.fridata#Fabien	http://www.unice.fr/voc#hasName	38
http://www.w3.org/1999/02/22-rdf-syntax-ns#Property	http://www.w3.org/1999/02/22-rdf-syntax-ns#Property	http://www.w3.org/1999/02/22-rdf-syntax-ns#Property
http://www.w3.org/1999/02/22-rdf-syntax-ns#Type	http://www.w3.org/1999/02/22-rdf-syntax-ns#Type	http://www.w3.org/1999/02/22-rdf-syntax-ns#Type
http://www.unice.fr/voc#name	http://www.w3.org/1999/02/22-rdf-syntax-ns#Property	http://www.w3.org/1999/02/22-rdf-syntax-ns#Property
http://www.unice.fr/voc#hasColleague	http://www.w3.org/1999/02/22-rdf-syntax-ns#Property	http://www.w3.org/1999/02/22-rdf-syntax-ns#Property
http://www.unice.fr/voc#name	http://www.w3.org/1999/02/22-rdf-syntax-ns#Property	http://www.w3.org/1999/02/22-rdf-syntax-ns#Property
http://www.unice.fridata#Fabien	http://www.w3.org/1999/02/22-rdf-syntax-ns#Property	http://www.w3.org/1999/02/22-rdf-syntax-ns#Property
http://www.unice.fridata#Thomas	http://www.w3.org/1999/02/22-rdf-syntax-ns#Property	http://www.w3.org/1999/02/22-rdf-syntax-ns#Property
http://www.unice.fridata#Jane	http://www.w3.org/1999/02/22-rdf-syntax-ns#Property	http://www.w3.org/1999/02/22-rdf-syntax-ns#Property
http://www.unice.fridata#Catherine	http://www.w3.org/1999/02/22-rdf-syntax-ns#Property	http://www.w3.org/1999/02/22-rdf-syntax-ns#Property
http://www.unice.fridata#Fabien	http://www.w3.org/1999/02/22-rdf-syntax-ns#Property	http://www.w3.org/1999/02/22-rdf-syntax-ns#Property
http://www.unice.fridata#Stephan	http://www.w3.org/1999/02/22-rdf-syntax-ns#Property	http://www.w3.org/1999/02/22-rdf-syntax-ns#Property
http://www.unice.fridata#Anny	http://www.w3.org/1999/02/22-rdf-syntax-ns#Property	http://www.w3.org/1999/02/22-rdf-syntax-ns#Property
http://www.unice.fridata#Stephan	http://www.w3.org/1999/02/22-rdf-syntax-ns#Property	http://www.w3.org/1999/02/22-rdf-syntax-ns#Property
http://www.unice.fridata#Fabien	http://www.w3.org/1999/02/22-rdf-syntax-ns#Property	http://www.w3.org/1999/02/22-rdf-syntax-ns#Property
http://www.unice.fridata#Fabien	http://www.w3.org/1999/02/22-rdf-syntax-ns#Property	http://www.w3.org/1999/02/22-rdf-syntax-ns#Property
http://www.unice.fridata#Stephan	http://www.unice.fr/voc#hasFather	http://www.unice.fridata#Stephan
http://www.unice.fridata#Stephan	http://www.unice.fr/voc#hasMother	http://www.unice.fridata#Anny
http://www.unice.fridata#Stephan	http://www.unice.fr/voc#hasSpouse	http://www.unice.fridata#Fabien
http://www.unice.fridata#Stephan	http://www.unice.fr/voc#hasAge	http://www.unice.fridata#45
http://www.unice.fridata#Stephan	http://www.unice.fr/voc#shoeSize	http://www.unice.fridata#38

## Understand existing data

1, Get the RDF/XML about <http://ns.inria.fr/fabien.gandon#me> and translate the RDF/XML into Turtle/N3

Code of validated RDF in N3 syntax:

```
@prefix foaf: <http://xmlns.com/foaf/0.1/> .  
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .  
@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#> .  
@prefix xml: <http://www.w3.org/XML/1998/namespace> .  
@prefix xsd: <http://www.w3.org/2001/XMLSchema#> .  
  
<http://ns.inria.fr/fabien.gandon> a foaf:PersonalProfileDocument ;
```

```

foaf:maker <http://ns.inria.fr/fabien.gandon#me> ;
foaf:primaryTopic <http://ns.inria.fr/fabien.gandon#me> .

<http://ns.inria.fr/fabien.gandon#me> a foaf:Person ;
    foaf:depiction <http://www-sop.inria.fr/members/Fabien.Gandon/common/FabienGandonBackground.jpg> ;
    foaf:family_name "Gandon" ;
    foaf:givenname "Fabien" ;
    foaf:homepage <http://fabien.info> ;
    foaf:knows [ a foaf:Person ;
        rdfs:seeAlso <http://www.i3s.unice.fr/~faron/> ;
        foaf:mbox <mailto:faron@polytech.unice.fr> ;
        foaf:name "Catherine Faron-Zucker" ],
        [ a foaf:Person ;
            rdfs:seeAlso <http://www-sop.inria.fr/members/Olivier.Corby/> ;
            foaf:mbox <mailto:olivier.corby@inria.fr> ;
            foaf:name "Olivier Corby" ] ;
    foaf:mbox <mailto:fabien.gandon@inria.fr> ;
    foaf:name "Fabien Gandon" ;
    foaf:nick "Bafien" ;
    foaf:phone <http://ns.inria.fr/tel:0492387788> ;
    foaf:schoolHomepage <http://www.insa-rouen.fr> ;
    foaf:title "Dr" ;
    foaf:workInfoHomepage <http://fabien.info> ;
    foaf:workplaceHomepage <http://www.inria.fr> .

```

Can you guess the link between <http://ns.inria.fr/fabien.gandon> and <http://ns.inria.fr/fabien.gandon#me>

**Answer :**

The URL (<http://ns.inria.fr/fabien.gandon>) is the way to identify what exists on the web ;

The URI (<http://ns.inria.fr/fabien.gandon#me>) is the way to identify on the web what exists – here we have the URI of Fabien gandon on INRIA

2, Using CURL get the RDF/XML data of the White Shark on the BBC web site. Try to validate it on the W3C validation service. Do you get an error? Why? How can you fix it?

**Answer : There is an error – the issue is with BBC Site – no URL available**

3, Get the Turtle data of Paris on DBpedia.org then in the file find the triple that declares it as a capital in Europe.

Answer :

```
<http://dbpedia.org/resource/Paris> a <http://dbpedia.org/class/yago/WikicatCapitalsInEurope>
```

4, If you don't have the human dataset file yet, at the following address you will find an RDF file containing several annotations:

[http://wimmics.inria.fr/doc/tutorial/human\\_2013.rdf](http://wimmics.inria.fr/doc/tutorial/human_2013.rdf)

Download the file and use the RDF XML online validation service to validate the XML and see the triples and the graph.

1. What is the namespace used for instances / resources created in this file?

Answer : The Name space is the base : <http://www.inria.fr/2007/09/11/humans.rdfs-instances>

```
<rdf:RDF xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#" xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#" xmlns:xsd="http://www.w3.org/2001/XMLSchema#" xmlns="http://www.inria.fr/2007/09/11/humans.rdfs#" xml:base="http://www.inria.fr/2007/09/11/humans.rdfs-instances">
<Man rdf:ID="Harry">
<name>Harry</name>
<hasChild rdf:resource="#John"/>
<hasSpouse rdf:resource="#Sophie"/>
</Man>
<Person rdf:ID="John">
<name>John</name>
<shoesize rdf:datatype="http://www.w3.org/2001/XMLSchema#integer">14</shoesize>
<age rdf:datatype="http://www.w3.org/2001/XMLSchema#integer">37</age>
</Person>
<Person rdf:ID="Mark">
<name>Mark</name>
<shoesize rdf:datatype="http://www.w3.org/2001/XMLSchema#integer">8</shoesize>
<age rdf:datatype="http://www.w3.org/2001/XMLSchema#integer">14</age>
<shirtsize rdf:datatype="http://www.w3.org/2001/XMLSchema#integer">9</shirtsize>
<trouserssize rdf:datatype="http://www.w3.org/2001/XMLSchema#integer">36</trouserssize>
<hasFather rdf:resource="#John"/>
</Person>
<Person rdf:ID="Eve">
<rdf:type rdf:resource="http://www.inria.fr/2007/09/11/humans.rdfs#Lecturer"/>
<hasSpouse rdf:resource="#David"/>
<name>Eve</name>
<hasFriend rdf:resource="#Alice"/>
</Person>
<Person rdf:ID="David">
```

2. By which mechanism is the association between instances and namespace done i.e. how was the instance namespace specified?

Answer : by using "prefix" ; each time an object is object this technique allows to refer to the namespace it's a way to simplify coding) – see example below – instead of mentioning “  
<http://www.w3.org/1999/02/22-rdf-syntax-ns/Harry> »

```
rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
rdf:ID="Harry"
```

3. What is the namespace of the RDF schema used and how is it associated with the tags?

**Answer : The default namespace is “<http://www.inria.fr/2007/09/11/humans.rdfs#>” (without prefix) - it means that all datatype (eg Man / Person ) are referred to this default RDF**

```
<rdf:RDF xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#" xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#" xmlns:xsd="http://www.w3.org/2001/XMLSchema#" xmlns="http://www.inria.fr/2007/09/11/humans.rdfs#" xml:base="http://www.inria.fr/2007/09/11/humans.rdfs-instances">
  <Man rdf:ID="Harry">
    <name>Harry</name>
    <hasChild rdf:resource="#John"/>
    <hasSpouse rdf:resource="#Sophie"/>
  </Man>
  <Person rdf:ID="John">
    <name>John</name>
    <shoesize rdf:datatype="http://www.w3.org/2001/XMLSchema#integer">14</shoesize>
    <age rdf:datatype="http://www.w3.org/2001/XMLSchema#integer">37</age>
  </Person>
  <Person rdf:ID="Mark">
    <name>Mark</name>
    <shoesize rdf:datatype="http://www.w3.org/2001/XMLSchema#integer">8</shoesize>
    <age rdf:datatype="http://www.w3.org/2001/XMLSchema#integer">14</age>
    <shirtsize rdf:datatype="http://www.w3.org/2001/XMLSchema#integer">9</shirtsize>
    <trouserssize rdf:datatype="http://www.w3.org/2001/XMLSchema#integer">36</trouserssize>
    <hasFather rdf:resource="#John"/>
  </Person>
</rdf:RDF>
```

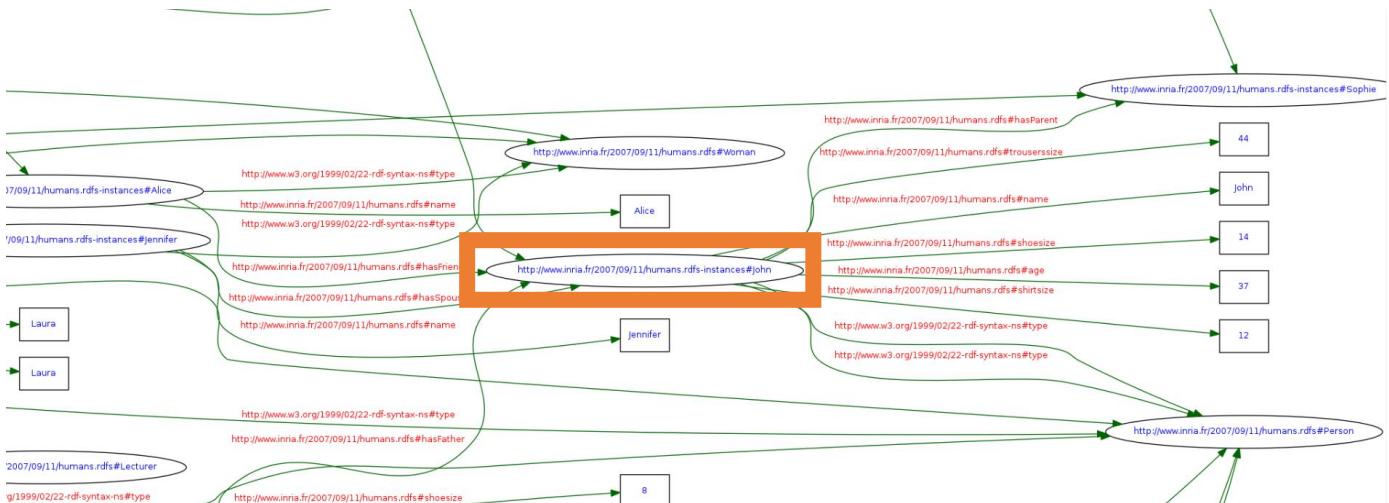
4. Explain the code `xmlns="&humans; #"`

**Answer : This code is a way to create a variable (Entity) and use it as a shortcut in the code**

5. Find everything about information on John in this file.

all the information:

**Answer : Many ways to obtain information – through Graph and look at input and output**



**Main information about John - Other way is to do a search in html and select where John is mentioned**

- Harry has child John
- John has name John
- John shoe size is 14
- John is 37 years old
- Mark has father John
- Alice has friend John
- Jennifer has spouse John
- John has short size 12
- John has trouser size 44
- John has parent Sophie

6. Translate the file in turtle and save it as `human_2013.ttl`  
 10 first lines:

```

@prefix : <http://www.inria.fr/2007/09/11/humans.rdfs#> .
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .
@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#> .
@prefix xml: <http://www.w3.org/XML/1998/namespace> .
@prefix xsd: <http://www.w3.org/2001/XMLSchema#> .

<http://www.inria.fr/2007/09/11/humans.rdfs-instances#Eve> a :Lecturer,
  :Person ;
  :hasFriend <http://www.inria.fr/2007/09/11/humans.rdfs-instances#Alice> ;
  :hasSpouse <http://www.inria.fr/2007/09/11/humans.rdfs-instances#David> ;
  :name "Eve" .
```

7. In the turtle version find everything about Laura.  
 all the information:

```

:hasChild <http://www.inria.fr/2007/09/11/humans.rdfs-instances#Harry> ;
:hasFriend <http://www.inria.fr/2007/09/11/humans.rdfs-instances#Alice> ;
:name "Jack" .

<http://www.inria.fr/2007/09/11/humans.rdfs-instances#Catherine> a :Woman ;
:hasMother <http://www.inria.fr/2007/09/11/humans.rdfs-instances#Laura> .

<http://www.inria.fr/2007/09/11/humans.rdfs-instances#Gaston> a :Man,
  :Researcher ;
:age 102 ;
:hasChild <http://www.inria.fr/2007/09/11/humans.rdfs-instances#Jack>,
<http://www.inria.fr/2007/09/11/humans.rdfs-instances#Pierre> ;
:name "Gaston" ;
:shirtsize 12 ;
:shoesize 11 ;

<http://www.inria.fr/2007/09/11/humans.rdfs-instances#Laura> a :Lecturer,
  :Person,
  :Researcher ;
:hasFriend <http://www.inria.fr/2007/09/11/humans.rdfs-instances#Alice> ;
:name "Laura" .

<http://www.inria.fr/2007/09/11/humans.rdfs-instances#Pierre> a :Man ;
:age 71 ;
:name "Pierre" ;
:shirtsize 9 ;
:shoesize 8 ;
:trouserssize 30 .

<http://www.inria.fr/2007/09/11/humans.rdfs-instances#Alice> a :Woman ;
:hasFriend <http://www.inria.fr/2007/09/11/humans.rdfs-instances#John> ;
:name "Alice" .

<http://www.inria.fr/2007/09/11/humans.rdfs-instances#John> a :Person ;
:age 37 ;
:hasParent <http://www.inria.fr/2007/09/11/humans.rdfs-instances#Sophie> ;
:name "John" ;
:shirtsize 12 ;
:shoesize 14 ;
:trouserssize 44 .
```

#### Main information about Laura

- **Laura is a Lecturer**
- **Laura is a Person**
- **Laura is a Researcher**
- **Laura has friend Alice**
- **Laura has name Laura**
- **Catherine has mother Laura**
- **William has spouse Laura**

## Day 03: questions from the course on SPARQL.

### Q3.1 Test SPARQL online

Connect to: <https://corese.inria.fr/srv/tutorial/sparql>

Answers to the query:

```
prefix v: <http://www.inria.fr/2015/humans#>
select * where { ?x a v:Person . }
```

We are looking to all Person as defined by <http://www.inria.fr/2015/humans>

The screenshot shows a web browser window with two tabs: "Le futur du web à la lecture des r" and "Corese Web Server". The address bar displays the URL <https://corese.inria.fr/srv/tutorial/sparql>. Below the address bar is a large input field containing the SPARQL query. At the bottom of this field is a "submit" button. The results of the query are displayed in a list below the input field, with each result numbered from 1 to 8. The results are: 1 <http://www.inria.fr/2015/humans-instances#John>, 2 <http://www.inria.fr/2015/humans-instances#Sophie>, 3 <http://www.inria.fr/2015/humans-instances#Mark>, 4 <http://www.inria.fr/2015/humans-instances#Eve>, 5 <http://www.inria.fr/2015/humans-instances#David>, 6 <http://www.inria.fr/2015/humans-instances#Laura>, 7 <http://www.inria.fr/2015/humans-instances#William>, 8 <http://www.inria.fr/2015/humans-instances#Karl>.

1	<http://www.inria.fr/2015/humans-instances#John>
2	<http://www.inria.fr/2015/humans-instances#Sophie>
3	<http://www.inria.fr/2015/humans-instances#Mark>
4	<http://www.inria.fr/2015/humans-instances#Eve>
5	<http://www.inria.fr/2015/humans-instances#David>
6	<http://www.inria.fr/2015/humans-instances#Laura>
7	<http://www.inria.fr/2015/humans-instances#William>
8	<http://www.inria.fr/2015/humans-instances#Karl>

### Q3.2 Test SPARQL online

Connect to

<http://dbpedia.org/snorql/>

or

<http://fr.dbpedia.org/sparql>

or ...

<http://wiki.dbpedia.org/Internationalization/Chapters>

Answers to the query:

```
SELECT * WHERE {  
    ?x rdfs:label "Paris"@fr .  
    ?x ?p ?v .  
}  
LIMIT 10
```

Query which give all properties and all objects for Paris in French by using French dbpedia

<http://fr.dbpedia.org/sparql>

x	p	v
<a href="http://fr.dbpedia.org/resource/Catégorie:Paris">http://fr.dbpedia.org/resource/Catégorie:Paris</a>	<a href="http://www.w3.org/1999/02/22-rdf-syntax-ns#type">http://www.w3.org/1999/02/22-rdf-syntax-ns#type</a>	<a href="http://www.w3.org/2004/02/skos/core#Concept">http://www.w3.org/2004/02/skos/core#Concept</a>
<a href="http://fr.dbpedia.org/resource/Paris">http://fr.dbpedia.org/resource/Paris</a>	<a href="http://www.w3.org/1999/02/22-rdf-syntax-ns#type">http://www.w3.org/1999/02/22-rdf-syntax-ns#type</a>	<a href="http://www.w3.org/2002/07/owl#Thing">http://www.w3.org/2002/07/owl#Thing</a>
<a href="http://fr.dbpedia.org/resource/Paris">http://fr.dbpedia.org/resource/Paris</a>	<a href="http://www.w3.org/1999/02/22-rdf-syntax-ns#type">http://www.w3.org/1999/02/22-rdf-syntax-ns#type</a>	<a href="http://schema.org/Place">http://schema.org/Place</a>
<a href="http://fr.dbpedia.org/resource/Paris">http://fr.dbpedia.org/resource/Paris</a>	<a href="http://www.w3.org/1999/02/22-rdf-syntax-ns#type">http://www.w3.org/1999/02/22-rdf-syntax-ns#type</a>	<a href="http://dbpedia.org/ontology/Place">http://dbpedia.org/ontology/Place</a>
<a href="http://fr.dbpedia.org/resource/Paris">http://fr.dbpedia.org/resource/Paris</a>	<a href="http://www.w3.org/1999/02/22-rdf-syntax-ns#type">http://www.w3.org/1999/02/22-rdf-syntax-ns#type</a>	<a href="http://dbpedia.org/ontology/PopulatedPlace">http://dbpedia.org/ontology/PopulatedPlace</a>
<a href="http://fr.dbpedia.org/resource/Paris">http://fr.dbpedia.org/resource/Paris</a>	<a href="http://www.w3.org/1999/02/22-rdf-syntax-ns#type">http://www.w3.org/1999/02/22-rdf-syntax-ns#type</a>	<a href="http://dbpedia.org/ontology/Settlement">http://dbpedia.org/ontology/Settlement</a>
<a href="http://fr.dbpedia.org/resource/Paris">http://fr.dbpedia.org/resource/Paris</a>	<a href="http://www.w3.org/1999/02/22-rdf-syntax-ns#type">http://www.w3.org/1999/02/22-rdf-syntax-ns#type</a>	<a href="http://www.w3.org/2003/01/geo/wgs84_pos#SpatialThing">http://www.w3.org/2003/01/geo/wgs84_pos#SpatialThing</a>
<a href="http://fr.dbpedia.org/resource/Paris">http://fr.dbpedia.org/resource/Paris</a>	<a href="http://www.w3.org/1999/02/22-rdf-syntax-ns#type">http://www.w3.org/1999/02/22-rdf-syntax-ns#type</a>	<a href="http://www.wikidata.org/entity/Q486972">http://www.wikidata.org/entity/Q486972</a>
<a href="http://fr.dbpedia.org/resource/Paris">http://fr.dbpedia.org/resource/Paris</a>	<a href="http://www.w3.org/1999/02/22-rdf-syntax-ns#type">http://www.w3.org/1999/02/22-rdf-syntax-ns#type</a>	<a href="http://dbpedia.org/ontology/Location">http://dbpedia.org/ontology/Location</a>
<a href="http://fr.dbpedia.org/resource/Paris">http://fr.dbpedia.org/resource/Paris</a>	<a href="http://www.w3.org/1999/02/22-rdf-syntax-ns#type">http://www.w3.org/1999/02/22-rdf-syntax-ns#type</a>	<a href="http://www.w3.org/2004/02/skos/core#Concept">http://www.w3.org/2004/02/skos/core#Concept</a>

It exists different dbpedia links

The screenshot shows a browser window with the following details:

- Address bar: https://wiki.dbpedia.org/join/chapters
- Page title: Chapters | DBpedia
- Content area:
  - Section header: Other language DBpedia chapter:
  - Table:

Language	SPARQL Endpoint	Resource Domain	Resource Format	Contact Page	Contact Person
Arabic	<a href="http://ar.dbpedia.org/sparql">http://ar.dbpedia.org/sparql</a>	ar	IRI	@	Haytham Al-Feel, Ahmed Slama
Basque	<a href="http://eu.dbpedia.org/sparql">http://eu.dbpedia.org/sparql</a>	eu	IRI	@	Mikel Emaldi
Catalan	<a href="http://dbpedia-ca.upf.edu/sparql/">http://dbpedia-ca.upf.edu/sparql/</a>	ca	IRI	@	Jens Grivolla
Czech	<a href="http://cs.dbpedia.org/sparql">http://cs.dbpedia.org/sparql</a>	cs	URI	@	Vojtech Svatek, Václav Zeman
Dutch	<a href="http://nl.dbpedia.org/sparql">http://nl.dbpedia.org/sparql</a>	nl	IRI	@	Enno Meijers, Gerard Kuys, Roland Cornelissen
English	<a href="http://dbpedia.org/sparql">http://dbpedia.org/sparql</a>		IRI	@	(long list)
Esperanto	<a href="http://eo.dbpedia.org/sparql">http://eo.dbpedia.org/sparql</a>	eo	IRI	@	Alessio Palmero Aprosio
French	<a href="http://fr.dbpedia.org/sparql">http://fr.dbpedia.org/sparql</a>	fr	IRI	@	Fabien Gandon, Elmahdi Korfed
Greek	<a href="http://el.dbpedia.org/sparql">http://el.dbpedia.org/sparql</a>	el	IRI	@	Charalambos Bratsas, Sotiris Karampatakis
German		de	IRI	@	Harald Sack
Indonesia	<a href="http://id.dbpedia.org/sparql">http://id.dbpedia.org/sparql</a>	id	URI	@	Riko Adi Prasetya
  - Cookie banner at the bottom: This website uses cookies. OK, I agree | Read more

### Q3.3 Test SPARQL online

Connect to:

<https://query.wikidata.org/>

What does this query retrieve?

```
SELECT distinct ?p ?n WHERE
{      wd:Q30 p:P6 [ ps:P6 ?p ] .
      ?p rdfs:label ?n .
      FILTER (lang(?n)="en") }
```

Discover wd:Q30 using the namespace attached to wd:

PREFIX wd: <http://www.wikidata.org/entity/>

Discover p:P6 using the namespace attached to p:

PREFIX p: <http://www.wikidata.org/prop/>

Find q-name of the property “given name”

[https://www.wikidata.org/wiki/Wikidata:List\\_of\\_properties](https://www.wikidata.org/wiki/Wikidata:List_of_properties)

QUERY results : all US American presidents

p	n
<a href="#">wd:Q23</a>	George Washington
<a href="#">wd:Q76</a>	Barack Obama
<a href="#">wd:Q91</a>	Abraham Lincoln
<a href="#">wd:Q207</a>	George W. Bush
<a href="#">wd:Q1124</a>	Bill Clinton
<a href="#">wd:Q8007</a>	Franklin Delano Roosevelt
<a href="#">wd:Q8612</a>	Andrew Johnson
<a href="#">wd:Q9582</a>	Gerald Ford
<a href="#">wd:Q9588</a>	Richard Nixon
<a href="#">wd:Q9640</a>	Lyndon B. Johnson

- Q30 : represent entity US

The screenshot shows a browser window with multiple tabs open, including "Le futur du web à la le...", "Corese Web Server", "fr.dbpedia.org/sparql?", "Chapters | DBpedia", "Wikidata Query Service", "Wikidata:SPARQL quer...", and "Search results for 'give'". The main content area is the "Wikidata Query Service" interface. On the left, there's an "Assistant de requête" sidebar with a dropdown menu showing "(Q30) pays d'Amérique du Nord". Below it are two rows of filters: "États-Unis" and "chef de l'exécutif" under the first row, and " \_:b0" and "chef de l'exécutif" under the second row. To the right, the query editor displays the following SPARQL code:

```
1 SELECT DISTINCT ?p ?n WHERE
2 { wd:Q30 p:P6 [ ps:P6 ?p ] .
3 ?p rdfs:label ?n .
4 FILTER (lang(?n)="en") }
```

- P6 : represents Head of Government

The screenshot shows the Wikidata Query Service interface. The top navigation bar includes tabs for 'Corese Web Server', 'fr.dbpedia.org/sparql?', 'Chapters | DBpedia', 'Wikidata Query Service', and 'Wikidata'. The main area has a title 'Wikidata Query Service' with sub-links 'Exemples', 'Aide', and 'Davantage d'outils'. A sidebar on the left titled 'Assistant de requête' shows a dropdown for 'États-Unis' and a filter for 'chef de l'exécutif'. The main workspace displays a query box with the following SPARQL code:

```
1 SELECT distinct ?p ?n WHERE
2 { wd:Q30 p:P6 [ ps:P6 ?p ] .
3 ?p rdfs:label ?n .
4 FILTER (lang(?n)="en") }
```

- Q-name of the property “given name” is P735

The screenshot shows the Wikidata search interface. In the search bar, 'given name' is entered. Below the search bar are advanced parameters and search filters for 'Default', 'Discussion', 'General Help', and 'All'. A 'Property' filter is selected. The results section shows a single result: 'given name (P735)', which is described as 'first name or another given name of this person; values used with the property shouldn't link disambiguation nor family names'. It indicates 42 statements and 0 sitelinks, last updated on 09:07, 20 February 2019.

**Q3.4 SPARQL query to return 20 persons at most (use type foaf:Person)**

### Answer

```
SELECT * WHERE
{ ?p a foaf:person }
LIMIT 20
```

**Q3.5 SPARQL query to return 20 persons (at most), after the 10th result i.e. from 11th to 30th**

### Answer

```
SELECT * WHERE
{ ?p a foaf:person }
LIMIT 20
OFFSET 10
```

**Q3.6** You have two properties: c:name and c:age

1. Find the age of resources whose name is ‘Fabien’
2. Find the name of resources whose age is less than 50
3. Find property values of resources whose name is ‘Fabien’ and whose age is less than 50
4. Find other names of resources whose name is ‘Fabien’
5. Find resources which have two different properties with the same value
6. Find resources which have the same property with two different values

### **QUERY 1 : Find the age of resources whose name is ‘Fabien’**

```
SELECT ?age WHERE
{
?res c:name 'Fabien'; c:age ?age}
```

**QUERY 2** : Find the name of resources whose age is less than 50

```
SELECT ?name WHERE
{
  ?res c:name ?name; c:age ?age.
  Filter (?age<50)
}
```

**QUERY 3** : Find property values of resources whose name is ‘Fabien’ and whose age is less than 50

```
SELECT ?prop ?values WHERE
{
  ?res c:name ‘Fabien’; c:age ?age ; ?prop ?values.
  Filter (?age<50)
}
```

**QUERY 4** : Find other names of resources whose name is ‘Fabien’

```
SELECT ?name WHERE
{
  ?res c:name ?name, ?name.
  Filter (?name=‘Fabien’)
}
```

**QUERY 5** : Find resources which have two different properties with the same value

```
SELECT * WHERE
{
  ?res ?prop1 ?values ; ?prop2 ?values.
  Filter (?prop1 != ?prop2)
}
```

**QUERY 6** : Find resources which have the same property with two different values

```
SELECT * WHERE
{
  ?res ?prop ?values1 ; ?prop ?values2.
  Filter (?values1 != ?values2)
}
```

**Q3.7** Could this query return `ex:a c:memberOf ex:b` and why ?

```
select * where {  
    ?x c:memberOf ?org .  
    minus { ex:a c:memberOf ex:b }  
}
```

**Answer :** The minus is ignored (there are no common variables in the 2 patterns) so `ex:b` is part of the query

**Q3.8** get the members of organizations (`c:memberOf`) but remove the resources author of a document (`c:author`) by using 'not exists'

**Query :**

```
Select * where  
{ ?x c:membersOf ?org. Filter (! exists {?x c:author ?doc}) }
```

**Q3.9** what is retrieving this query ?

```
prefix ex: <http://example.org/>  
select ?x (count(?doc) as ?c)  
where { ?x ex:author ?doc }  
group by ?x  
order by desc(count(?doc))
```

**Answer :**

Query which displays people (authors of document) and their number of documents ;

Data are grouped by authors and sorted from authors with max number of document

2 variables displayed at the end

**Q3.10** What expression should we use to find the `?x` related to `?y` by paths composed of properties `foaf:knows` and/or `rdfs:seeAlso`?

- `?x (foaf:knows | rdfs:seeAlso)+ ?y`
- `?x foaf:knows+ | rdfs:seeAlso+ ?y`
- `?x (foaf:knows / rdfs:seeAlso)+ ?y`

**Answer :** The 1st expression (`?x (foaf:knows | rdfs:seeAlso)+ ?y`)

**Q3.11** what is this query retrieving?

```
prefix foaf: <http://xmlns.com/foaf/0.1/>
select ?x (if (bound(?n), ?n, "John Doe") as ?m)
where {
  ?x foaf:knows ?y
  optional { ?y foaf:name ?n }
}
```

**Answer :**

**Query which displays people who has friend (knows people) and a name ;**

**This name is the name of the friend (if exist : optional condition result) or John Doe if friend name is not available**

**2 variables displayed at the end**

**Q3.12** what is this query retrieving?

```
prefix ex: <http://example.org/>
select ?x (avg(?a) as ?b)
where {
  ?x ex:knows ?y .
  ?y ex:age ?a
}
group by ?x
```

**Answer :**

**Query which displays people X (who have friend & these friends have age) and an age ;**

**This age is the average age of friends - By using average of friends it's a way to give prediction of age of X**

**2 variables displayed at the end**

**Q3.13** You have two properties: c:name and c:study and the resources c:Informatics and c:Mathematics

1. Find resources that study informatics or mathematics
2. In addition return the name of the resource if it has a name
3. In addition return the graph where the name is given

**Query 1 : Find resources that study informatics or mathematics**

Select \* where

```
{?x c:study c:Informatics} union {?x c:study c:Mathematics}
```

**Query 2 : In addition return the name of the resource if it has a name**

```
Select * where  
{ { ?x c :study c :Informatics} union { ?x c :study c Mathematics}  
Optional { ?x c :name ?name}}
```

**Query 3 : In addition return the graph where the name is given**

```
Select * where  
{ { ?x c :study c :Informatics} union { ?x c :study c Mathematics}  
Optional { graph ?g {?x c :name ?name}}}
```

**Q3.14** On which graph(s) is calculated ?x ?p ?y

On which graph(s) is calculated graph ?g { ?y ?q ?z }

```
prefix ex: <http://example.org/>  
select *  
from ex:g1  
from named ex:g2  
where {  
    ?x ?p ?y .  
    graph ?g { ?y ?q ?z } }
```

**Answer**

Due to **from :?x ?p ?y** is calculated in g1

Due to **from named ?y ?q ?z** is calculated in g2

**Q3.15** Write a query to change foaf:name into rdfs:label

**Query**

```
DELETE {?x foaf:name ?name }  
INSERT {?x rdfs:label ?name }  
WHERE {?x foaf:name ?name}
```

**Q3.16** what is this query performing?

```
prefix ex: <http://example.org/>
delete { ?x ex:age ?a }
insert { ?x ex:age ?i }
where {
  select ?x (xsd:integer(?a) as ?i)
  where {
    ?x ex:age ?a
    filter(datatype(?a) = xsd:string)
  }
}
```

**Answer : Query allow to replace by deleting / adding mechanism :**

- Replace (delete / insert) triples where age is in string format by new triples with ages as an integer format
- This query is applied for people who have an age (for whom age is a string) and will allow to convert this string format in an integer
- 

**Q3.17** Which clauses could you use to obtained results as RDF triples following a specific pattern?

- SELECT ... WHERE {...} ...
- CONSTRUCT {} WHERE {...} ...
- DESCRIBE <...>      DESCRIBE ... {...}
- ASK {...}
- DELETE { ... } INSERT { ... } WHERE {...} ...

**Answers highlighted in green are possible clauses used to obtain results as RDF triples :**

- CONSTRUCT {} WHERE {} which is a way to construct a new graph
  - DELETE {} INSERT {} WHERE {} which is a way to modify the current database
-

## Day 03: Answers to the practical session on SPARQL.

## Software requirements

- The RDF XML online validation service by W3C: <https://www.w3.org/RDF/Validator/>
  - The RDF online translator: <http://rdf-translator.appspot.com/>
  - The SPARQL Corese engine: <http://wimmics.inria.fr/corese>

## Basic query on RDF human.rdf

If you haven't done it yet download the SPARQL Corese engine.

On Window double-click the file “.jar”. If it does not work or on other platforms, run the command " java -jar -Dfile.encoding=UTF8 " followed by the name of the “.jar” archive. Notice that you need java on your machine and proper path configuration

This interface provides two tabs: (1) one to load input files and see traces of execution, and (2) the default tab to start loading or writing queries and see their result.

If you don't have the human dataset file yet download the following file of annotations and save it as "human.rdf":

[http://wimmics.inria.fr/doc/tutorial/human\\_2013.rdf](http://wimmics.inria.fr/doc/tutorial/human_2013.rdf)

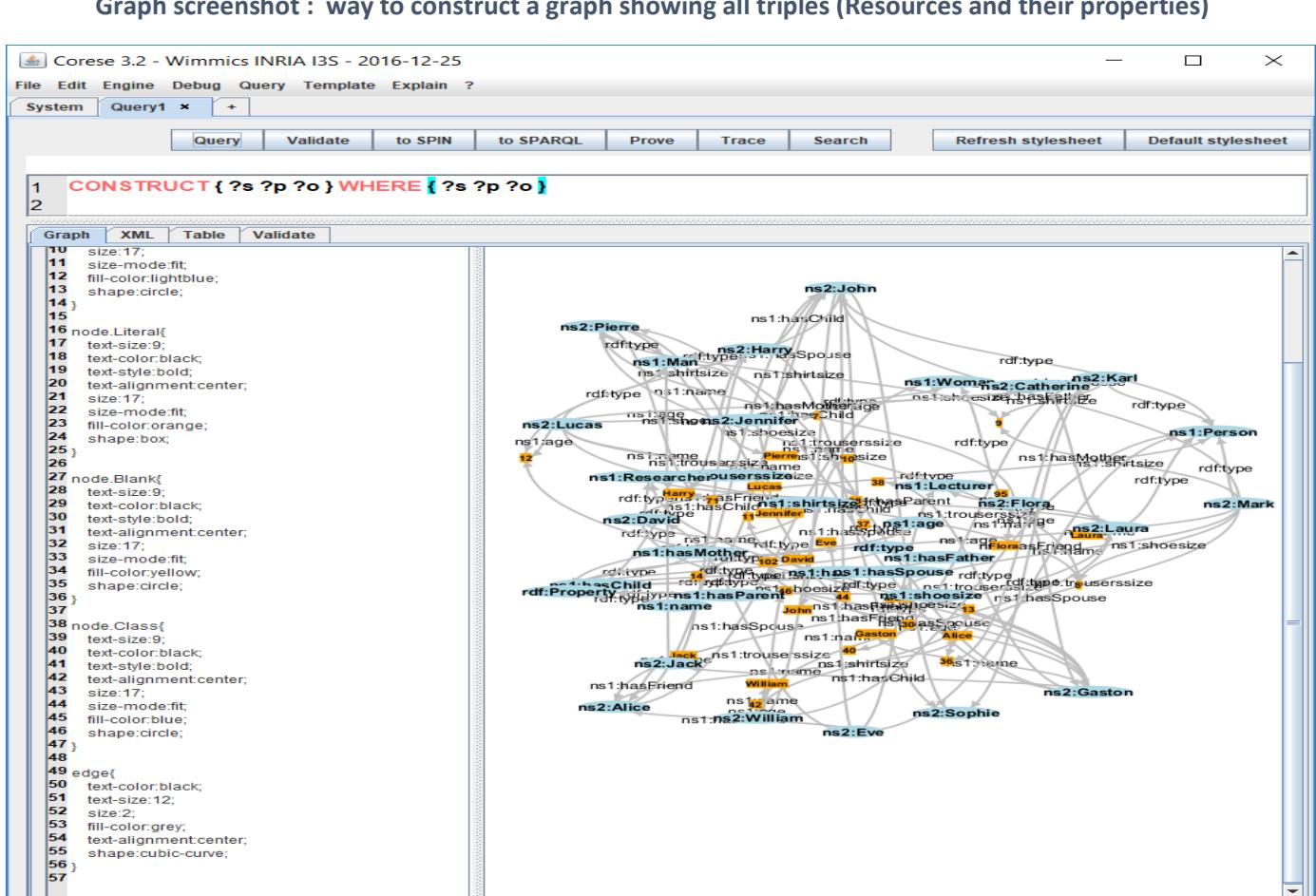
Load the file h

## Question 1:

Create a new tab to enter the following query and explain what it does.

CONSTRUCT { ?s ?p ?o } WHERE { ?s ?p

a good way to familiarize yourself with the data.



## Question 2:

Create a new tab to enter the following query:

```
prefix h: <http://www.inria.fr/2007/09/11/humans.rdfs#>  
select * where { ?x a ?t . filter(strstarts(?t, h:)) }
```

Translate this query in plain English.

### Answer

Query which displays all variables for people (x) who has a (t) which start by  
<http://www.inria.fr/2007/09/11/humans.rdfs#>

2 variables displayed at the end

Run this query. How many answers do you get?

Results : we obtained 21answers

The screenshot shows the CoRee 3.2 interface with the following details:

- File Edit Engine Debug Query Template Explain ?**
- System Query1 × Query2 × +**
- Query Validate to SPIN to SPARQL Prove Trace Search Refresh stylesheet Default stylesheet**

In the main area, the query is:

```
1 prefix h: <http://www.inria.fr/2007/09/11/humans.rdfs#>  
2 select * where { ?x a ?t . filter(strstarts(?t, h:)) }
```

The results table shows two columns:

?x	?t
http://www.inria.fr/2007/09/11/humans.rdfs#instances#Harry	http://www.inria.fr/2007/09/11/humans.rdfs#Man
http://www.inria.fr/2007/09/11/humans.rdfs#instances#John	http://www.inria.fr/2007/09/11/humans.rdfs#Person
http://www.inria.fr/2007/09/11/humans.rdfs#instances#Mark	http://www.inria.fr/2007/09/11/humans.rdfs#Person
http://www.inria.fr/2007/09/11/humans.rdfs#instances#Pete	http://www.inria.fr/2007/09/11/humans.rdfs#Person
http://www.inria.fr/2007/09/11/humans.rdfs#instances#Steve	http://www.inria.fr/2007/09/11/humans.rdfs#Person
http://www.inria.fr/2007/09/11/humans.rdfs#instances#David	http://www.inria.fr/2007/09/11/humans.rdfs#Person
http://www.inria.fr/2007/09/11/humans.rdfs#instances#Alice	http://www.inria.fr/2007/09/11/humans.rdfs#Researcher
http://www.inria.fr/2007/09/11/humans.rdfs#instances#Gaston	http://www.inria.fr/2007/09/11/humans.rdfs#Man
http://www.inria.fr/2007/09/11/humans.rdfs#instances#Jackson	http://www.inria.fr/2007/09/11/humans.rdfs#Researcher
http://www.inria.fr/2007/09/11/humans.rdfs#instances#Jack	http://www.inria.fr/2007/09/11/humans.rdfs#Man
http://www.inria.fr/2007/09/11/humans.rdfs#instances#Fora	http://www.inria.fr/2007/09/11/humans.rdfs#Woman
http://www.inria.fr/2007/09/11/humans.rdfs#instances#Pierre	http://www.inria.fr/2007/09/11/humans.rdfs#Man
http://www.inria.fr/2007/09/11/humans.rdfs#instances#Laura	http://www.inria.fr/2007/09/11/humans.rdfs#Person
http://www.inria.fr/2007/09/11/humans.rdfs#instances#Ella	http://www.inria.fr/2007/09/11/humans.rdfs#Lecturer
http://www.inria.fr/2007/09/11/humans.rdfs#instances#Aurora	http://www.inria.fr/2007/09/11/humans.rdfs#Researcher
http://www.inria.fr/2007/09/11/humans.rdfs#instances#Catherina	http://www.inria.fr/2007/09/11/humans.rdfs#Man
http://www.inria.fr/2007/09/11/humans.rdfs#instances#Lucas	http://www.inria.fr/2007/09/11/humans.rdfs#Man
http://www.inria.fr/2007/09/11/humans.rdfs#instances#Catherine	http://www.inria.fr/2007/09/11/humans.rdfs#Woman
http://www.inria.fr/2007/09/11/humans.rdfs#instances#William	http://www.inria.fr/2007/09/11/humans.rdfs#Person
http://www.inria.fr/2007/09/11/humans.rdfs#instances#Karl	http://www.inria.fr/2007/09/11/humans.rdfs#Person

Find John and his types.

Answer : John type is <http://www.inria.fr/2007/09/11/humans.rdfs#Person>

The screenshot shows the CoRee 3.2 interface with the following details:

- File Edit Engine Debug Query Template Explain ?**
- System Query1 × Query2 × Query3 × +**
- Query Validate to SPIN to SPARQL Prove Trace**

In the main area, the query is:

```
1 prefix h: <http://www.inria.fr/2007/09/11/humans.rdfs#>  
2 select * where { ?x a ?t ; h:name "John". filter(strstarts(?t, h:)) }
```

The results table shows two columns:

?x	?t
http://www.inria.fr/2007/09/11/humans.rdfs#John	http://www.inria.fr/2007/09/11/humans.rdfs#Person

### Question 3:

In the previous answer, locate the URI of John.

1. formulate a SELECT query to find all the properties of John

#### Query

```
prefix h: <http://www.inria.fr/2007/09/11/humans.rdfs#>  
select * where {<http://www.inria.fr/2007/09/11/humans.rdfs-instances#John> ?prop ?val }
```

#### Results:

?val	?prop
http://www.inria.fr/2007/09/11/humans.rdf#age	http://www.inria.fr/2007/09/11/humans.rdf#hasParent
http://www.inria.fr/2007/09/11/humans.rdf#name	http://www.inria.fr/2007/09/11/humans.rdf#hasChild
http://www.inria.fr/2007/09/11/humans.rdf#height	http://www.inria.fr/2007/09/11/humans.rdf#hasFriend
http://www.inria.fr/2007/09/11/humans.rdf#size	http://www.inria.fr/2007/09/11/humans.rdf#hasSpouse
http://www.inria.fr/2007/09/11/humans.rdf#trousersize	http://www.w3.org/1999/02/22-rdf-syntax-ns#type
http://www.inria.fr/2007/09/11/humans.rdf#Person	

2. request a description of John using the SPARQL clause for this.

#### Query

```
DESCRIBE http://www.inria.fr/2007/09/11/humans.rdfs-instances#John
```

#### Results:

9	text-align:center;
10	size:17;
11	size-mode:fit;
12	fill-color:lightblue;
13	shape:circle;
14	}
15	
16	node.Literal{
17	text-size:9;
18	text-color:black;
19	text-style:bold;
20	text-align:center;
21	size:17;
22	size-mode:fit;
23	fill-color:orange;
24	shape:box;
25	}
26	
27	node.Blank{
28	text-size:9;
29	text-color:black;
30	text-style:bold;
31	text-align:center;
32	size:17;
33	size-mode:fit;
34	fill-color:yellow;
35	shape:circle;
36	}
37	
38	node.Class{
39	text-size:9;
40	text-color:black;

The graph view shows node 'ns2:John' at the center, connected to nodes 'ns2:Harry', 'ns2:Alice', 'ns2:Jennifer', and 'ns1:Person'. Edges include 'ns1:name' from 'ns2:John' to 'ns2:Harry', 'ns1:hasChild' from 'ns2:John' to 'ns2:Alice', 'ns1:hasFriend' from 'ns2:John' to 'ns2:Jennifer', 'ns1:shoecize' from 'ns2:John' to 'ns1:Person', 'ns1:trousersize' from 'ns2:John' to 'ns1:Person', 'ns1:age' from 'ns1:Person' to 'ns2:John', 'ns1:hasParent' from 'ns1:Person' to 'ns2:John', and 'ns1:hasFather' from 'ns1:Person' to 'ns2:John'. There are also several numbered nodes (12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40) scattered around the graph, likely representing temporary or specific nodes used in the query execution.

## Question 4

Create a new tab to enter the following query:

```
prefix h: <http://www.inria.fr/2007/09/11/humans.rdfs#>  
select * where { ?x h:hasSpouse ?y }
```

Translate this query in plain English.

**Query which displays all variables for people in couple (property “has spouse”)**

Run this query. How many answers do you get?

**Number of answers : 6**

The screenshot shows the Corese 3.2 interface with the following details:

- Title Bar:** Corese 3.2 - Wimmicks INRIA I3S - 2016-12-25
- Toolbar:** File, Edit, Engine, Debug, Query, Template, Explain, ?, System, Query1, Query2, Query3, +, Query, Validate, to SPIN, to SPARQL, Prove, Trace, Search, Refresh stylesheet, Default stylesheet.
- Query Editor:** Contains the SPARQL query:

```
1 prefix h: <http://www.inria.fr/2007/09/11/humans.rdfs#>  
2 select * where { ?x h:hasSpouse ?y }  
3  
4
```
- Results Table:** A table showing the results of the query. The columns are labeled "?x" and "?y". The data is as follows:

?x	?y
http://www.inria.fr/2007/09/11/humans.rdfs-instances#Harry	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Sophie
http://www.inria.fr/2007/09/11/humans.rdfs-instances#Eve	http://www.inria.fr/2007/09/11/humans.rdfs-instances#David
http://www.inria.fr/2007/09/11/humans.rdfs-instances#Flora	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Gaston
http://www.inria.fr/2007/09/11/humans.rdfs-instances#Jennifer	http://www.inria.fr/2007/09/11/humans.rdfs-instances#John
http://www.inria.fr/2007/09/11/humans.rdfs-instances#William	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Laura
http://www.inria.fr/2007/09/11/humans.rdfs-instances#Karl	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Catherine

## Question 5:

In the RDF file, find the name of the property that is used to give the shoe size of a person.

- Deduce a query to extract all the persons (h:Person) with their shoe size.

**Query: shoe size - <http://www.inria.fr/2007/09/11/humans.rdfs#shoysize>**

The screenshot shows the Corese 3.2 interface with the following details:

- Title Bar:** Corese 3.2 - Wimmicks INRIA I3S - 2016-12-25
- Toolbar:** File, Edit, Engine, Debug, Query, Template, Explain, ?, System, Query1, Query2, Query3, Query4, Query5, +, Query, Validate, to SPIN, to SPARQL, Prove, Trace, Search, Refresh stylesheet, Default stylesheet.
- Query Editor:** Contains the SPARQL query:

```
1 prefix h: <http://www.inria.fr/2007/09/11/humans.rdfs#>  
2 select ?x ?Ssize where {?x a h:Person; h:shoysize ?Ssize}  
3  
4
```
- Results Table:** A table showing the results of the query. The columns are labeled "?x" and "?Ssize". The data is as follows:

?x	?Ssize
http://www.inria.fr/2007/09/11/humans.rdfs-instances#John	14
http://www.inria.fr/2007/09/11/humans.rdfs-instances#Mark	8
http://www.inria.fr/2007/09/11/humans.rdfs-instances#William	10
http://www.inria.fr/2007/09/11/humans.rdfs-instances#Karl	7

2. Change this query to retrieve all persons and, if available, their shoe size.

**Query + result:**

The screenshot shows the Corese 3.2 interface with the following details:

- Query Editor:** Contains the following SPARQL query:
 

```
1 prefix h: <http://www.inria.fr/2007/09/11/humans.rdfs#>
2 select ?x ?size where {?x a h:Person.
3   optional { ?x h:shoeSize ?size}}
```
- Result Table:** A table showing the results of the query. The columns are labeled "?x" and "?size". The data is as follows:
 

?x	?size
http://www.inria.fr/2007/09/11/humans.rdfs-instances#John	14
http://www.inria.fr/2007/09/11/humans.rdfs-instances#Mark	8
http://www.inria.fr/2007/09/11/humans.rdfs-instances#Eve	
http://www.inria.fr/2007/09/11/humans.rdfs-instances#David	
http://www.inria.fr/2007/09/11/humans.rdfs-instances#Laura	
http://www.inria.fr/2007/09/11/humans.rdfs-instances#William	10
http://www.inria.fr/2007/09/11/humans.rdfs-instances#Karl	7

3. Change this query to retrieve all persons whose shoe size is greater than 8 or whose shirt size is greater than 12.

**Query + result:**

The screenshot shows the Corese 3.2 interface with the following details:

- Query Editor:** Contains the following modified SPARQL query:
 

```
1 prefix h: <http://www.inria.fr/2007/09/11/humans.rdfs#>
2 select ?x ?ShoeSize ?ShirtSize where
3 {
4   {?x a h:Person; h:shoeSize ?ShoeSize. filter(?ShoeSize>8)}
5   UNION
6   {?x a h:Person; h:shirtSize ?ShirtSize. filter(?ShirtSize>12)}
7 }
```
- Result Table:** A table showing the results of the query. The columns are labeled "?x", "?ShoeSize", and "?ShirtSize". The data is as follows:
 

?x	?ShoeSize	?ShirtSize
http://www.inria.fr/2007/09/11/humans.rdfs-instances#John	14	
http://www.inria.fr/2007/09/11/humans.rdfs-instances#William	10	13
http://www.inria.fr/2007/09/11/humans.rdfs-instances#Karl		

### Question 6:

In the RDF file, find the name of the property that is used to indicate the children of a person.

1. Formulate a query to find the parents who have at least one child.

**Query + result:**

The screenshot shows the Corese 3.2 interface with the following details:

- Query Editor:** Contains the following SPARQL query:
 

```
1 prefix h: <http://www.inria.fr/2007/09/11/humans.rdfs#>
2 select ?x where
3 {
4   {?x h:hasChild ?child}
5 }
```
- Result Table:** A table showing the results of the query. The column is labeled "?x". The data is as follows:
 

?x
http://www.inria.fr/2007/09/11/humans.rdfs-instances#Harry
http://www.inria.fr/2007/09/11/humans.rdfs-instances#Gaston
http://www.inria.fr/2007/09/11/humans.rdfs-instances#Gaston
http://www.inria.fr/2007/09/11/humans.rdfs-instances#Jack
http://www.inria.fr/2007/09/11/humans.rdfs-instances#Flora

How many answers do you get? How many duplicates do you identify in these responses?

**Result : We obtain 5 answers / 1 duplicate (Gaston)**

2. Find a way to avoid duplicates.

**Query: By adding distinct in the select part of the query as below**

The screenshot shows the Corese 3.2 interface with the title "Corese 3.2 - Wimmicks INRIA I3S - 2016-12-25". The menu bar includes File, Edit, Engine, Debug, Query, Template, Explain, and a question mark icon. Below the menu is a tab bar with System, Query1, Query2, Query3, Query4, Query5, Query6, and a plus sign. A toolbar below the tabs includes Query, Validate, to SPIN, to SPARQL, Prove, Trace, Search, Refresh stylesheet, and Default stylesheet. The main area contains a numbered query:

```
1 prefix h: <http://www.inria.fr/2007/09/11/humans.rdfs#>
2 select distinct ?x where
3 {
4   {?x h:hasChild ?child}
5 }
```

Below the query, the results are displayed under the "Table" tab:

?x
http://www.inria.fr/2007/09/11/humans.rdfs-instances#Harry
http://www.inria.fr/2007/09/11/humans.rdfs-instances#Gaston
http://www.inria.fr/2007/09/11/humans.rdfs-instances#Jack
http://www.inria.fr/2007/09/11/humans.rdfs-instances#Flora

How many answers do you get then?

**Result We obtain 4 answers**

3. Rewrite a query to find the Persons who have no child.

**Query: We obtain 7 answers**

The screenshot shows the Corese 3.2 interface with the title "Corese 3.2 - Wimmicks INRIA I3S - 2016-12-25". The menu bar includes File, Edit, Engine, Debug, Query, Template, Explain, and a question mark icon. Below the menu is a tab bar with System, Query1, Query2, Query3, Query4, Query5, Query6, and a plus sign. A toolbar below the tabs includes Graph, XML, Table, Validate, to SPIN, to SPARQL, Prove, Trace, Search, Refresh stylesheet, and Default stylesheet. The main area contains a numbered query:

```
1 prefix h: <http://www.inria.fr/2007/09/11/humans.rdfs#>
2 select ?x where
3 {
4   {?x a h:Person}
5   minus{?x h:hasChild ?child}
6 }
```

Below the query, the results are displayed under the "Table" tab:

http://www.inria.fr/2007/09/11/humans.rdfs-instances#John
http://www.inria.fr/2007/09/11/humans.rdfs-instances#Mark
http://www.inria.fr/2007/09/11/humans.rdfs-instances#Eve
http://www.inria.fr/2007/09/11/humans.rdfs-instances#David
http://www.inria.fr/2007/09/11/humans.rdfs-instances#Laura
http://www.inria.fr/2007/09/11/humans.rdfs-instances#William
http://www.inria.fr/2007/09/11/humans.rdfs-instances#Karl

## Question 7

In the RDF file, find the name of the property that is used to give the age of a person.

1. Formulate a query to find people who are not adults.

**Query + result:**

The screenshot shows the Corese 3.2 interface with the following details:

- Toolbar:** File, Edit, Engine, Debug, Query, Template, Explain, ?
- Query Tab:** System, Query1, Query2, Query3, Query4, Query5, Query6, **Query7**, Query8
- Buttons:** Query, Validate, to SPIN, to SPARQL, Prove, Trace, Search, Refresh stylesheet, Default stylesheet
- Query Editor:** A SPARQL query is entered:

```
1 prefix h: <http://www.inria.fr/2007/09/11/humans.rdfs#>
2 select ?x ?age where
3 {?x h:age ?age. filter(?age<18)}
```
- Results Table:** A table showing the results of the query. The columns are labeled ?x and ?age. The data shows two rows:

?x	?age
http://www.inria.fr/2007/09/11/humans.rdfs-instances#Mark	14
http://www.inria.fr/2007/09/11/humans.rdfs-instances#Lucas	12

How many answers do you get?

**Answers : we obtain 2 persons (Mark & Lucas)**

2. Use the appropriate query clause to check if Mark is an adult; use the proper clause statement for this type of query to get a true or false answer.

**Query + result : the answer is FALSE – by using the ASK Statement**

The screenshot shows the Corese 3.2 interface with the following details:

- Toolbar:** File, Edit, Engine, Debug, Query, Template, Explain, ?
- Query Tab:** System, Query1, Query2, Query3, Query4, Query5, Query6, Query7, Query8
- Buttons:** Query, Validate, to SPIN, to SPARQL, Prove, Trace, Search, Refresh stylesheet, Default stylesheet
- Query Editor:** A SPARQL query is entered:

```
1 prefix h: <http://www.inria.fr/2007/09/11/humans.rdfs#>
2 ask {?x h:age ?age; h:name 'Mark'. filter(?age>18)}
```
- Results Table:** An XML result set is shown, indicating a false value.

```
<?xml version="1.0" ?>
<sparql xmlns="http://www.w3.org/2005/sparql-results#">
<head>
</head>
<boolean>false</boolean>
</sparql>
```

3. Write a query that indicates for each person if her age is even (true or false).

#### Query + result:

Corese 3.2 - Wimmiics INRIA I3S - 2016-12-25

File Edit Engine Debug Query Template Explain ?

System Query1 × Query2 × Query3 × Query4 × Query5 × Query6 × Query7 × Query8 × +

Query Validate to SPIN to SPARQL Prove Trace Search Re

```

1 prefix h: <http://www.inria.fr/2007/09/11/humans.rdfs#>
2 select ?x ?age ((xsd:integer(?age/2))^2=?age) as ?even
3 where {?x a h:Person ; h:age ?age.}
4

```

Graph XML Table Validate

?x	?age	?even
http://www.inria.fr/2007/09/11/humans/rdfs-instances#John	37	false
http://www.inria.fr/2007/09/11/humans/rdfs-instances#Mark	14	true
http://www.inria.fr/2007/09/11/humans/rdfs-instances#William	42	true
http://www.inria.fr/2007/09/11/humans/rdfs-instances#Karl	36	true

#### Question 8

1. **Construct** the symmetric of all hasFriend relations using the good SPARQL statement (ex. When finding Thomas hasFriend Fabien, your query should construct Fabien hasFriend Thomas)

#### Query + result:

Corese 3.2 - Wimmiics INRIA I3S - 2016-12-25

File Edit Engine Debug Query Template Explain ?

System Query1 × Query2 × Query3 × Query4 × Query5 × Query6 × Query7 × Query8 × Query9 × +

Query Validate to SPIN to SPARQL Prove Trace Search Refresh stylesheet Default stylesheet

```

1 prefix h: <http://www.inria.fr/2007/09/11/humans.rdfs#>
2 construct {?x h:hasFriend ?y.}
3 where {?y h:hasFriend ?x.}

```

Graph XML Table Validate

2. **Insert** the symmetric of all hasFriend relations using the adequate SPARQL statement but check the results with a select query before and after.

#### Query - Before doing query : 6 answers

Corese 3.2 - Wimmiics INRIA I3S - 2016-12-25

File Edit Engine Debug Query Template Explain ?

System Query1 × Query2 × Query3 × Query4 × Query5 × Query6 × Query7 × Query8 × Query9 × Query10 × +

Query Validate to SPIN to SPARQL Prove Trace Search Refresh stylesheet Default stylesheet

```

1 prefix h: <http://www.inria.fr/2007/09/11/humans.rdfs#>
2 select *
3 where {?y h:hasFriend ?x.}

```

Graph XML Table Validate

?y	?x
http://www.inria.fr/2007/09/11/humans/rdfs-instances#Eve	http://www.inria.fr/2007/09/11/humans/rdfs-instances#Alice
http://www.inria.fr/2007/09/11/humans/rdfs-instances#David	http://www.inria.fr/2007/09/11/humans/rdfs-instances#John
http://www.inria.fr/2007/09/11/humans/rdfs-instances#Alice	http://www.inria.fr/2007/09/11/humans/rdfs-instances#Alice
http://www.inria.fr/2007/09/11/humans/rdfs-instances#Jack	http://www.inria.fr/2007/09/11/humans/rdfs-instances#Alice
http://www.inria.fr/2007/09/11/humans/rdfs-instances#Laura	http://www.inria.fr/2007/09/11/humans/rdfs-instances#Sophie
http://www.inria.fr/2007/09/11/humans/rdfs-instances#Karl	

## After query : 12 answers

Corese 3.2 - WimMics INRIA I3S - 2016-12-25

File Edit Engine Debug Query Template Explain ?

System Query1 x Query2 x Query3 x Query4 x Query5 x Query6 x Query7 x Query8 x Query9 x Query10 x +

Query Validate to SPIN to SPARQL Prove Trace

```

1 prefix h: <http://www.inria.fr/2007/09/11/humans.rdf#>
2 insert {?x h:hasFriend ?y.}
3 where {?y h:hasFriend ?x.}

```

Graph	XML	Table	Validate																									
		<table border="1"> <thead> <tr> <th>?y</th> <th>?x</th> </tr> </thead> <tbody> <tr><td>http://www.inria.fr/2007/09/11/humans.rdfs-instances#John</td><td>http://www.inria.fr/2007/09/11/humans.rdfs-instances#Alice</td></tr> <tr><td>http://www.inria.fr/2007/09/11/humans.rdfs-instances#Sophie</td><td>http://www.inria.fr/2007/09/11/humans.rdfs-instances#Carl</td></tr> <tr><td>http://www.inria.fr/2007/09/11/humans.rdfs-instances#Eve</td><td>http://www.inria.fr/2007/09/11/humans.rdfs-instances#Alice</td></tr> <tr><td>http://www.inria.fr/2007/09/11/humans.rdfs-instances#David</td><td>http://www.inria.fr/2007/09/11/humans.rdfs-instances#Gaston</td></tr> <tr><td>http://www.inria.fr/2007/09/11/humans.rdfs-instances#Alice</td><td>http://www.inria.fr/2007/09/11/humans.rdfs-instances#John</td></tr> <tr><td>http://www.inria.fr/2007/09/11/humans.rdfs-instances#Alice</td><td>http://www.inria.fr/2007/09/11/humans.rdfs-instances#Eve</td></tr> <tr><td>http://www.inria.fr/2007/09/11/humans.rdfs-instances#Alice</td><td>http://www.inria.fr/2007/09/11/humans.rdfs-instances#Jack</td></tr> <tr><td>http://www.inria.fr/2007/09/11/humans.rdfs-instances#Alice</td><td>http://www.inria.fr/2007/09/11/humans.rdfs-instances#Laura</td></tr> <tr><td>http://www.inria.fr/2007/09/11/humans.rdfs-instances#Gaston</td><td>http://www.inria.fr/2007/09/11/humans.rdfs-instances#David</td></tr> <tr><td>http://www.inria.fr/2007/09/11/humans.rdfs-instances#Jack</td><td>http://www.inria.fr/2007/09/11/humans.rdfs-instances#Alice</td></tr> <tr><td>http://www.inria.fr/2007/09/11/humans.rdfs-instances#Laura</td><td>http://www.inria.fr/2007/09/11/humans.rdfs-instances#Alice</td></tr> <tr><td>http://www.inria.fr/2007/09/11/humans.rdfs-instances#Karl</td><td>http://www.inria.fr/2007/09/11/humans.rdfs-instances#Sophie</td></tr> </tbody> </table>	?y	?x	http://www.inria.fr/2007/09/11/humans.rdfs-instances#John	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Alice	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Sophie	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Carl	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Eve	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Alice	http://www.inria.fr/2007/09/11/humans.rdfs-instances#David	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Gaston	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Alice	http://www.inria.fr/2007/09/11/humans.rdfs-instances#John	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Alice	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Eve	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Alice	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Jack	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Alice	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Laura	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Gaston	http://www.inria.fr/2007/09/11/humans.rdfs-instances#David	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Jack	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Alice	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Laura	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Alice	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Karl	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Sophie
?y	?x																											
http://www.inria.fr/2007/09/11/humans.rdfs-instances#John	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Alice																											
http://www.inria.fr/2007/09/11/humans.rdfs-instances#Sophie	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Carl																											
http://www.inria.fr/2007/09/11/humans.rdfs-instances#Eve	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Alice																											
http://www.inria.fr/2007/09/11/humans.rdfs-instances#David	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Gaston																											
http://www.inria.fr/2007/09/11/humans.rdfs-instances#Alice	http://www.inria.fr/2007/09/11/humans.rdfs-instances#John																											
http://www.inria.fr/2007/09/11/humans.rdfs-instances#Alice	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Eve																											
http://www.inria.fr/2007/09/11/humans.rdfs-instances#Alice	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Jack																											
http://www.inria.fr/2007/09/11/humans.rdfs-instances#Alice	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Laura																											
http://www.inria.fr/2007/09/11/humans.rdfs-instances#Gaston	http://www.inria.fr/2007/09/11/humans.rdfs-instances#David																											
http://www.inria.fr/2007/09/11/humans.rdfs-instances#Jack	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Alice																											
http://www.inria.fr/2007/09/11/humans.rdfs-instances#Laura	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Alice																											
http://www.inria.fr/2007/09/11/humans.rdfs-instances#Karl	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Sophie																											

## Question 9

Choose and edit one of the SELECT WHERE queries previously written to transform them into a CONSTRUCT WHERE query (retaining the same WHERE clause) in order to visualize the results as a graph.

### Query + Graph visualization:

Corese 3.2 - WimMics INRIA I3S - 2016-12-25

File Edit Engine Debug Query Template Explain ?

System Query1 x Query2 x Query3 x Query4 x Query5 x Query6 x Query7 x Query8 x Query9 x Query10 x Query11 x +

Query Validate to SPIN to SPARQL Prove Trace Search Refresh stylesheet Default stylesheet

```

1 prefix h: <http://www.inria.fr/2007/09/11/humans.rdf#>
2 CONSTRUCT
3 where {?x a h:Person ; h:age ?age.}
4

```

Graph	XML	Table	Validate
<pre> 12 size-mode fit; 13 fill-color lightblue; 14 shape circle; 15 16 node Literal{ 17   text-size:9; 18   text-color: black; 19   text-style: bold; 20   text-alignment: center; 21   size: 17; 22   size-mode: fit; 23   fill-color: orange; 24   shape: box; 25 } 26 27 node Blank{ 28   text-size:9; 29   text-color: black; 30   text-style: bold; 31   text-alignment: center; 32   size: 17; 33   size-mode: fit; 34   fill-color: yellow; 35   shape: circle; 36 } 37 38 node Class{ 39   text-size:9; 40   text-color: black; 41   text-style: bold; 42   text-alignment: center; 43   size: 17; 44   size-mode: fit; 45   fill-color: blue; 46   shape: circle; 47 } 48 49 edge{ 50   text-color: black; 51   text-size:12; 52   size: 2; 53   fill-color: grey; 54   text-alignment: center; 55   shape: cubic-curve; 56 } </pre>			

## Question 10

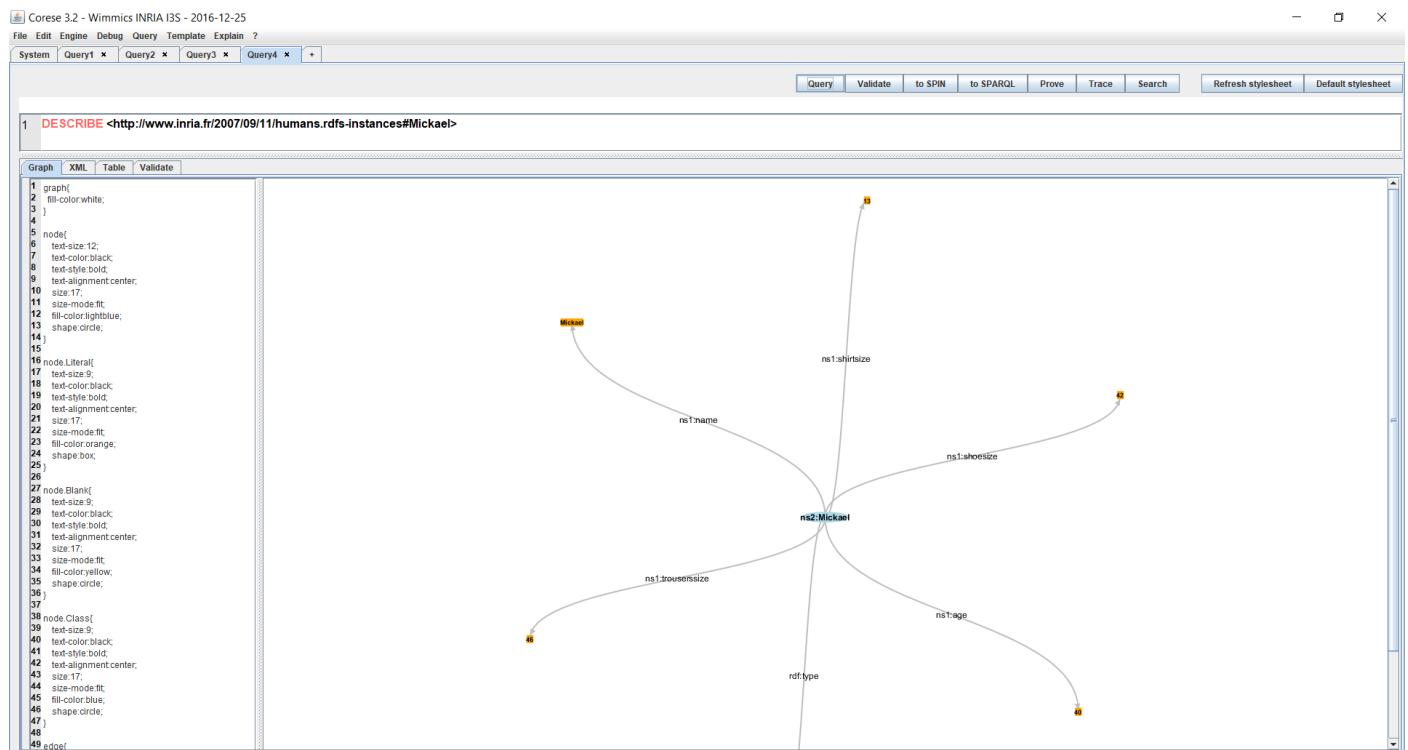
Edit the file to add your own annotation (about you) to the RDF file reusing the properties of the file. Build queries to verify and visualize the annotations you added.

### Step 1 : insert of my own properties in the RDF file - screenshot:

The screenshot shows an RDF file in Notepad++. The file contains several individuals with their properties. A specific individual, `<Person rdf:ID="Mickael">`, is highlighted with an orange rectangle. This individual has properties such as `shoesize`, `age`, `trouserssize`, `shirtsize`, and `name`. The `name` property is annotated with `<name>Mickael</name>`.

```
<Man>
<Man rdf:ID="Gaston">
<rdfs:type rdf:resource="http://www.inria.fr/2007/09/11/humans.rdfs#Researcher"/>
<shoesize rdf:datatype="http://www.w3.org/2001/XMLSchema#integer">11</shoesize>
<trouserssize rdf:datatype="http://www.w3.org/2001/XMLSchema#integer">38</trouserssize>
<age rdf:datatype="http://www.w3.org/2001/XMLSchema#integer">102</age>
<shirtsize rdf:datatype="http://www.w3.org/2001/XMLSchema#integer">12</shirtsize>
<name>Gaston</name>
<hasChild rdf:resource="#Pierre"/>
<hasChild rdf:resource="#Jack"/>
</Man>
<Lecturer rdf:about="#Laura"/>
<Person rdf:ID="William">
<hasSpouse rdf:resource="#Laura"/>
<shoesize rdf:datatype="http://www.w3.org/2001/XMLSchema#integer">10</shoesize>
<age rdf:datatype="http://www.w3.org/2001/XMLSchema#integer">42</age>
<trouserssize rdf:datatype="http://www.w3.org/2001/XMLSchema#integer">46</trouserssize>
<shirtsize rdf:datatype="http://www.w3.org/2001/XMLSchema#integer">13</shirtsize>
<name>William</name>
</Person>
<Person rdf:ID="Mickael">
<shoesize rdf:datatype="http://www.w3.org/2001/XMLSchema#integer">42</shoesize>
<age rdf:datatype="http://www.w3.org/2001/XMLSchema#integer">40</age>
<trouserssize rdf:datatype="http://www.w3.org/2001/XMLSchema#integer">46</trouserssize>
<shirtsize rdf:datatype="http://www.w3.org/2001/XMLSchema#integer">13</shirtsize>
<name>Mickael</name>
</Person>
<Man rdf:ID="Pierre">
<shoesize rdf:datatype="http://www.w3.org/2001/XMLSchema#integer">8</shoesize>
<age rdf:datatype="http://www.w3.org/2001/XMLSchema#integer">71</age>
<trouserssize rdf:datatype="http://www.w3.org/2001/XMLSchema#integer">30</trouserssize>
<shirtsize rdf:datatype="http://www.w3.org/2001/XMLSchema#integer">9</shirtsize>
<name>Pierre</name>
</Man>
<Person rdf:ID="Karl">
<hasSpouse rdf:resource="#Catherine"/>
<hasFriend rdf:resource="#Sophie"/>
</Person>
```

### Step 2 : Graph visualization - screenshot:



## Question 11

- Formulate a query to find the persons who share the same shirt size.

**Query + Result:**

```

1 prefix h: <http://www.inria.fr/2007/09/11/humans.rdfs#>
2 select ?x ?y
3 where {?x a h:Person; h:shirtsize ?Shirtsize1.
4 ?y a h:Person; h:shirtsize ?Shirtsize2.
5 filter(?Shirtsize1=?Shirtsize2)
6 filter(?x !=?y)
7 }
8
9

```

?x	?y
http://www.inria.fr/2007/09/11/humans.rdfs#instances#Mark	http://www.inria.fr/2007/09/11/humans.rdfs#instances#Carl
http://www.inria.fr/2007/09/11/humans.rdfs#instances#William	http://www.inria.fr/2007/09/11/humans.rdfs#instances#Michael
http://www.inria.fr/2007/09/11/humans.rdfs#instances#Michael	http://www.inria.fr/2007/09/11/humans.rdfs#instances#William
http://www.inria.fr/2007/09/11/humans.rdfs#instances#Mark	http://www.inria.fr/2007/09/11/humans.rdfs#instances#Mark

- Find the persons who have the same size shirt (shirtsize) and construct a seeAlso relationship between them.

**Query :**

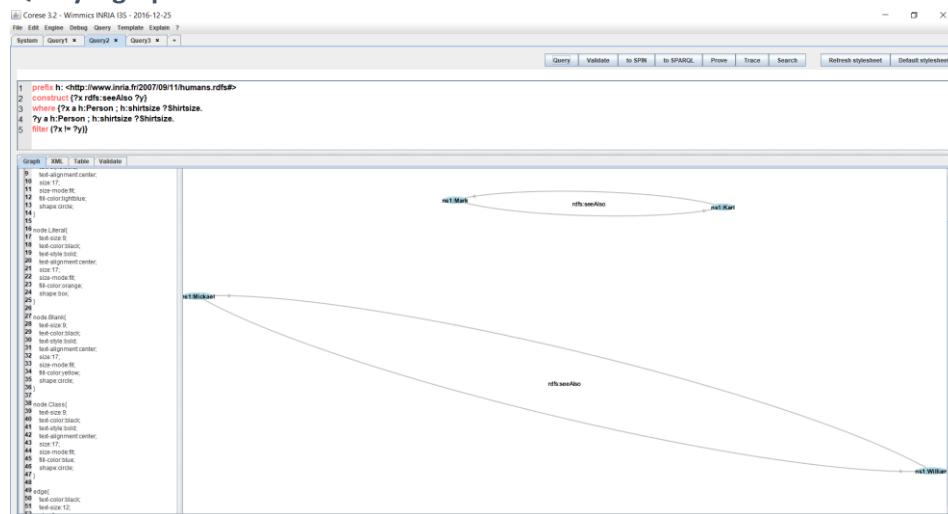
```

1 prefix h: <http://www.inria.fr/2007/09/11/humans.rdfs#>
2 construct {?x rdfs:seeAlso ?y}
3 where {?x a h:Person ; h:shirtsize ?Shirtsize.
4 ?y a h:Person ; h:shirtsize ?Shirtsize.
5 filter (?x != ?y)}

```

- Change the query into an insert.
- Visualize the resources connected by seeAlso (use the CONSTRUCT clause).

**Query + graphical result:**



5. Adapt the first query to find persons who have same size shoe (shoesize) and insert a seeAlso relationship between them.

### Query + result:

The screenshot shows the CoReSE 3.2 interface with a query editor and a results table. The query is:

```

1 prefix h: <http://www.inria.fr/2007/09/11/humans.rdfs#>
2 select *
3 where {?x a h:Person ; h:shoesize ?Shoesize.
4 ?y a h:Person ; h:shoesize ?Shoesize.
5 filter (?x != ?y)}

```

The results table has columns for ?x, ?Shoesize, and ?y. There are no rows present.

**Comment : There's no Person with same ShoeSize – If we delete Person condition we obtain the following result**

The screenshot shows the CoReSE 3.2 interface with a query editor and a results table. The query is:

```

1 prefix h: <http://www.inria.fr/2007/09/11/humans.rdfs#>
2 insert {?x rdfs:seeAlso ?y}
3 where {?x h:shoesize ?Shoesize.
4 ?y h:shoesize ?Shoesize.
5 filter (?x != ?y)}

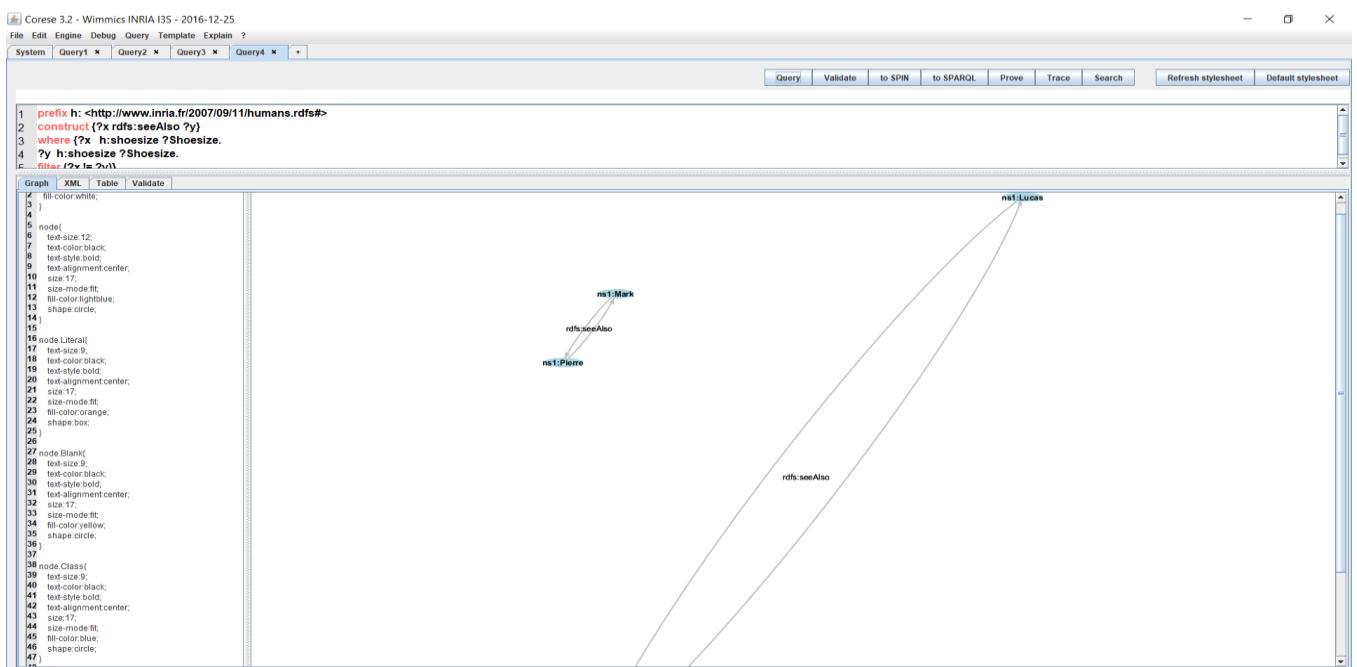
```

The results table has columns for ?x, ?Shoesize, and ?y. The data is:

?x	?Shoesize	?y
http://www.inria.fr/2007/09/11/humans.rdfs#Mark	8	http://www.inria.fr/2007/09/11/humans.rdfs#Pierre
http://www.inria.fr/2007/09/11/humans.rdfs#Pierre	8	http://www.inria.fr/2007/09/11/humans.rdfs#Mark
http://www.inria.fr/2007/09/11/humans.rdfs#Lucas	7	http://www.inria.fr/2007/09/11/humans.rdfs#Karl
http://www.inria.fr/2007/09/11/humans.rdfs#Karl	7	http://www.inria.fr/2007/09/11/humans.rdfs#Lucas

6. Visualize the resources connected by seeAlso (use the CONSTRUCT clause)

### Query + graphical result:



7. Change the query to find the resources connected by a path consisting of one or several seeAlso.

### Query + result:

The screenshot shows the Corese 3.2 interface with a query results table. The table has two columns: ?x and ?y. The ?x column contains the following URIs: http://www.inria.fr/2007/09/11/humans.rdfs#Mark, http://www.inria.fr/2007/09/11/humans.rdfs#Pierre, http://www.inria.fr/2007/09/11/humans.rdfs#Lucas, http://www.inria.fr/2007/09/11/humans.rdfs#Karl, http://www.inria.fr/2007/09/11/humans.rdfs#Willam, and http://www.inria.fr/2007/09/11/humans.rdfs#Mickael. The ?y column contains the same set of URIs: http://www.inria.fr/2007/09/11/humans.rdfs#Pierre, http://www.inria.fr/2007/09/11/humans.rdfs#Lucas, http://www.inria.fr/2007/09/11/humans.rdfs#Mark, http://www.inria.fr/2007/09/11/humans.rdfs#Karl, http://www.inria.fr/2007/09/11/humans.rdfs#Willam, and http://www.inria.fr/2007/09/11/humans.rdfs#Mickael.

```

1 prefix h: <http://www.inria.fr/2007/09/11/humans.rdfs#>
2 select *
3 where {?x h:seeAlso+ ?y}

```

**Comment : if we just want to obtain the name of resources which have one or several relation of type seeAlso we can add the DISTINCT condition**

The screenshot shows the Corese 3.2 interface with a query results table. The table has one column labeled ?x. It contains the following URIs: http://www.inria.fr/2007/09/11/humans.rdfs#Mark, http://www.inria.fr/2007/09/11/humans.rdfs#Pierre, http://www.inria.fr/2007/09/11/humans.rdfs#Lucas, http://www.inria.fr/2007/09/11/humans.rdfs#Karl, http://www.inria.fr/2007/09/11/humans.rdfs#Willam, and http://www.inria.fr/2007/09/11/humans.rdfs#Mickael.

```

1 prefix h: <http://www.inria.fr/2007/09/11/humans.rdfs#>
2 select distinct ?x
3 where {?x h:seeAlso+ ?y}

```

8. Reload the engine (option reload in the menu) and rerun the last visualization query.

The screenshot shows the Corese 3.2 interface with a query results table. The table is currently empty, indicated by the label ?x.

```

1 prefix h: <http://www.inria.fr/2007/09/11/humans.rdfs#>
2 select distinct ?x
3 where {?x h:seeAlso+ ?y}

```

**Comment : after reloading the engine the previous insert disappeared – it was just a temporary insert**

## Question 12

- Find the largest shoe size

Query + result:

The screenshot shows the Corese 3.2 interface with the title "Corese 3.2 - Wimmicks INRIA I3S - 2016-12-25". The top menu bar includes File, Edit, Engine, Debug, Query, Template, Explain, and a question mark icon. Below the menu is a tab bar with tabs for Query4, Query5, Query6, Query7, Query8, Query9, Query10, Query11, Query12, Query13, and a plus sign. The "System" tab is selected. A sub-tab bar below it shows "Query1" and "Query2". At the bottom of the interface are buttons for Query, Validate, to SPIN, to SPARQL, Prove, Trace, and Search.

```
1 prefix h: <http://www.inria.fr/2007/09/11/humans.rdfs#>
2 select (max(?Shoesize) as ?Shoesize)
3 where {?x a h:Person; h:shoesize ?Shoesize}
4
5
```

The results pane shows a table with two columns: "?Shoesize" and "14".

?Shoesize	14

- Find people who have the biggest size of shoe (subquery + aggregate)

Query + result: reuse the result obtain in the previous query as a filter value

The screenshot shows the Corese 3.2 interface with the title "Corese 3.2 - Wimmicks INRIA I3S - 2016-12-25". The top menu bar includes File, Edit, Engine, Debug, Query, Template, Explain, and a question mark icon. Below the menu is a tab bar with tabs for Query6, Query7, Query8, Query9, Query10, Query11, Query12, Query13, Query14, Query15, and a plus sign. The "System" tab is selected. A sub-tab bar below it shows "Query1", "Query2", "Query3", "Query4", and "Query5". At the bottom of the interface are buttons for Query, Validate, to SPIN, to SPARQL, Prove, Trace, and Search, along with Refresh stylesheet and Default stylesheet buttons.

```
1 prefix h: <http://www.inria.fr/2007/09/11/humans.rdfs#>
2 select ?x ?Shoesize
3 where {?x a h:Person; h:shoesize ?Shoesize.}
4 GROUP BY (?x)
5 HAVING (?Shoesize = 14)
6
```

The results pane shows a table with two columns: "?x" and "?Shoesize". The row contains the URL "http://www.inria.fr/2007/09/11/humans.rdfs-instances#John" and the value "14".

?x	?Shoesize
http://www.inria.fr/2007/09/11/humans.rdfs-instances#John	14

3. Calculate the average shoe size using the appropriate aggregation operator

**Query + result:**

The screenshot shows the CoReSe 3.2 interface with the title "CoReSe 3.2 - Wimmicks INRIA I3S - 2016-12-25". The top menu includes File, Edit, Engine, Debug, Query, Template, Explain, and ?. Below the menu is a tab bar with tabs for Query6, Query7, Query8, Query9, Query10, Query11, Query12, Query13, Query14, Query15, and a plus sign. The "System" tab is selected. Below the tabs are buttons for Query, Validate, to SPIN, to SPARQL, Prove, Trace, and Search, along with Refresh stylesheet and Default stylesheet links.

```

1 prefix h: <http://www.inria.fr/2007/09/11/humans.rdfs#>
2 select (AVG(?ShoeSize) as ?AVGShoeSize)
3 where {?x a h:Person; h:shoeSize ?ShoeSize.}
4
5

```

The results table below the query editor shows one row with the value "9.75" under the column labeled "?AVGShoeSize".

Graph	XML	Table	Validate
		?AVGShoeSize	9.75

4. Check the average with your own calculation using sum() and count()

**Query + result:**

The screenshot shows the CoReSe 3.2 interface with the title "CoReSe 3.2 - Wimmicks INRIA I3S - 2016-12-25". The top menu and tabs are identical to the previous screenshot. The query editor contains the following SPARQL code:

```

1 prefix h: <http://www.inria.fr/2007/09/11/humans.rdfs#>
2 select (SUM(?ShoeSize) as ?SUMShoeSize) (count(?ShoeSize) as ?COUNTShoeSize) ((?SUMShoeSize)/(?COUNTShoeSize)) as ?AVGShoeSize
3 where {?x a h:Person; h:shoeSize ?ShoeSize.}
4
5

```

The results table below the query editor shows three columns: "39" under "?SUMShoeSize", "4" under "?COUNTShoeSize", and "9.75" under "?AVGShoeSize".

Graph	XML	Table	Validate
		?SUMShoeSize	39
		?COUNTShoeSize	4
		?AVGShoeSize	9.75

### Question 13

Find couples without children

**Query + result : If we exclude all “hasfather” / “hasmother” / “haschild” properties – only one couple has no child (Eve/David)**

The screenshot shows the CoReSe 3.2 interface with the title "CoReSe 3.2 - Wimmicks INRIA I3S - 2016-12-25". The top menu and tabs are identical to the previous screenshots. The query editor contains the following SPARQL code:

```

1 prefix h: <http://www.inria.fr/2007/09/11/humans.rdfs#>
2 select ?x ?y
3 where{ {?x h:hasSpouse ?y.}
4 minus {?x h:hasChild ?z}
5 minus {?y h:hasChild ?z}
6 minus {?z h:hasFather ?x}
7 minus {?z h:hasFather ?y}
8 minus {?z h:hasMother ?x}
9 minus {?z h:hasMother ?y}}
10

```

The results table below the query editor shows two rows with the values "http://www.inria.fr/2007/09/11/humans.rdfs-instances#Eve" and "http://www.inria.fr/2007/09/11/humans.rdfs-instances#David" under the columns "?x" and "?y" respectively.

Graph	XML	Table	Validate
		?x	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Eve
		?y	http://www.inria.fr/2007/09/11/humans.rdfs-instances#David

## Question 14

Using INSERT DATA, create a new person with its properties. Then, check that it has been created.

### Insert: New person TOTO

Corese 3.2 - Wimmicks INRIA I3S - 2016-12-25

File Edit Engine Debug Query Template Explain ?

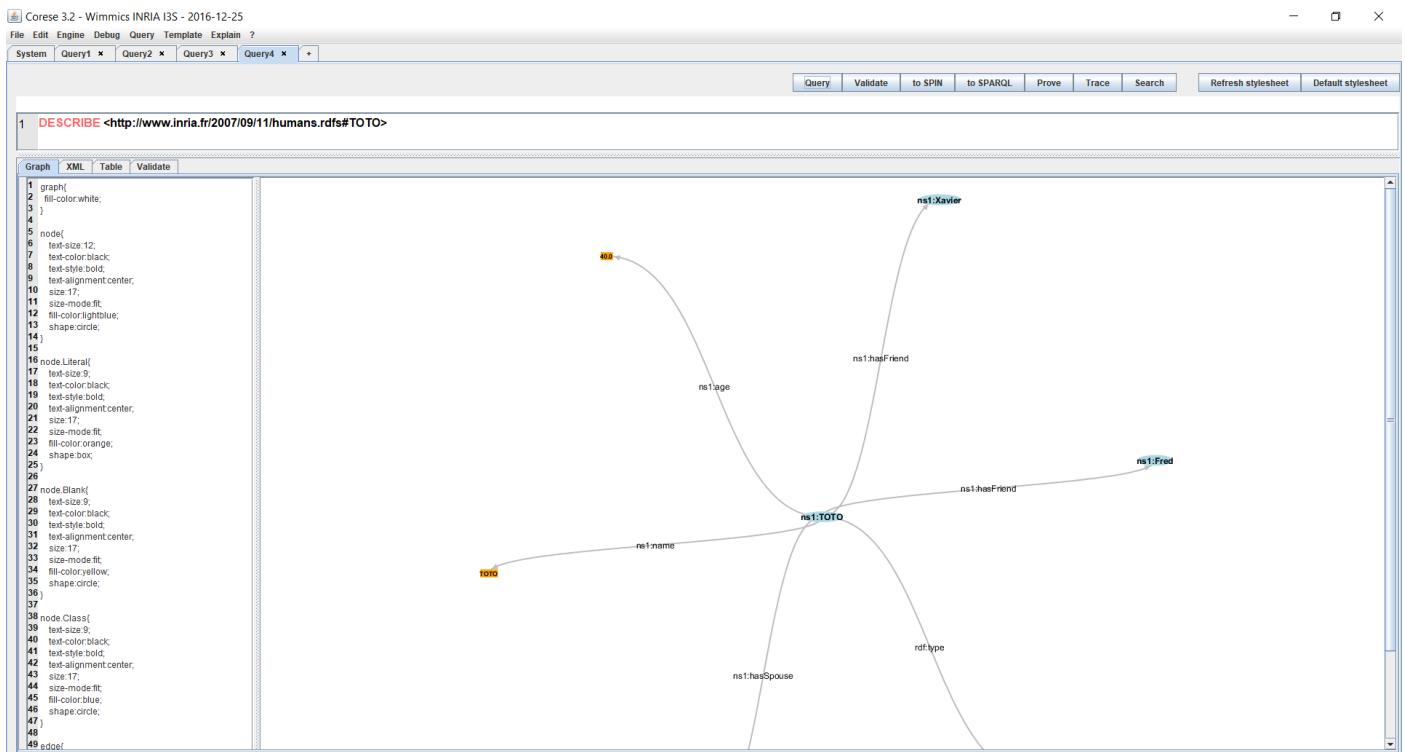
Query9 × Query10 × Query11 × Query12 × Query13 × Query14 × Query15 × Query16 × Query17 × Query18 × Query19 × +  
System Query1 × Query2 × Query3 × Query4 × Query5 × Query6 × Query7 ×

Query Validate to SPIN to SPARQL Prove Trace Search Refresh stylesheet

```
1 prefix h: <http://www.inria.fr/2007/09/11/humans.rdfs#>
2 INSERT DATA { <http://www.inria.fr/2007/09/11/humans.rdfs#TOTO> a h:Person ;
3   h:name "TOTO" ;
4   h:hasSpouse h:TETE ;
5   h:hasFriend h:Xavier, h:Fred ;
6   h:age 40 .}
```

Graph XML Table Validate

### Screenshot result:



## Question 15

Find the people connected by paths of any family links. Construct an arc `seeAlso` between them to visualize the result.

### Query + result : after creation of TOTO

The screenshot shows the CoReSE 3.2 interface with the following details:

- Query:**

```
1 prefix g: <http://www.inria.fr/2007/09/11/humans.rdfs#>
2 select ?x ?y
3 where {
4   ?x (g:hasMother | rdfs:seeAlso)* ?y
5   UNION
6   ?x (g:hasFather | rdfs:seeAlso)* ?y
7   UNION
8   ?x (g:hasParent | rdfs:seeAlso)* ?y
9   UNION
10 ?x (g:hasSpouse | rdfs:seeAlso)* ?y
11 UNION
12 ?x (g:hasChild | rdfs:seeAlso)* ?y
13 }
```
- Results:** A table showing the results of the query. The columns are labeled `?x` and `?y`. The data consists of pairs of URIs representing people connected by family links.

?x	?y
http://www.inria.fr/2007/09/11/humans.rdfsInstances#Lucas	http://www.inria.fr/2007/09/11/humans.rdfsInstances#Catherine
http://www.inria.fr/2007/09/11/humans.rdfsInstances#Lucas	http://www.inria.fr/2007/09/11/humans.rdfsInstances#Laura
http://www.inria.fr/2007/09/11/humans.rdfsInstances#Catherine	http://www.inria.fr/2007/09/11/humans.rdfsInstances#Laura
http://www.inria.fr/2007/09/11/humans.rdfsInstances#Jack	http://www.inria.fr/2007/09/11/humans.rdfsInstances#John
http://www.inria.fr/2007/09/11/humans.rdfsInstances#John	http://www.inria.fr/2007/09/11/humans.rdfsInstances#Sophie
http://www.inria.fr/2007/09/11/humans.rdfsInstances#Harry	http://www.inria.fr/2007/09/11/humans.rdfsInstances#Sophie
http://www.inria.fr/2007/09/11/humans.rdfsInstances#Eve	http://www.inria.fr/2007/09/11/humans.rdfsInstances#David
http://www.inria.fr/2007/09/11/humans.rdfsInstances#Flora	http://www.inria.fr/2007/09/11/humans.rdfsInstances#Gaston
http://www.inria.fr/2007/09/11/humans.rdfsInstances#Jennifer	http://www.inria.fr/2007/09/11/humans.rdfsInstances#John
http://www.inria.fr/2007/09/11/humans.rdfsInstances#William	http://www.inria.fr/2007/09/11/humans.rdfsInstances#Laura
http://www.inria.fr/2007/09/11/humans.rdfsInstances#Karl	http://www.inria.fr/2007/09/11/humans.rdfsInstances#Catherine
http://www.inria.fr/2007/09/11/humans.rdfsInstances#TOTO	http://www.inria.fr/2007/09/11/humans.rdfsInstances#ITE
http://www.inria.fr/2007/09/11/humans.rdfsInstances#Harry	http://www.inria.fr/2007/09/11/humans.rdfsInstances#John
http://www.inria.fr/2007/09/11/humans.rdfsInstances#Gaston	http://www.inria.fr/2007/09/11/humans.rdfsInstances#Jack
http://www.inria.fr/2007/09/11/humans.rdfsInstances#Gaston	http://www.inria.fr/2007/09/11/humans.rdfsInstances#Harry
http://www.inria.fr/2007/09/11/humans.rdfsInstances#Gaston	http://www.inria.fr/2007/09/11/humans.rdfsInstances#John
http://www.inria.fr/2007/09/11/humans.rdfsInstances#Jack	http://www.inria.fr/2007/09/11/humans.rdfsInstances#Harry
http://www.inria.fr/2007/09/11/humans.rdfsInstances#Jack	http://www.inria.fr/2007/09/11/humans.rdfsInstances#John
http://www.inria.fr/2007/09/11/humans.rdfsInstances#Flora	http://www.inria.fr/2007/09/11/humans.rdfsInstances#Pierre

## Question 16

Run the following query:

```
prefix db: <http://dbpedia.org/ontology/>
prefix foaf: <http://xmlns.com/foaf/0.1/>
prefix h: <http://www.inria.fr/2007/09/11/humans.rdfs#>
construct { ?x h:name ?nx . ?y h:name ?ny . ?x h:hasSpouse ?y }
where {
  service <http://fr.dbpedia.org/sparql/> {
    select * where {
      ?x db:spouse ?y .
      ?x foaf:name ?nx .
      ?y foaf:name ?ny .
    }
    limit 20
  }
}
```

Explain what it does

### Query result Explanation

This query creates a graph which displays people who have a spouse and for whom their name and the name of their spouse is known - the query displays the first 20 results

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File Edit Engine Debug Query Template Explain ?

System | Query1 | Query2 | Query3 | Query4 | Query5 | Query6 | Query7 | Query8 | Query9 | Query10 | Query11 | Query12 | Query13 | Query14 | Query15 | Query16 | Query17 | Query18 | Query19 | Query20 | +

Query Validate to SPIN to SPARQL Prove Trace Search Refresh stylesheet Default stylesheet

```

1 prefix: <http://www.w3.org/2009/08/rdf/commonto/1>
2 prefix h: <http://www.inria.fr/2007/09/11/humans.rdfs#>
3 construct { ?x h:name ?nx . ?y h:name ?ny . ?x h:hasSpouse ?y }
4 where {
5   service <http://fr.dbpedia.org/sparql/> {
6     select * where {
7       ?x db:spouse ?y .
8       ?x foaf:name ?nx .
9       ?y foaf:name ?ny .
10      }
11    }
12   limit 20
13 }
14 }
15
16

```

Graph XML Table Validate

modify it to insert new persons in the base and check the results.

### Query + result: creation of new resources “Alain & Aline”

Corese 3.2 - Wimmics INRIA I3S - 2016-12-25

File Edit Engine Debug Query Template Explain ?

System | Query1 | Query2 | Query3 | Query4 | Query5 | Query6 | Query7 | Query8 | Query9 | Query10 | +

Query Validate to SPIN to SPARQL Prove Trace Search Refresh stylesheet Default stylesheet

```

1 prefix db: <http://dbpedia.org/ontology/>
2 prefix foaf: <http://xmlns.com/foaf/0.1/>
3 prefix h: <http://www.inria.fr/2007/09/11/humans.rdfs#>
4 insert <http://fr.dbpedia.org/resource/http://fr.dbpedia.org/resource/Alain> h:name "Alain de Nice"@fr. <http://fr.dbpedia.org/resource/http://fr.dbpedia.org/resource/Aline> h:name "Aline de Nice"@fr.
5 <http://fr.dbpedia.org/resource/http://fr.dbpedia.org/resource/Alain> db:spouse <http://fr.dbpedia.org/resource/http://fr.dbpedia.org/resource/Aline>.
6 <http://fr.dbpedia.org/resource/http://fr.dbpedia.org/resource/Alain> foaf:name "Alain de Nice"@fr .
7 <http://fr.dbpedia.org/resource/http://fr.dbpedia.org/resource/Alain> foaf:name "Aline de Nice"@fr .
8
9 }
10 where{
11   service <http://fr.dbpedia.org/sparql/> {
12     select * where {
13       ?x db:spouse ?y .
14       ?x foaf:name ?nx .
15       ?y foaf:name ?ny .
16     }
17   limit 20
18 }
19 }
20

```

Corese 3.2 - Wimmics INRIA I3S - 2016-12-25

File Edit Engine Debug Query Template Explain ?

System | Query1 | Query2 | Query3 | Query4 | Query5 | Query6 | Query7 | Query8 | Query9 | Query10 | +

Query Validate to SPIN to SPARQL Prove Trace Search Refresh stylesheet Default stylesheet

```

1 describe <http://fr.dbpedia.org/resource/http://fr.dbpedia.org/resource/Alain>

```

Graph XML Table Validate

## Day 04: questions from the course on RDFS.

**Q4.1** Choose among the following assertions one or more you consider to be true:

- an ontology is necessarily formalized in first-order logic
- an ontology may allow inferences on data that uses it
- conceptual graphs can represent an ontology
- a shared ontology promotes interoperability
- description logics can represent an ontology

Answers highlighted in green

**Q4.2** RDFS contains primitives to (several answers possible)...

- describe classes of resources
- describe formulas of calculation for values of properties
- describe types of properties of resources
- document definitions in natural language
- sign and authenticate the authors of the definitions of classes and properties

Answers highlighted in green

**Q4.3.** What is defined and derived from these definitions?

```
@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#>
@prefix : <http://inria.fr/devices#>
:Phone rdfs:subClassOf :Device .
:Computer rdfs:subClassOf :Device .
:Smartphone rdfs:subClassOf :Computer .
:Smartphone rdfs:subClassOf :Phone .
```

Answer - Explanations

Line1 : It defines rdfs attached to w3

Line 2 : an another prefix is mentioned : namespace of our ontology

Line 3 to 6 :

Phone is a subclass of Device (everytime I have a phone I have a device)

Computer subclass of Device (everytime I have a computer I have a device)

Smartphone subclass of computer and subclass of phone

By transivity Device (with phone and computer)

System automatically create link smartphone in device

**Q4.4.** What is defined and derived from these definitions?

```
@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#>
@prefix : <http://inria.fr/member#>
:employeeOf rdfs:subPropertyOf :proRelationWith .
:hasControlOver rdfs:subPropertyOf :proRelationWith .
:isShareholderOf rdfs:subPropertyOf :hasControlOver .
:isCEOof rdfs:subPropertyOf :employeeOf, :hasControlOver .
```

#### Answer - Explanations

**Line1 :** It defines rdfs attached to w3

**Line 2 :** an another prefix is mentioned : namespace of our ontology

**Line 3 to 6 :**

**EmployeeOf** is a subproperty of **proRelationWith**,

**Has Controlover** is a subproperty of **proRelationWith**

**isShareholderof** is a subproperty of **hasControlOver**

**isCEOof** is a subproperty of **employeeOf** and **hasControlOver**

If a new CEO is created the system will automatically create properties with employeeOf / has Controlover and proRelationWith

**Q4.5.** What can be said about the types of the resources that will be linked by the properties defined below?

```
@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#>
@prefix : <http://inria.fr/humans#>
:driverOf rdfs:subPropertyOf :isControling .
:piloteOf rdfs:subPropertyOf :isControling .
:isControling rdfs:domain :Human ; rdfs:range :Object .
:driverOf rdfs:range :Car .
:piloteOf rdfs:domain :Adult ; rdfs:range :Plane .
```

#### Answer – Explanations **look at video**

**Line1 :** It defines rdfs attached to w3

**Line 2 :** an another prefix is mentioned : namespace of our ontology

**Line 3 to 7 :**

**driverOf** is a subproperty of **isControling**,

**pilotOf** is a subproperty of **isControling**

**isControling** has for domain Human and for Ranges Object and Cars

**pilotOf** has for domain Adult and for Range Plane

Q4.6. What could we add to this schema (several answers are possible)?

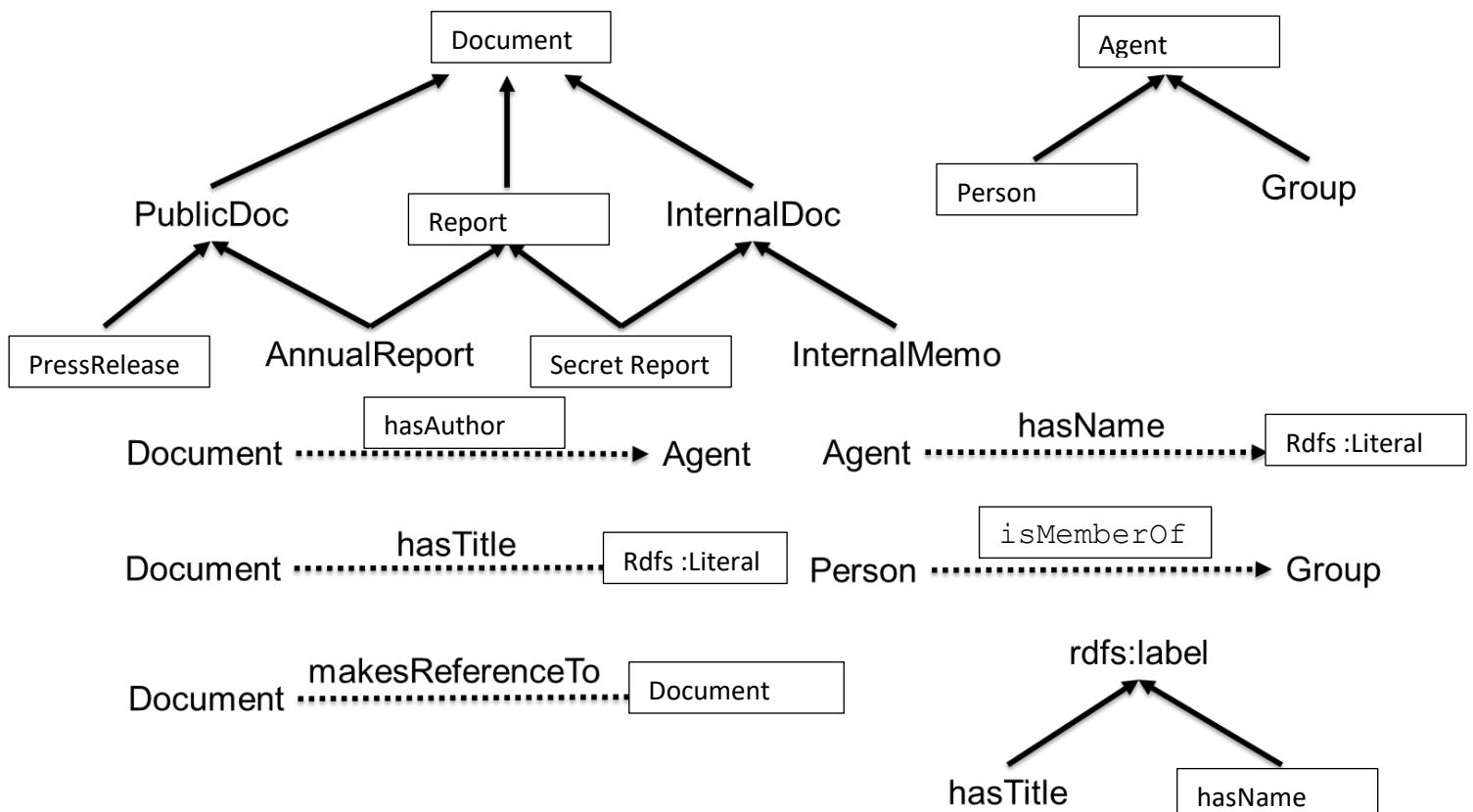
```
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#>
@base <http://inria.fr/2005/humans.rdfs>
<p1> a rdf:Property ; rdfs:label "age"@fr .
<c1> a rdfs:Class; rdfs:comment "un être humain"@fr .
```

- <p1> rdfs:label "prénom"@fr .
- <c1> rdfs:comment "a human being"@fr .
- <c1> rdfs:label "personne"@fr .
- <p1> rdfs:label "age"@en .
- <c1> rdfs:label "woman"@en .
- <c1> rdfs:label "persona"@es .

Answers highlighted in green

Q4.7. (a) Fill the blanks with: Document, PublicDoc, PressRelease, Report, AnnualReport, InternalDoc, SecretReport, InternalMemo, Agent, Person, Group, hasTitle, hasAuthor, makesReferenceTo, hasName, isMemberOf + rdf / rdfs primitives.

(b) Write it in RDFS and validate the RDF.



\*new 3 - Notepad++

File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?

Jen.ttl Jen.rdf new 1 new 2 human\_2013\_bis.ttl human\_2013\_schema\_xml.rdfs human\_2013\_dataset.rdf nev

```

1 @prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#> .
2 @prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .

3
4 <PressRelease> a rdfs:Class ;
5 rdfs:subClassOf <PublicDoc> .
6 <AnnualReport> a rdfs:Class ;
7 rdfs:subClassOf <PublicDoc>, <Report> .
8 <SecretReport> a rdfs:Class ;
9 rdfs:subClassof <Report>, <InternalDoc> .
10 <InternalMemo> a rdfs:Class ;
11 rdfs:subClassOf <InternalDoc> .
12 <PublicDoc> a rdfs:Class ;
13 rdfs:subClassof <Document> .
14 <Report> a rdfs:Class ;
15 rdfs:subClassof <Document> .
16 <InternalDoc> a rdfs:Class ;
17 rdfs:subClassof <Document> .

18 <Person> a rdfs:Class ;
19 rdfs:subClassof <Agent> .
20 <Group> a rdfs:Class ;
21 rdfs:subClassOf <Agent> .

22 <hasAuthor> a rdf:Property ;
23 rdfs:range <Agent> ; rdfs:domain <Document> .

24 <hasTitle> a rdf:Property ;
25 rdfs:range rdfs:Literal ; rdfs:domain <Document> ; rdfs:subPropertyOf rdfs:label.

26
27 <hasName> a rdf:Property ;
28 rdfs:range rdfs:Literal ; rdfs:domain <Agent> ; rdfs:subPropertyOf rdfs:label.

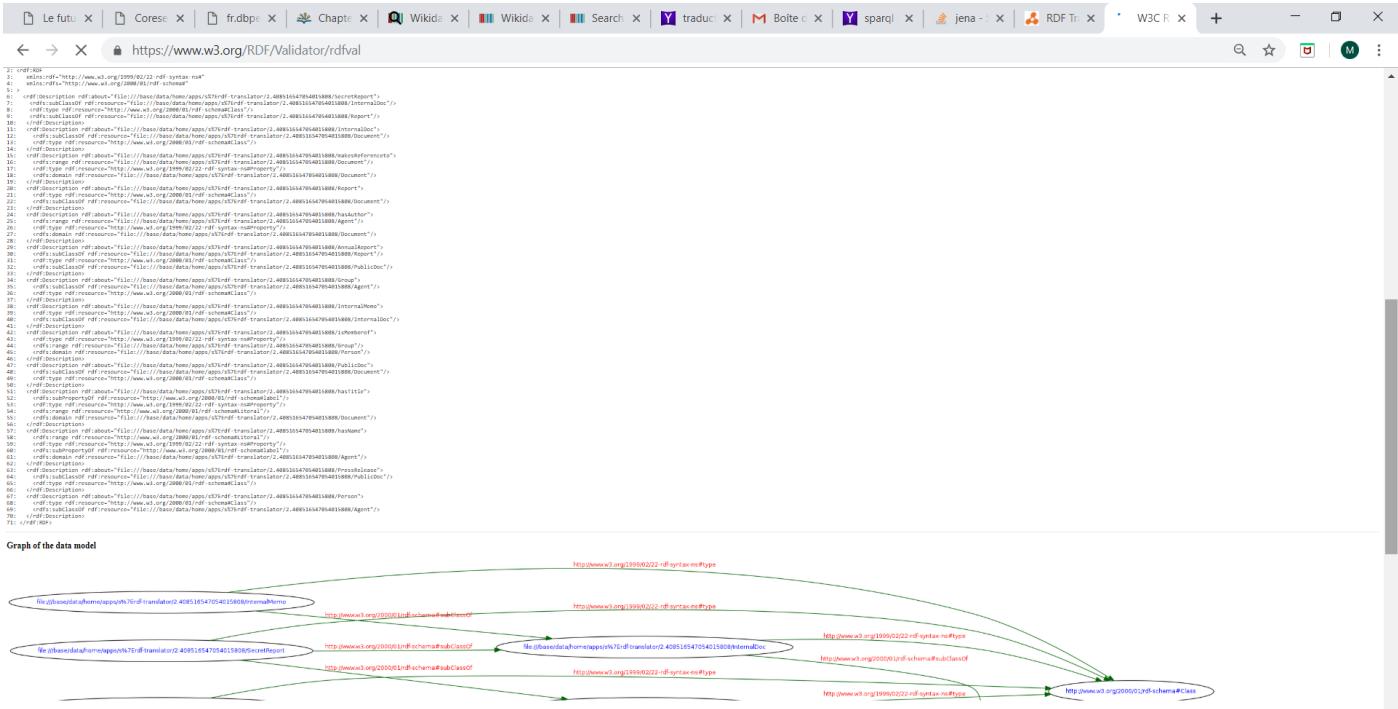
29
30 <makesReferenceto> a rdf:Property ;
31 rdfs:range <Document> ; rdfs:domain <Document> .

32
33 <isMemberof> a rdf:Property ;
34 rdfs:range <Group> ; rdfs:domain <Person>.

35
36
37
38

```

## After traduction and Validation I obtained the following graph



## Day 04: Answers to the practical session on RDFS.

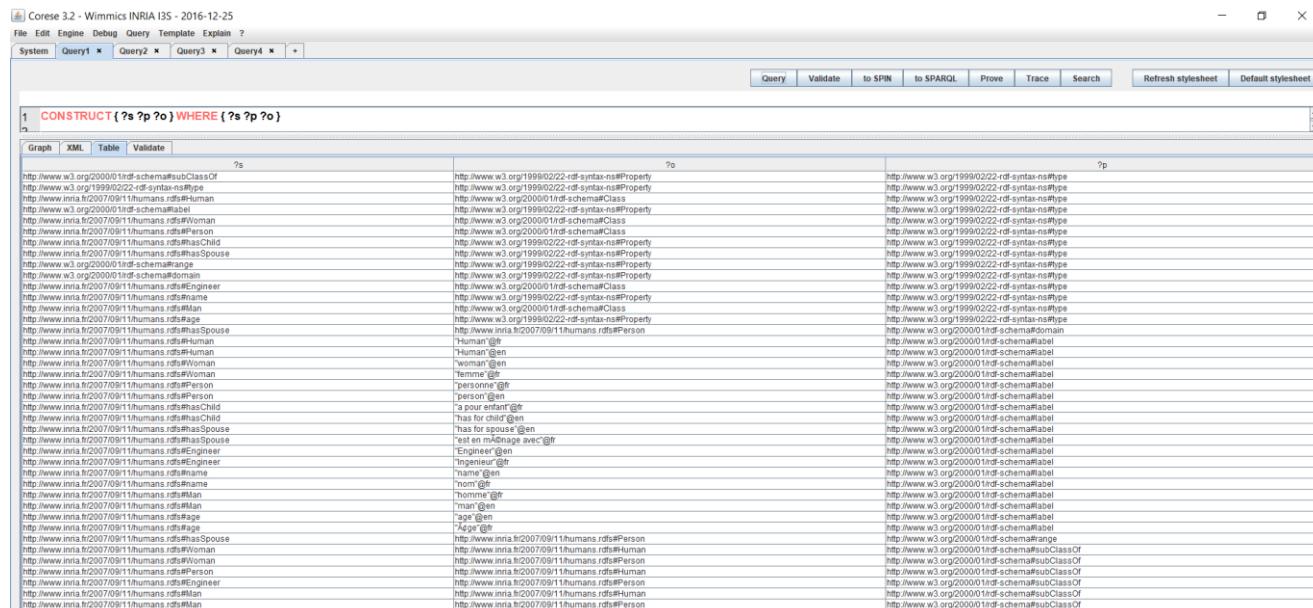
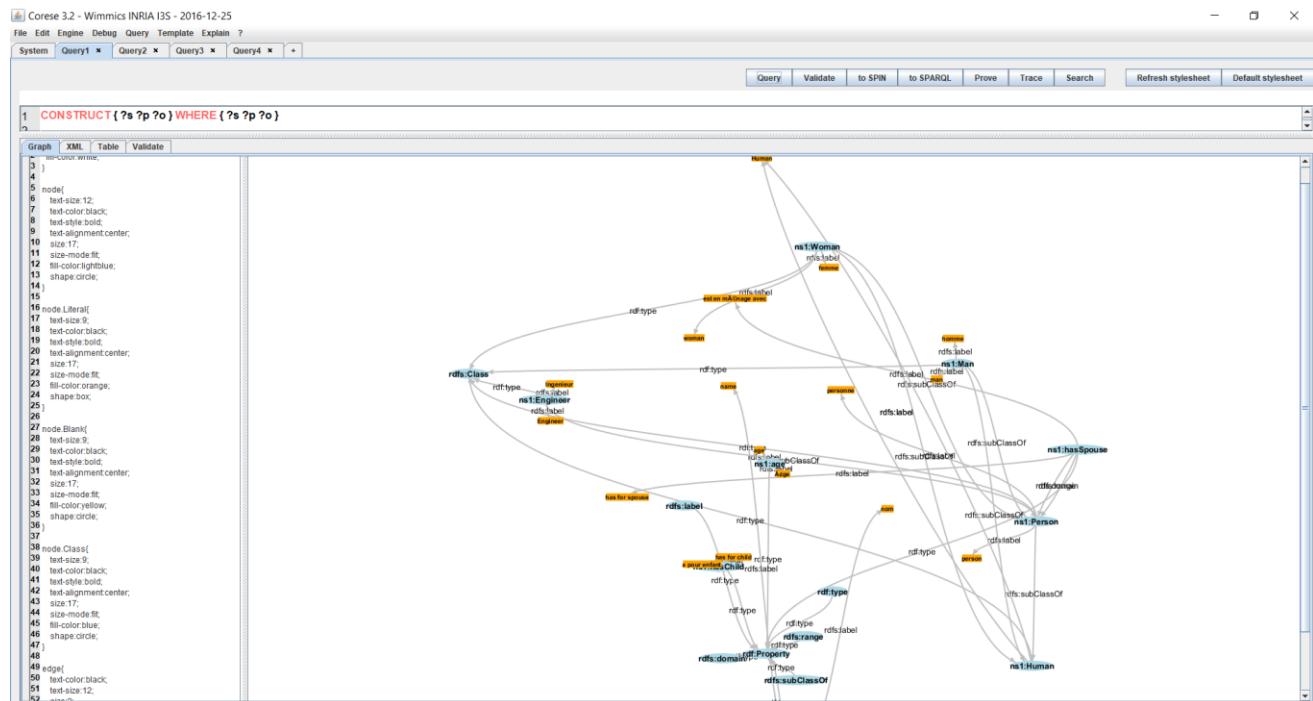
## Software requirements

- The RDF XML online validation service by W3C: <https://www.w3.org/RDF/Validator/>
  - The RDF online translator: <http://rdf-translator.appspot.com/>
  - The SPARQL Corese engine: <http://wimmics.inria.fr/corese>

## Create your own schema Family.rdf

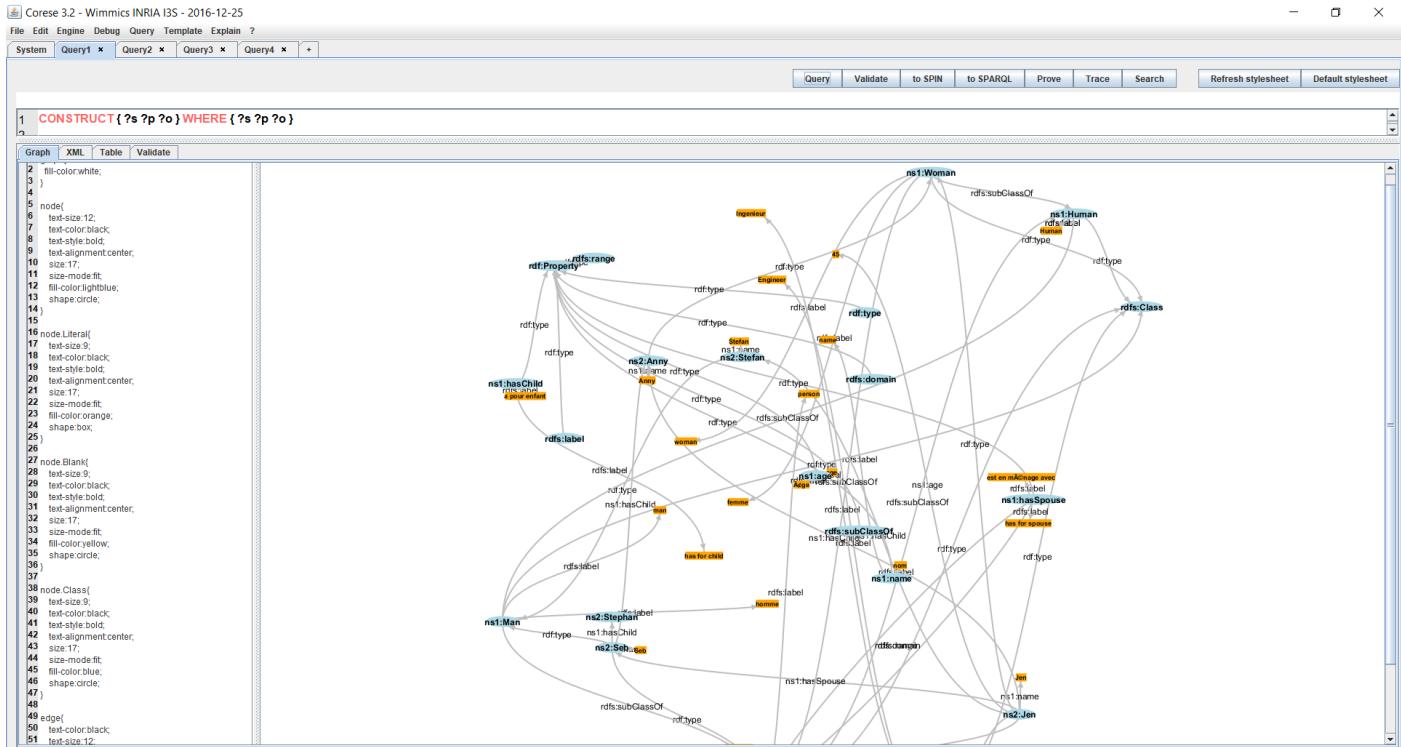
- Write the the RDF schema that you used in the description of Jen in a RDF/XML (or in turtle and then translate it) and save the RDF/XML in a file called “Family.rdfs”. Of course, this assumes that the URIs for the classes and properties declared/used must match in both files. You may have to update the files Jen.rdf and Jen.ttl to use your ontology.

Your schema:

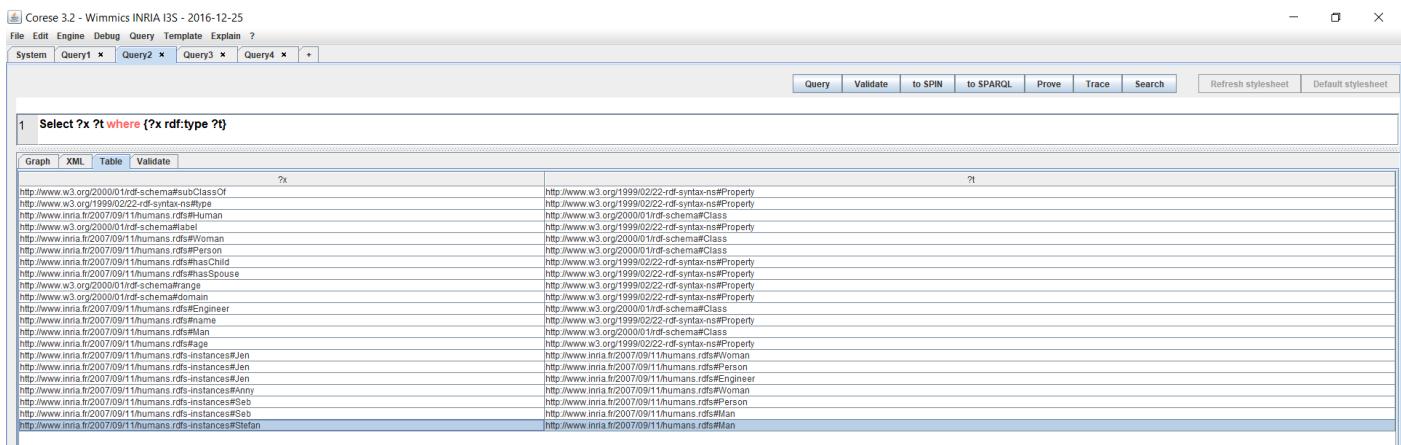


- Check that your RDF schema and RDF files are valid using the W3C's RDF validation service.
- Launch the standalone interface of Corese and load your files Family.rdfs and Jen.rdf
- The interface contains a default SPARQL query:  
Select ?x ?t where {?x rdf:type ?t}  
Launch the query and look at the results.

## Result : Graph screenshot after loaded both files (RDF + RDFS)



## QUERY + result Screenshot: Select ?x ?t where {?x rdf:type ?t}



- Modify your ontology to declare the classes of Man and Woman as sub classes of Human (don't change the data), reload the schemas and data and search for the humans to see the results

### Query + result:

Corese 3.2 - Wimmicks INRIA I3S - 2016-12-25

File Edit Engine Debug Query Template Explain ?

System Query1 × Query2 × Query3 × Query4 × +

```

1 prefix h: <http://www.w3.org/2000/01/rdf-schema#>
2 prefix g: <http://www.inria.fr/2007/09/11/humans.rdfs#>
3 SELECT * WHERE { ?s a g:Human}

```

Graph XML Table Validate

	?s
1	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Jen
2	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Anny
3	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Seb
4	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Stefan

- Modify your ontology to declare the properties hasChild and hasSpouse as sub properties of familyLink (don't change the data), reload the schemas and data and search for the family links to see the results.

### Query + result:

Corese 3.2 - Wimmicks INRIA I3S - 2016-12-25

File Edit Engine Debug Query Template Explain ?

System Query1 × Query2 × Query3 × Query4 × Query5 × +

Query Validate to SPIN to SPARQL Prove

```

1 prefix h: <http://www.w3.org/2000/01/rdf-schema#>
2 prefix g: <http://www.inria.fr/2007/09/11/humans.rdfs#>
3 SELECT * WHERE { ?s <file:///base/data/home/apps/s%7Erdf-translator/2.408516547054015808/hasFamilyLink> ?p }
4

```

Graph XML Table Validate

	?s	?p
1	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Jen	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Anny
2	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Jen	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Seb
3	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Jen	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Stefan
4	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Seb	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Anny
5	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Seb	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Stephan

- Modify your ontology to declare the class FamilyMember and use it to specify the signature of the property familyLink (don't change the data) then reload the schemas and data and search for the family members.

### Query + result:

Corese 3.2 - Wimmicks INRIA I3S - 2016-12-25

File Edit Engine Debug Query Template Explain ?

System Query1 × Query2 × Query3 × Query4 × Query5 × Query6 × +

Query Validate to SPIN

```

1 prefix h: <http://www.w3.org/2000/01/rdf-schema#>
2 prefix g: <http://www.inria.fr/2007/09/11/humans.rdfs#>
3 SELECT distinct ?p WHERE {
4   {?p a g:FamilyMember}
5   UNION
6   {?p g:hasSpouse ?r}
7 }

```

Graph XML Table Validate

	?p
1	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Anny
2	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Seb
3	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Stefan
4	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Jen

## About the human.rdfs schema

1. If you don't have the human schema file yet, download the RDF schema available at this address and save it as "human.rdfs":  
[http://wimmics.inria.fr/doc/tutorial/human\\_2013.rdfs](http://wimmics.inria.fr/doc/tutorial/human_2013.rdfs)
2. What is the namespace associated with this ontology? How was it associated?

Answer :

Name space associated is the following one  
xml:base=<http://www.inria.fr/2007/09/11/humans.rdfs>

3. Look at the XML structure of this file and locate different syntactic properties: the different possible uses of the markup (ex: opening tag and closing, single tag), the use of namespaces for qualified names, the use of entities, etc.
4. Locate the use of the terms of the RDF (S) language: Class, Property, label, how, range, domain, subClassOf, subPropertyOf, etc. To what namespaces are they associated?

Answer :

There's no prefix before Class / property / label.... So by default the namespace associated is the following one xmlns="<http://www.w3.org/2000/01/rdf-schema#>"

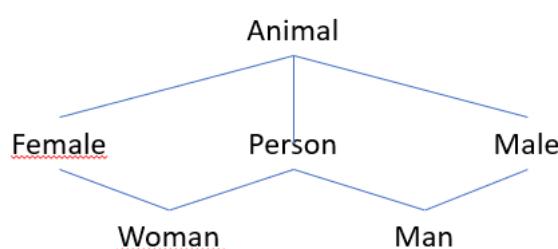
5. What are the classes of resources that can have the age property?

Answer :

There are no range / no domain to restrict use of age property – so all classes of resources could concerned by age

6. Look at the beginning of the file and draw the subgraph of the hierarchy containing the classes Animal, Man and Woman.

Answer : The proposed hierarchy is the following one



## Query the schema itself

Reset or relaunch the standalone Corese search engine interface and load the file human.rdfs (and only this one).

1. Write a query to find all the classes of the ontology.

Potential query :

DESCRIBE <http://www.w3.org/2000/01/rdf-schema#Class>

The screenshot shows the CoReSE 3.2 interface with the title bar "CoReSE 3.2 - Wimmicks INRIA I3S - 2016-12-25". The menu bar includes File, Edit, Engine, Debug, Query, Template, Explain, and a help icon. Below the menu is a tab bar with System, Query1 (selected), Query2, and a plus sign. A toolbar below the tabs includes Query, Validate, to SPIN, to SPARQL, Prove, Trace, Search, Refresh stylesheet, and Default stylesheet.

The main area displays a query result table titled "1 DESCRIBE <http://www.w3.org/2000/01/rdf-schema#Class>". The table has four columns: ?\_ast\_v\_0, ?\_ast\_p\_0, ?\_ast\_v\_1, and ?\_ast\_p\_1. The data rows list various RDF triples related to the class description.

?_ast_v_0	?_ast_p_0	?_ast_v_1	?_ast_p_1
		http://www.inria.fr/2007/09/11/humans.rdfs#Animal	http://www.w3.org/1999/02/22-rdf-syntax-ns#type
		http://www.inria.fr/2007/09/11/humans.rdfs#Male	http://www.w3.org/1999/02/22-rdf-syntax-ns#type
		http://www.inria.fr/2007/09/11/humans.rdfs#Female	http://www.w3.org/1999/02/22-rdf-syntax-ns#type
		http://www.inria.fr/2007/09/11/humans.rdfs#Man	http://www.w3.org/1999/02/22-rdf-syntax-ns#type
		http://www.inria.fr/2007/09/11/humans.rdfs#Person	http://www.w3.org/1999/02/22-rdf-syntax-ns#type
		http://www.inria.fr/2007/09/11/humans.rdfs#Lecturer	http://www.w3.org/1999/02/22-rdf-syntax-ns#type
		http://www.inria.fr/2007/09/11/humans.rdfs#Researcher	http://www.w3.org/1999/02/22-rdf-syntax-ns#type
		http://www.inria.fr/2007/09/11/humans.rdfs#Woman	http://www.w3.org/1999/02/22-rdf-syntax-ns#type

## 2. Write a query to find all the links subClassOf in the ontology.

The screenshot shows the CoReSE 3.2 interface with the title bar "CoReSE 3.2 - Wimmicks INRIA I3S - 2016-12-25". The menu bar includes File, Edit, Engine, Debug, Query, Template, Explain, and a help icon. Below the menu is a tab bar with System, Query1 (selected), Query2, and a plus sign. A toolbar below the tabs includes Query, Validate, to SPIN, to SPARQL, Prove, Trace, Search, Refresh stylesheet, and Default stylesheet.

The main area displays a query result table titled "1 select \* where {?x <http://www.w3.org/2000/01/rdf-schema#subClassOf> ?t} .". The table has two columns: ?x and ?t. The data rows list various subClassOf relationships.

?x	?t
http://www.inria.fr/2007/09/11/humans.rdfs#Male	http://www.inria.fr/2007/09/11/humans.rdfs#Animal
http://www.inria.fr/2007/09/11/humans.rdfs#Female	http://www.inria.fr/2007/09/11/humans.rdfs#Animal
http://www.inria.fr/2007/09/11/humans.rdfs#Man	http://www.inria.fr/2007/09/11/humans.rdfs#Male
http://www.inria.fr/2007/09/11/humans.rdfs#Person	http://www.inria.fr/2007/09/11/humans.rdfs#Person
http://www.inria.fr/2007/09/11/humans.rdfs#Lecturer	http://www.inria.fr/2007/09/11/humans.rdfs#Person
http://www.inria.fr/2007/09/11/humans.rdfs#Researcher	http://www.inria.fr/2007/09/11/humans.rdfs#Person
http://www.inria.fr/2007/09/11/humans.rdfs#Woman	http://www.inria.fr/2007/09/11/humans.rdfs#Female

## 3. Write a query to find the definitions and translations of "shoe size" (other labels and comments in different languages for the resource labeled "shoe size").

The screenshot shows the CoReSE 3.2 interface with the title bar "CoReSE 3.2 - Wimmicks INRIA I3S - 2016-12-25". The menu bar includes File, Edit, Engine, Debug, Query, Template, Explain, and a help icon. Below the menu is a tab bar with System, Query1 (selected), Query2, Query3, and a plus sign. A toolbar below the tabs includes Query, Validate, to SPIN, to SPARQL, Prove, Trace, Search, Refresh stylesheet, and Default stylesheet.

The main area displays a query result table titled "1 prefix h:<http://www.w3.org/2000/01/rdf-schema#>". The table has two columns: ?LabelComment and ?LabelComment. The data rows list various labels and comments for the shoe size resource.

?LabelComment	?LabelComment
"shoe size"@en	
"size"@en	
"pointure"@fr	
"inexpress in some way the approximate length of the shoes for a person.\n"@en	
"\ninitialle, exprimé en points, des chaussures d'une personne.\n"@fr	

4. Write a query to find the synonyms in French of the word 'personne' in French (other labels in the same language for the same resource/class/property). What are the answers?

The screenshot shows the Corese 3.2 interface with the title "Corese 3.2 - Wimmics INRIA I3S - 2016-12-25". The menu bar includes File, Edit, Engine, Debug, Query, Template, Explain, and a question mark icon. The tab bar shows "System", "Query1" (closed), "Query2" (closed), "Query3" (closed), "Query4" (selected), and a "+" button. Below the tabs are buttons for "Query", "Validate", "to SPIN", "to SPARQL", "Prove", "Trace", "Search", and two stylesheet buttons. The main area contains a query editor with the following code:

```

1 prefix h: <http://www.w3.org/2000/01/rdf-schema#>
2 prefix g: <http://www.inria.fr/2007/09/11/humans.rdfs#>
3 select ?Person where { g:Person h:label ?Person . filter(lang(?Person)='fr')} 
4

```

Below the query editor is a results table with tabs for Graph, XML, Table, and Validate. The Table tab is selected, showing a single row with the label "?Person". The table body contains four entries: "'homme"@fr", "'personne"@fr", "'Ãtre humain"@fr", and "'humain"@fr'.

5. Write a query to find the different meaning of the term "size" (disambiguation using the different comments attached to different resources/classes/properties having the label "size"). What are the answers?

The screenshot shows the Corese 3.2 interface with the title "Corese 3.2 - Wimmics INRIA I3S - 2016-12-25". The menu bar and tabs are identical to the previous screenshot. The main area contains a query editor with the following code:

```

1 prefix h: <http://www.w3.org/2000/01/rdf-schema#>
2 prefix g: <http://www.inria.fr/2007/09/11/humans.rdfs#>
3 select * where {
4   { ?x h:label "size"@en ; h:comment ?y}
5   UNION
6   { ?x h:label "size"@fr ; h:comment ?y}
7 }

```

Below the query editor is a results table with tabs for Graph, XML, Table, and Validate. The Table tab is selected, showing two columns: "?x" and "?y". There are six rows, each consisting of a URL from the "humans.rdfs" namespace followed by its English and French comments. The URLs and their comments are:

?x	?y
http://www.inria.fr/2007/09/11/humans.rdfs#shoewidth	"express in some way the approximate length of the shoes for a person.\n"@en
http://www.inria.fr/2007/09/11/humans.rdfs#shoewidth	"taille, exprimÃ©e en points, des chaussures d'une personne.\n"@fr
http://www.inria.fr/2007/09/11/humans.rdfs#shirtsize	"express in some way the approximate dimensions of the shirts of a person.\n"@en
http://www.inria.fr/2007/09/11/humans.rdfs#shirtsize	"dimensions approximatives des chemises portÃ©es par une personne.\n"@fr
http://www.inria.fr/2007/09/11/humans.rdfs#trouserssize	"express in some way the approximate dimensions of the trousers of a person.\n"@en
http://www.inria.fr/2007/09/11/humans.rdfs#trouserssize	"dimensions approximatives des pantalons portÃ©s par une personne.\n"@fr

## 6. Write a query to find the properties that use the class Person in their signatures?

Corese 3.2 - Wimmics INRIA I3S - 2016-12-25

File Edit Engine Debug Query Template Explain ?

System Query1 × Query2 × Query3 × Query4 × Query5 × Query6 × +

Query Validate to SPIN to SPARQL Prove Trace Search Refresh stylesheet Default stylesheet

```

1 prefix h: <http://www.w3.org/2000/01/rdf-schema#>
2 prefix g: <http://www.inria.fr/2007/09/11/humans.rdfs#>
3 select ?Prop where {
4   { ?Prop h:domain g:Person.}
5   UNION
6   { ?Prop h:range g:Person.}
7 }
```

Graph XML Table Validate

?Prop

http://www.inria.fr/2007/09/11/humans.rdfs#hasFriend  
http://www.inria.fr/2007/09/11/humans.rdfs#shoesize  
http://www.inria.fr/2007/09/11/humans.rdfs#shirtsize  
http://www.inria.fr/2007/09/11/humans.rdfs#trousersize  
http://www.inria.fr/2007/09/11/humans.rdfs#hasSpouse  
http://www.inria.fr/2007/09/11/humans.rdfs#hasFriend  
http://www.inria.fr/2007/09/11/humans.rdfs#hasSpouse

## 7. Rebuild the hierarchy of Classes (CONSTRUCT) considering only the classes in the humans.rdfs schema

Corese 3.2 - Wimmics INRIA I3S - 2016-12-25

File Edit Engine Debug Query Template Explain ?

System Query1 × Query2 × Query3 × Query4 × Query5 × Query6 × Query7 × +

Query Validate to SPIN to SPARQL Prove Trace Search Refresh stylesheet Default stylesheet

```

1 prefix h: <http://www.w3.org/2000/01/rdf-schema#>
2 prefix g: <http://www.inria.fr/2007/09/11/humans.rdfs#>
3 CONSTRUCT { ?s h:subClassOf ?o.}
4 WHERE { ?s h:subClassOf ?o.}
```

Graph XML Table Validate

```

graph TD
    g:Person -- "rdfs:subClassOf" --> g:Researcher
    g:Person -- "rdfs:subClassOf" --> g:Lecturer
    g:Person -- "rdfs:subClassOf" --> g:Animal
    g:Researcher -- "rdfs:subClassOf" --> g:Man
    g:Lecturer -- "rdfs:subClassOf" --> g:Male
    g:Male -- "rdfs:subClassOf" --> g:Man

```

## 8. To the previous CONSTRUCT add the signatures of the relations.

Corese 3.2 - Wimmicks INRIA I3S - 2016-12-25

File Edit Engine Debug Query Template Explain ?

System Query1 x Query2 x Query3 x Query4 x Query5 x Query6 x Query7 x Query8 x +

Query Validate to SPIN to SPARQL Prove Trace Search Refresh stylesheet Default stylesheet

```

1 prefix h: <http://www.w3.org/2000/01/rdf-schema#>
2 prefix g: <http://www.inria.fr/2007/09/11/humans.rdfs#>
3 CONSTRUCT { ?s h:subClassOf ?c. ?s h:domain ?d. ?s h:range ?r. }
4 WHERE {
5   { ?s h:subClassOf ?c. }
6   UNION
7   { ?s h:domain ?d. }
8   UNION
9   { ?s h:range ?r. }
10 }
```

Graph XML Table Validate

```

graph TD
1 graph[ ]
2 node[ ]
3 node[ ]
4 node[ ]
5 node[ ]
6 node[ ]
7 node[ ]
8 node[ ]
9 node[ ]
10 node[ ]
11 node[ ]
12 node[ ]
13 node[ ]
14 node[ ]
15 node[ ]
16 node[ ]
17 node[ ]
18 node[ ]
19 node[ ]
20 node[ ]
21 node[ ]
22 node[ ]
23 node[ ]
24 node[ ]
25 node[ ]
26 node[ ]
27 node[ ]
28 node[ ]
29 node[ ]
30 node[ ]
31 node[ ]
32 node[ ]
33 node[ ]
34 node[ ]
35 node[ ]
36 node[ ]
37 node[ ]
38 node[ ]
```

You now know how to query schemas on the semantic Web!

## Query data augmented by an RDFS schema

### Question 1

1. Reset the Corese engine and load only the annotations (.rdf)
2. Write a query to find the Persons.

**Query + result:**

The screenshot shows the Corese 3.2 interface with the title "Corese 3.2 - Wimmicks INRIA I3S - 2016-12-25". The menu bar includes File, Edit, Engine, Debug, Query, Template, and Explain. Below the menu is a toolbar with tabs for System, Query1, Query2, Query3, Query4, Query5, Query6, Query7, Query8, Query9, and a plus sign. The main area contains a query editor with the following code:

```
1 prefix g: <http://www.inria.fr/2007/09/11/humans.rdfs#>
2 select * where { ?x a g:Person }
3
```

Below the query editor is a results table with tabs for Graph, XML, Table, and Validate. The Table tab is selected, showing a list of person names under the column header "?x". The list includes:

?x
http://www.inria.fr/2007/09/11/humans.rdfs-instances#John
http://www.inria.fr/2007/09/11/humans.rdfs-instances#Mark
http://www.inria.fr/2007/09/11/humans.rdfs-instances#Eve
http://www.inria.fr/2007/09/11/humans.rdfs-instances#David
http://www.inria.fr/2007/09/11/humans.rdfs-instances#Laura
http://www.inria.fr/2007/09/11/humans.rdfs-instances#William
http://www.inria.fr/2007/09/11/humans.rdfs-instances#Mickael
http://www.inria.fr/2007/09/11/humans.rdfs-instances#Karl

**Result : Number of results before: 8 persons (7 + myself)**

3. Load the schema (.rdfs)
4. Rerun the query to find the Persons and explain the result.

Corese 3.2 - Wimmicks INRIA I3S - 2016-12-25

File Edit Engine Debug Query Template Explain ?

System Query1 x Query2 x Query3 x Query4 x Query5 x Query6 x Query7 x Query8 x Query9 x +

Query Validate to SPIN to SPARQL Prove Trace Search Refresh stylesheet Default stylesheet

```

1 prefix g: <http://www.inria.fr/2007/09/11/humans.rdfs#>
2 select * where { ?x a g:Person }
3

```

Graph	XML	Table	Validate
			?
http://www.inria.fr/2007/09/11/humans.rdfs-instances#Harry http://www.inria.fr/2007/09/11/humans.rdfs-instances#John http://www.inria.fr/2007/09/11/humans.rdfs-instances#Sophie http://www.inria.fr/2007/09/11/humans.rdfs-instances#Mark http://www.inria.fr/2007/09/11/humans.rdfs-instances#Eve http://www.inria.fr/2007/09/11/humans.rdfs-instances#David http://www.inria.fr/2007/09/11/humans.rdfs-instances#Alice http://www.inria.fr/2007/09/11/humans.rdfs-instances#Gaston http://www.inria.fr/2007/09/11/humans.rdfs-instances#Jack http://www.inria.fr/2007/09/11/humans.rdfs-instances#Flora http://www.inria.fr/2007/09/11/humans.rdfs-instances#Pierre http://www.inria.fr/2007/09/11/humans.rdfs-instances#Laura http://www.inria.fr/2007/09/11/humans.rdfs-instances#Jennifer http://www.inria.fr/2007/09/11/humans.rdfs-instances#Lucas http://www.inria.fr/2007/09/11/humans.rdfs-instances#Catherine http://www.inria.fr/2007/09/11/humans.rdfs-instances#William http://www.inria.fr/2007/09/11/humans.rdfs-instances#Mickael http://www.inria.fr/2007/09/11/humans.rdfs-instances#Karl			

New number of results after and your explanation: 18 persons. More persons due to the fact subclasses have been defined in schema to guarantee that Man & Woman are declared as Person

## Question 2

1. Write a query to find Males and their wives. How many answers do you get? Explain this result.

Corese 3.2 - Wimmicks INRIA I3S - 2016-12-25

File Edit Engine Debug Query Template Explain ?

Query3 x Query4 x Query5 x Query6 x Query7 x Query8 x Query9 x Query10 x +

System Query1 x Query2 x

Query Validate to SPIN to SPARQL Prove Trace Search Refresh stylesheet Default stylesheet

```

1 prefix g: <http://www.inria.fr/2007/09/11/humans.rdfs#>
2 prefix h: <http://www.w3.org/2000/01/rdf-schema#>
3 select * where { ?x a g:Male; g:hasSpouse ?y }

```

Graph	XML	Table	Validate
			?
?x http://www.inria.fr/2007/09/11/humans.rdfs-instances#Harry ?y http://www.inria.fr/2007/09/11/humans.rdfs-instances#Sophie			

Result : Number of results: Only one person considered as Male and has a wife

2. In the data declare that Lucas has to father Karl. Reset CoReSe, reload the ontology and the data, and then rerun the query to find Males and their wives. Explain the new result.

Action : Line added in RDF:

The screenshot shows the Wimmicks INRIA I3S interface. At the top, there is a menu bar with File, Edit, Engine, Debug, Query, Template, Explain, and a question mark icon. Below the menu is a tab bar with tabs for Query3, Query4, Query5, Query6, Query7, Query8, Query9, Query10, and Query11. The Query10 tab is currently selected. Below the tabs is a toolbar with buttons for Query, Validate, to SPIN, to SPARQL, Prove, Trace, Search, Refresh stylesheet, and Default stylesheet. The main area contains a query editor with the following code:

```

1 prefix g: <http://www.inria.fr/2007/09/11/humans.rdfs#>
2 prefix h: <http://www.w3.org/2000/01/rdf-schema#>
3 select * where { ?x a g:Male; g:hasSpouse ?y }

```

Below the query editor is a results table with four rows:

Graph	XML	Table	Validate

The table has two columns labeled "?x" and "?y". The first row shows Harry and Sophie. The second row shows Karl and Catherine.

Result : 2 lines appear – by declaring Karl as Father the system classed him as a Male (range effect) – this information was missing in the datafile but as he hasSpouse Catherine – that's why a new line is added

### Question 3

1. Write a query to find the Lecturers and their types. How many answers do you get? See how this typing is declared in the data and explain the result.

**Query + Results : 2 lecturers (Eve and Laura) and by the following query we obtain all their characteristics**

The screenshot shows the Wimmicks INRIA I3S interface. At the top, there is a menu bar with File, Edit, Engine, Debug, Query, Template, Explain, and a question mark icon. Below the menu is a tab bar with tabs for System, Query1, Query2, Query3, Query4, Query5, Query6, Query7, Query8, Query9, Query10, and Query11. The Query11 tab is currently selected. Below the tabs is a toolbar with buttons for Query, Validate, to SPIN, to SPARQL, Prove, Trace, Search, Refresh stylesheet, and Default stylesheet. The main area contains a query editor with the following code:

```

1 prefix g: <http://www.inria.fr/2007/09/11/humans.rdfs#>
2 prefix h: <http://www.w3.org/2000/01/rdf-schema#>
3 select * where { ?x a g:Lecturer. ?x a ?y }

```

Below the query editor is a results table with two columns labeled "?x" and "?y". The table has six rows:

Graph	XML	Table	Validate

The table has two columns labeled "?x" and "?y". The first row shows Eve and Person. The second row shows Eve and Lecturer. The third row shows Laura and Person. The fourth row shows Laura and Lecturer. The fifth row shows Laura and Researcher. The sixth row shows Laura and Animal. The seventh row shows Laura and Female.

2. Write a query to find common instances of the classes Person and Male. See how this typing is declared in the data and explain the presence of Jack.

Corese 3.2 - Wimmicks INRIA I3S - 2016-12-25

File Edit Engine Debug Query Template Explain ?

System Query1 × Query2 × Query3 × Query4 × Query5 × Query6 × Query7 × Query8 × Query9 × Query10 × Query11 ×

Query Validate to SPIN to SPARQL Prove Trace Search

```

1 prefix g: <http://www.inria.fr/2007/09/11/humans.rdfs#>
2 prefix h: <http://www.w3.org/2000/01/rdf-schema#>
3 select * where { ?x a g:Person, g:Male.}

```

Corese 3.2 - Wimmicks INRIA I3S - 2016-12-25

File Edit Engine Debug Query Template Explain ?

System Query1 × Query2 × Query3 × Query4 × Query5 × Query6 × Query7 × Query8 × Query9 × Query10 × Query11 × Query12 × +

Query Validate to SPIN to SPARQL Prove Trace Search Refresh stylesheet Default stylesheet

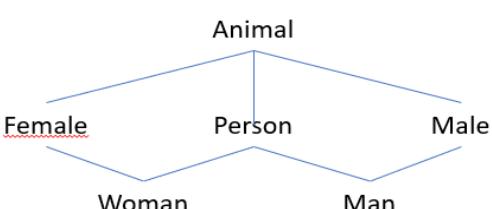
```

1 prefix g: <http://www.inria.fr/2007/09/11/humans.rdfs#>
2 prefix h: <http://www.w3.org/2000/01/rdf-schema#>
3 select * where { ?x a g:Person, g:Male. ?x a ?y}

```

?	?
http://www.inria.fr/2007/09/11/humans.rdfs#Harry	http://www.inria.fr/2007/09/11/humans.rdfs#Man
http://www.inria.fr/2007/09/11/humans.rdfs#John	http://www.inria.fr/2007/09/11/humans.rdfs#Person
http://www.inria.fr/2007/09/11/humans.rdfs#Gaston	http://www.inria.fr/2007/09/11/humans.rdfs#Person
http://www.inria.fr/2007/09/11/humans.rdfs#Jack	http://www.inria.fr/2007/09/11/humans.rdfs#Animal
http://www.inria.fr/2007/09/11/humans.rdfs#Pierre	http://www.inria.fr/2007/09/11/humans.rdfs#Male
http://www.inria.fr/2007/09/11/humans.rdfs#Lucas	http://www.inria.fr/2007/09/11/humans.rdfs#Man
http://www.inria.fr/2007/09/11/humans.rdfs#Karl	http://www.inria.fr/2007/09/11/humans.rdfs#Person

**Explanation : Jack is a Man and a Person so automatically he is considered as a Male – that's why he appears in the listing**



## Question 4

Write a query to find the hasAncestor relations. Explain the result after checking where this property is used in the data.

**Query+Result: The query below allows to find hasAncestor relations and property of this relation**

The screenshot shows the CoReSE 3.2 interface with the following details:

**Query Editor:**

```
1 prefix g: <http://www.inria.fr/2007/09/11/humans.rdfs#>
2 prefix h: <http://www.w3.org/2000/01/rdf-schema#>
3 select * where {
4   {?x g:hasAncestor ?y}
5   UNION
6   {?x ?p g:hasAncestor}
7 }
```

**Results Table:**

?x	?y	?p
http://www.inria.fr/2007/09/11/humans.rdfs-instances#John	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Sophie	
http://www.inria.fr/2007/09/11/humans.rdfs-instances#Mark	http://www.inria.fr/2007/09/11/humans.rdfs-instances#John	
http://www.inria.fr/2007/09/11/humans.rdfs-instances#Lucas	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Catherine	
http://www.inria.fr/2007/09/11/humans.rdfs-instances#Lucas	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Karl	
http://www.inria.fr/2007/09/11/humans.rdfs-instances#Catherine	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Laura	
http://www.inria.fr/2007/09/11/humans.rdfs-hasParent		http://www.w3.org/2000/01/rdf-schema#subPropertyOf

**Explanation : Each person who has a parent (Father &/or Mother) has a relation Ancestor with this parent**

## Question 5

1. Write a query to find the family cores (couples and their children) using a SELECT

The screenshot shows the CoReSE 3.2 interface with the following details:

**Query Editor:**

```
1 prefix g: <http://www.inria.fr/2007/09/11/humans.rdfs#>
2 prefix h: <http://www.w3.org/2000/01/rdf-schema#>
3 select * where {?x g:hasSpouse ?y ; g:hasChild ?z.}
```

**Results Table:**

?x	?y	?z
http://www.inria.fr/2007/09/11/humans.rdfs-instances#Harry	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Sophie	http://www.inria.fr/2007/09/11/humans.rdfs-instances#John
http://www.inria.fr/2007/09/11/humans.rdfs-instances#Flora	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Gaston	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Pierre

2. Modify it to display the result with a CONSTRUCT query

The screenshot shows the CoReSE 3.2 interface with the following details:

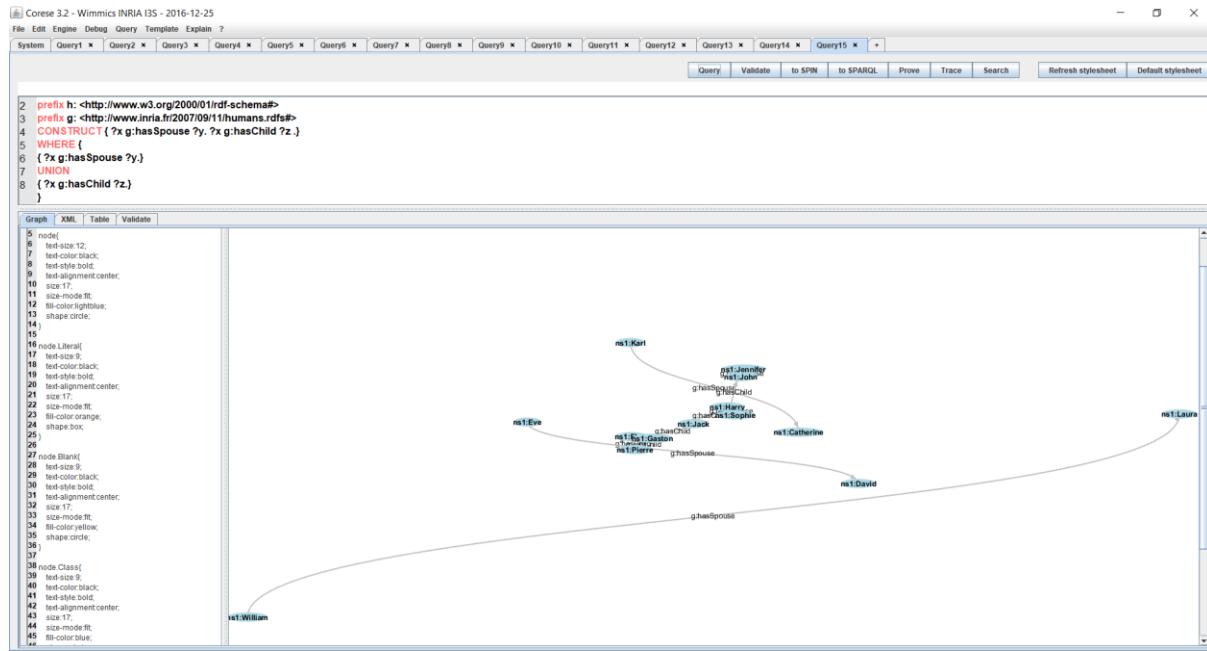
**Query Editor:**

```
2 prefix h: <http://www.w3.org/2000/01/rdf-schema#>
3 prefix g: <http://www.inria.fr/2007/09/11/humans.rdfs#>
4 CONSTRUCT { ?x g:hasSpouse ?y. ?x g:hasChild ?z. }
5 WHERE {
6   {?x g:hasSpouse ?y.}
7   UNION
8   {?x g:hasChild ?z.}
9 }
```

**Results Table:**

?x	?y	?z
http://www.inria.fr/2007/09/11/humans.rdfs-instances#Harry	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Sophie	
http://www.inria.fr/2007/09/11/humans.rdfs-instances#Eve	http://www.inria.fr/2007/09/11/humans.rdfs-instances#David	
http://www.inria.fr/2007/09/11/humans.rdfs-instances#Flora	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Gaston	
http://www.inria.fr/2007/09/11/humans.rdfs-instances#John	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Catherine	
http://www.inria.fr/2007/09/11/humans.rdfs-instances#Karl	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Calisto	
http://www.inria.fr/2007/09/11/humans.rdfs-instances#William	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Laura	
http://www.inria.fr/2007/09/11/humans.rdfs-instances#Jack		http://www.inria.fr/2007/09/11/humans.rdfs-instances#John
http://www.inria.fr/2007/09/11/humans.rdfs-instances#Calisto		http://www.inria.fr/2007/09/11/humans.rdfs-instances#Jack
http://www.inria.fr/2007/09/11/humans.rdfs-instances#Catherine		http://www.inria.fr/2007/09/11/humans.rdfs-instances#Piers
http://www.inria.fr/2007/09/11/humans.rdfs-instances#David		http://www.inria.fr/2007/09/11/humans.rdfs-instances#Piers
http://www.inria.fr/2007/09/11/humans.rdfs-instances#Laura		http://www.inria.fr/2007/09/11/humans.rdfs-instances#Piers

## Graphical view



## Question 6

- Declare the olderThan relationship in the schema to indicate between two people which is eldest and construct the arcs between peoples with a SPARQL query

### The following condition had been added to the schema

```

<rdf:Property rdf:ID="olderThan">
  <domain rdf:resource="#Person"/>
  <range rdf:resource="#Person"/>
</rdf:Property>

```

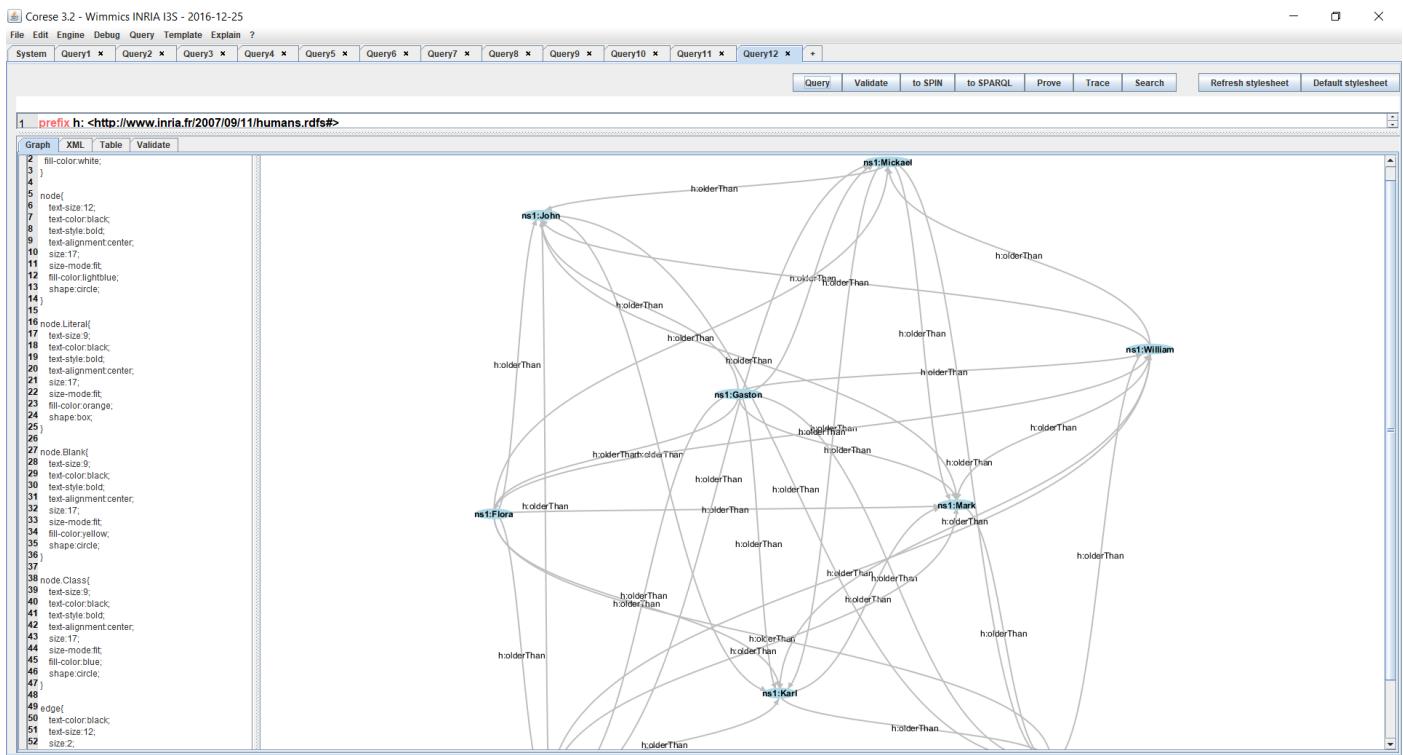
### Query + result

```

1 prefix h: <http://www.inria.fr/2007/09/11humans.rdfs#>
2 select *
3 where { ?x a h:Person ; h:age ?z1.
4 ?y a h:Person ; h:age ?z2.
5 filter (?z1 > ?z2)
6 }
7 
```

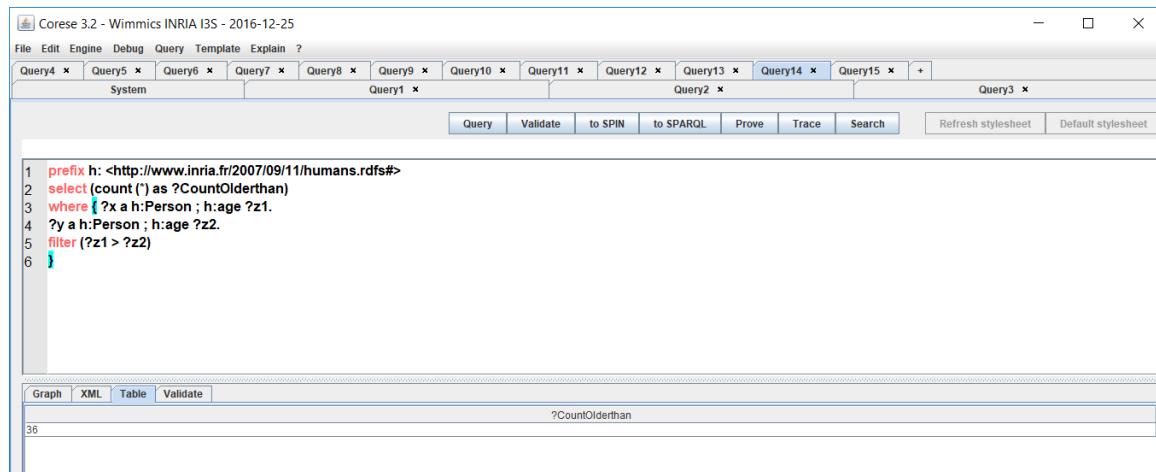
7x	7z1	7z2	
http://www.inria.fr/2007/09/11humans.rdf#instances#John	37	http://www.inria.fr/2007/09/11humans.rdf#instances#Mark	14
http://www.inria.fr/2007/09/11humans.rdf#instances#John	37	http://www.inria.fr/2007/09/11humans.rdf#instances#Lucas	12
http://www.inria.fr/2007/09/11humans.rdf#instances#John	37	http://www.inria.fr/2007/09/11humans.rdf#instances#Carl	36
http://www.inria.fr/2007/09/11humans.rdf#instances#Mark	14	http://www.inria.fr/2007/09/11humans.rdf#instances#Lucas	12
http://www.inria.fr/2007/09/11humans.rdf#instances#John	102	http://www.inria.fr/2007/09/11humans.rdf#instances#Carl	37
http://www.inria.fr/2007/09/11humans.rdf#instances#Gaston	102	http://www.inria.fr/2007/09/11humans.rdf#instances#Mark	14
http://www.inria.fr/2007/09/11humans.rdf#instances#Gaston	102	http://www.inria.fr/2007/09/11humans.rdf#instances#Fora	95
http://www.inria.fr/2007/09/11humans.rdf#instances#Gaston	102	http://www.inria.fr/2007/09/11humans.rdf#instances#Fora	71
http://www.inria.fr/2007/09/11humans.rdf#instances#Gaston	102	http://www.inria.fr/2007/09/11humans.rdf#instances#Fora	12
http://www.inria.fr/2007/09/11humans.rdf#instances#Gaston	102	http://www.inria.fr/2007/09/11humans.rdf#instances#Fora	36
http://www.inria.fr/2007/09/11humans.rdf#instances#Gaston	102	http://www.inria.fr/2007/09/11humans.rdf#instances#Fora	42
http://www.inria.fr/2007/09/11humans.rdf#instances#Gaston	102	http://www.inria.fr/2007/09/11humans.rdf#instances#Mickael	40
http://www.inria.fr/2007/09/11humans.rdf#instances#Fora	95	http://www.inria.fr/2007/09/11humans.rdf#instances#Fora	37
http://www.inria.fr/2007/09/11humans.rdf#instances#Fora	95	http://www.inria.fr/2007/09/11humans.rdf#instances#Mark	14
http://www.inria.fr/2007/09/11humans.rdf#instances#Fora	95	http://www.inria.fr/2007/09/11humans.rdf#instances#Pierre	71
http://www.inria.fr/2007/09/11humans.rdf#instances#Fora	95	http://www.inria.fr/2007/09/11humans.rdf#instances#Lucas	12
http://www.inria.fr/2007/09/11humans.rdf#instances#Fora	95	http://www.inria.fr/2007/09/11humans.rdf#instances#Fora	36
http://www.inria.fr/2007/09/11humans.rdf#instances#Fora	95	http://www.inria.fr/2007/09/11humans.rdf#instances#Fora	42
http://www.inria.fr/2007/09/11humans.rdf#instances#Fora	95	http://www.inria.fr/2007/09/11humans.rdf#instances#Mickael	40
http://www.inria.fr/2007/09/11humans.rdf#instances#Fora	95	http://www.inria.fr/2007/09/11humans.rdf#instances#John	37
http://www.inria.fr/2007/09/11humans.rdf#instances#Fora	71	http://www.inria.fr/2007/09/11humans.rdf#instances#John	14
http://www.inria.fr/2007/09/11humans.rdf#instances#Fora	71	http://www.inria.fr/2007/09/11humans.rdf#instances#John	12
http://www.inria.fr/2007/09/11humans.rdf#instances#Fora	71	http://www.inria.fr/2007/09/11humans.rdf#instances#John	36
http://www.inria.fr/2007/09/11humans.rdf#instances#Fora	71	http://www.inria.fr/2007/09/11humans.rdf#instances#Mickael	40
http://www.inria.fr/2007/09/11humans.rdf#instances#Fora	71	http://www.inria.fr/2007/09/11humans.rdf#instances#John	40
http://www.inria.fr/2007/09/11humans.rdf#instances#Fora	71	http://www.inria.fr/2007/09/11humans.rdf#instances#John	37
http://www.inria.fr/2007/09/11humans.rdf#instances#Fora	71	http://www.inria.fr/2007/09/11humans.rdf#instances#John	14
http://www.inria.fr/2007/09/11humans.rdf#instances#Fora	35	http://www.inria.fr/2007/09/11humans.rdf#instances#John	12
http://www.inria.fr/2007/09/11humans.rdf#instances#Karl	36	http://www.inria.fr/2007/09/11humans.rdf#instances#John	37
http://www.inria.fr/2007/09/11humans.rdf#instances#William	42	http://www.inria.fr/2007/09/11humans.rdf#instances#John	14
http://www.inria.fr/2007/09/11humans.rdf#instances#William	42	http://www.inria.fr/2007/09/11humans.rdf#instances#John	12
http://www.inria.fr/2007/09/11humans.rdf#instances#William	42	http://www.inria.fr/2007/09/11humans.rdf#instances#John	36
http://www.inria.fr/2007/09/11humans.rdf#instances#William	42	http://www.inria.fr/2007/09/11humans.rdf#instances#Mickael	40
http://www.inria.fr/2007/09/11humans.rdf#instances#William	42	http://www.inria.fr/2007/09/11humans.rdf#instances#John	37
http://www.inria.fr/2007/09/11humans.rdf#instances#William	42	http://www.inria.fr/2007/09/11humans.rdf#instances#John	14
http://www.inria.fr/2007/09/11humans.rdf#instances#William	42	http://www.inria.fr/2007/09/11humans.rdf#instances#Lucas	12
http://www.inria.fr/2007/09/11humans.rdf#instances#William	42	http://www.inria.fr/2007/09/11humans.rdf#instances#Lucas	36
http://www.inria.fr/2007/09/11humans.rdf#instances#William	42	http://www.inria.fr/2007/09/11humans.rdf#instances#Mickael	40
http://www.inria.fr/2007/09/11humans.rdf#instances#William	42	http://www.inria.fr/2007/09/11humans.rdf#instances#John	37
http://www.inria.fr/2007/09/11humans.rdf#instances#William	40	http://www.inria.fr/2007/09/11humans.rdf#instances#John	36

## Graphical view

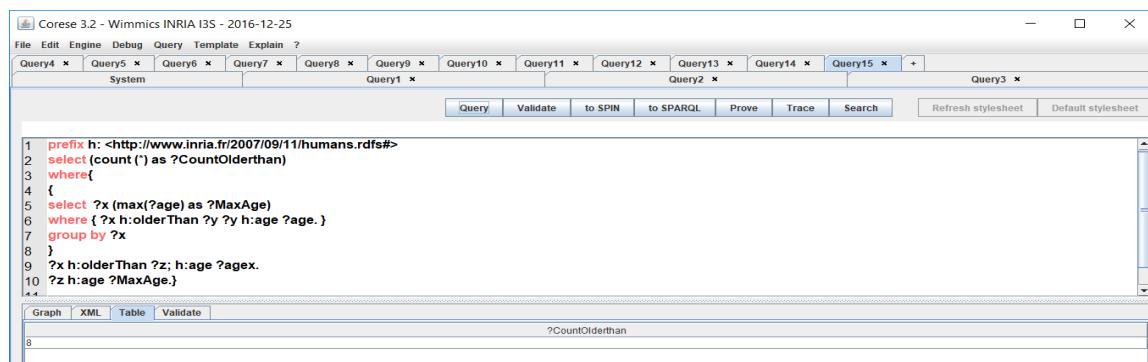


- Find a query that generates only the minimum number of link without redundancy with olderThan transitivity.

**Query + Result – preliminary result – the number of olderThan relation is 36**



Minimum number of link (n=8) could be obtained by the following query :



## Question 7

Write a query to find for John the properties which label contains the string "size" and the value of these properties.

The screenshot shows the Corese 3.2 interface with the title "Corese 3.2 - Wimmics INRIA I3S - 2016-12-25". The top menu includes File, Edit, Engine, Debug, Query, Template, Explain, and a toolbar with Query, Validate, to SPIN, to SPARQL, Prove, Trace, Search, Refresh stylesheet, and Default stylesheet. A tab bar at the top has tabs for Query7, Query8, Query9, Query10, Query11, Query12, Query13, Query14, Query15, Query16, Query17, and Query18. Below the tabs is a sub-tab bar with System, Query1, Query2, Query3, Query4, Query5, and Query6. The main area contains the following SPARQL query:

```
1 prefix g: <http://www.inria.fr/2007/09/11/humans.rdfs#>
2 prefix h: <http://www.w3.org/2000/01/rdf-schema#>
3 select distinct ?y ?p where{<http://www.inria.fr/2007/09/11/humans.rdfs#John> ?p ?y. ?p h:label "size"@en ; h:comment ?z}
4
5
```

Below the query results table:

Graph	XML	Table	Validate								
		<table border="1"><thead><tr><th>?y</th><th>?p</th></tr></thead><tbody><tr><td>12</td><td>http://www.inria.fr/2007/09/11/humans.rdfs#shirtsize</td></tr><tr><td>14</td><td>http://www.inria.fr/2007/09/11/humans.rdfs#shoessize</td></tr><tr><td>44</td><td>http://www.inria.fr/2007/09/11/humans.rdfs#trouserssize</td></tr></tbody></table>	?y	?p	12	http://www.inria.fr/2007/09/11/humans.rdfs#shirtsize	14	http://www.inria.fr/2007/09/11/humans.rdfs#shoessize	44	http://www.inria.fr/2007/09/11/humans.rdfs#trouserssize	
?y	?p										
12	http://www.inria.fr/2007/09/11/humans.rdfs#shirtsize										
14	http://www.inria.fr/2007/09/11/humans.rdfs#shoessize										
44	http://www.inria.fr/2007/09/11/humans.rdfs#trouserssize										

## Question 8

Use the ontology to document your answers in natural language: write a query to find the types and properties of Laura in French.

The screenshot shows the Corese 3.2 interface with the title "Corese 3.2 - Wimmics INRIA I3S - 2016-12-25". The top menu includes File, Edit, Engine, Debug, Query, Template, Explain, and a toolbar with Query, Validate, to SPIN, to SPARQL, Prove, Trace, Search, Refresh stylesheet, and Default stylesheet. A tab bar at the top has tabs for Query8, Query9, Query10, Query11, Query12, Query13, Query14, Query15, Query16, Query17, Query18, Query19, and Query7. Below the tabs is a sub-tab bar with System, Query1, Query2, Query3, Query4, Query5, Query6, and Query7. The main area contains the following SPARQL query:

```
1 prefix g: <http://www.inria.fr/2007/09/11/humans.rdfs#>
2 prefix h: <http://www.w3.org/2000/01/rdf-schema#>
3 select ?y ?z where{
4 {<http://www.inria.fr/2007/09/11/humans.rdfs#Laura> ?p ?y. ?p h:label ?z.filter(lang(?z)='fr')}
5 UNION
6 {<http://www.inria.fr/2007/09/11/humans.rdfs#Laura> a ?y. ?y h:label ?z.filter(lang(?z)='fr')}
7 }
8
```

Below the query results table:

Graph	XML	Table	Validate																								
		<table border="1"><thead><tr><th>?y</th><th>?z</th></tr></thead><tbody><tr><td>http://www.inria.fr/2007/09/11/humans.rdfs#Alice</td><td>"a pour ami"@fr</td></tr><tr><td>Laura</td><td>"nom"@fr</td></tr><tr><td>http://www.inria.fr/2007/09/11/humans.rdfs#Person</td><td>"homme"@fr</td></tr><tr><td>http://www.inria.fr/2007/09/11/humans.rdfs#Person</td><td>"personne"@fr</td></tr><tr><td>http://www.inria.fr/2007/09/11/humans.rdfs#Person</td><td>"Aêtre humain"@fr</td></tr><tr><td>http://www.inria.fr/2007/09/11/humans.rdfs#Person</td><td>"humain"@fr</td></tr><tr><td>http://www.inria.fr/2007/09/11/humans.rdfs#Lecturer</td><td>"professeur"@fr</td></tr><tr><td>http://www.inria.fr/2007/09/11/humans.rdfs#Researcher</td><td>"chercheur"@fr</td></tr><tr><td>http://www.inria.fr/2007/09/11/humans.rdfs#Researcher</td><td>"scientifique"@fr</td></tr><tr><td>http://www.inria.fr/2007/09/11/humans.rdfs#Animal</td><td>"animal"@fr</td></tr><tr><td>http://www.inria.fr/2007/09/11/humans.rdfs#Female</td><td>"femelle"@fr</td></tr></tbody></table>	?y	?z	http://www.inria.fr/2007/09/11/humans.rdfs#Alice	"a pour ami"@fr	Laura	"nom"@fr	http://www.inria.fr/2007/09/11/humans.rdfs#Person	"homme"@fr	http://www.inria.fr/2007/09/11/humans.rdfs#Person	"personne"@fr	http://www.inria.fr/2007/09/11/humans.rdfs#Person	"Aêtre humain"@fr	http://www.inria.fr/2007/09/11/humans.rdfs#Person	"humain"@fr	http://www.inria.fr/2007/09/11/humans.rdfs#Lecturer	"professeur"@fr	http://www.inria.fr/2007/09/11/humans.rdfs#Researcher	"chercheur"@fr	http://www.inria.fr/2007/09/11/humans.rdfs#Researcher	"scientifique"@fr	http://www.inria.fr/2007/09/11/humans.rdfs#Animal	"animal"@fr	http://www.inria.fr/2007/09/11/humans.rdfs#Female	"femelle"@fr	
?y	?z																										
http://www.inria.fr/2007/09/11/humans.rdfs#Alice	"a pour ami"@fr																										
Laura	"nom"@fr																										
http://www.inria.fr/2007/09/11/humans.rdfs#Person	"homme"@fr																										
http://www.inria.fr/2007/09/11/humans.rdfs#Person	"personne"@fr																										
http://www.inria.fr/2007/09/11/humans.rdfs#Person	"Aêtre humain"@fr																										
http://www.inria.fr/2007/09/11/humans.rdfs#Person	"humain"@fr																										
http://www.inria.fr/2007/09/11/humans.rdfs#Lecturer	"professeur"@fr																										
http://www.inria.fr/2007/09/11/humans.rdfs#Researcher	"chercheur"@fr																										
http://www.inria.fr/2007/09/11/humans.rdfs#Researcher	"scientifique"@fr																										
http://www.inria.fr/2007/09/11/humans.rdfs#Animal	"animal"@fr																										
http://www.inria.fr/2007/09/11/humans.rdfs#Female	"femelle"@fr																										

## Day 04: questions from the course on OWL.

### Q5.1 What can we deduce?

```
ex:Man owl:intersectionOf (ex:Male ex:Human) .  
ex:Woman owl:intersectionOf (ex:Female ex:Human) .  
ex:Human owl:unionOf (ex:Man ex:Woman) .  
ex:Jane a ex:Human .  
ex:John a ex:Man .  
ex:James a ex:Male .  
ex:Jane a ex:Female .
```

Answer :

**John is a Man so by union is becoming Male and Human**

**Jane is Female and Human so by union she is becoming a Woman**

### Q5.2 What are we defining and inferring?

```
@prefix ex: <http://example.org/>  
  
ex:GrandFather rdfs:subClassOf [  
    a owl:Class ;  
    owl:intersectionOf ( ex:Parent ex:Man )  
] .  
  
ex:Jim a ex:Man, ex:Parent .  
ex:Jack a ex:GrandFather .
```

Answer :

**Inheritance is only one sense so Jim is not a GrandFather**

**Jack is a GrandFather so by the intersection of he is also considered as Parent and Man**

### Q5.3 What can we deduce?

```
ex:hasSpouse a owl:SymmetricProperty .  
ex:hasChild owl:inverseOf ex:hasParent .  
ex:hasParent rdfs:subPropertyOf ex:hasAncestor .  
ex:hasAncestor a owl:TransitiveProperty .  
ex:Jim ex:hasChild ex:Jane .  
ex:Jane ex:hasSpouse ex:John .  
ex:Jim ex:hasParent ex:James .
```

Answer :

**Jane has parent Jim**

**John has spouse Jane**

**Jim has ancestor James**

**So Jane has ancestor James**

#### Q5.4 What can we deduce?

```
ex:Human owl:equivalentClass foaf:Person .  
foaf:name owl:equivalentProperty ex:name .  
ex:JimmyPage a ex:Human ;  
    owl:sameAs ex:JamesPatrickPage .  
ex:JimmyHendrix owl:differentFrom ex:JimmyPage .
```

Answer :

**JimmyPage is a human (equivalent to Person) and considered as JamesPatrickperson**

**BUT JimmyHendrix is different from Jimmypepage**

#### Q5.5 What are we defining and inferring?

```
ex:UnluckyPerson owl:equivalentClass [  
    a owl:Class ;  
    owl:intersectionOf (  
        ex:Person  
        [ a owl:Class ; owl:complementOf ex:Lucky ]  
    )  
].
```

Answer :

**Unlucky person class is equivalent of intersection Person and in complement of Lucky**

#### Q5.6 What can we deduce?

```
ex:Human rdfs:subClassOf  
[ a owl:Restriction ;  
    owl:onProperty ex:hasParent ;  
    owl:allValuesFrom ex:Human ] .  
ex:John a ex:Human .  
ex:John ex:hasParent ex:James, ex:Jane.
```

Answer :

**Human is a subclass which has restrictions, property “hasParent” and inheritance of all values from human. John is a human and has parent James and Jane so James and Jane become Human automatically**

### Q5.7 What are we defining and inferring?

```
@prefix ex: <http://example.org/>
ex:PersonList rdfs:subClassOf
[
  a owl:Restriction ;
  owl:onProperty rdf:first ;
  owl:allValuesFrom ex:Person
] , [
  a owl:Restriction ;
  owl:onProperty rdf:rest ;
  owl:allValuesFrom ex:PersonList
] .  
  
ex:value rdfs:range ex:PersonList .
ex:abc ex:value (ex:a ex:b ex:c) .
```

<ANSWER HERE/>

Subclass of 2 classes

- Property1 with first element must be a person
- Property2

Ex:a is person , then ex:b is a person then ex:c is a person

### Q5.8 What are we defining and inferring?

```
@prefix ex: <http://example.org/>
ex:Human rdfs:subClassOf [
  owl:intersectionOf (
    [
      a owl:Restriction ;
      owl:onProperty ex:hasBiologicalFather ;
      owl:maxCardinality 1
    ] , [
      a owl:Restriction ;
      owl:onProperty ex:hasBiologicalMother ;
      owl:maxCardinality 1
    ]
  )
] .
ex:John a ex:Human ;
       ex:hasBiologicalFather ex:James , ex:Jimmy .
```

<ANSWER HERE/>

Human intersection of 2 classes

The only way it works ex:James and ex:jimmy must be the same person – incoherence statement

### Q5.9 What are we defining and inferring?

```
@prefix ex: <http://example.org/>
ex:Wealthy a owl:Class ;
    owl:equivalentClass [
        a owl:Class ; owl:intersectionOf (
            [ a owl:Restriction ;
                owl:onProperty ex:hasChild ;
                owl:allValuesFrom ex:Wealthy
            ] ,
            [ a owl:Restriction ;
                owl:onProperty ex:hasChild ;
                owl:someValuesFrom ex:Wealthy
            ]
        ) ] .
ex:John a ex:Wealthy ; ex:hasChild ex:Jim .
```

Answer :

**Wealthy is a class equivalent to an intersection of 2 restrictions**

- All your children must be wealthy
- You must have at least one children wealthy to be wealthy

**Jonh is Wealthy and has a child so Jim is wealthy too**

---

# Day 04: Answers to the practical session on OWL.

## Software requirements

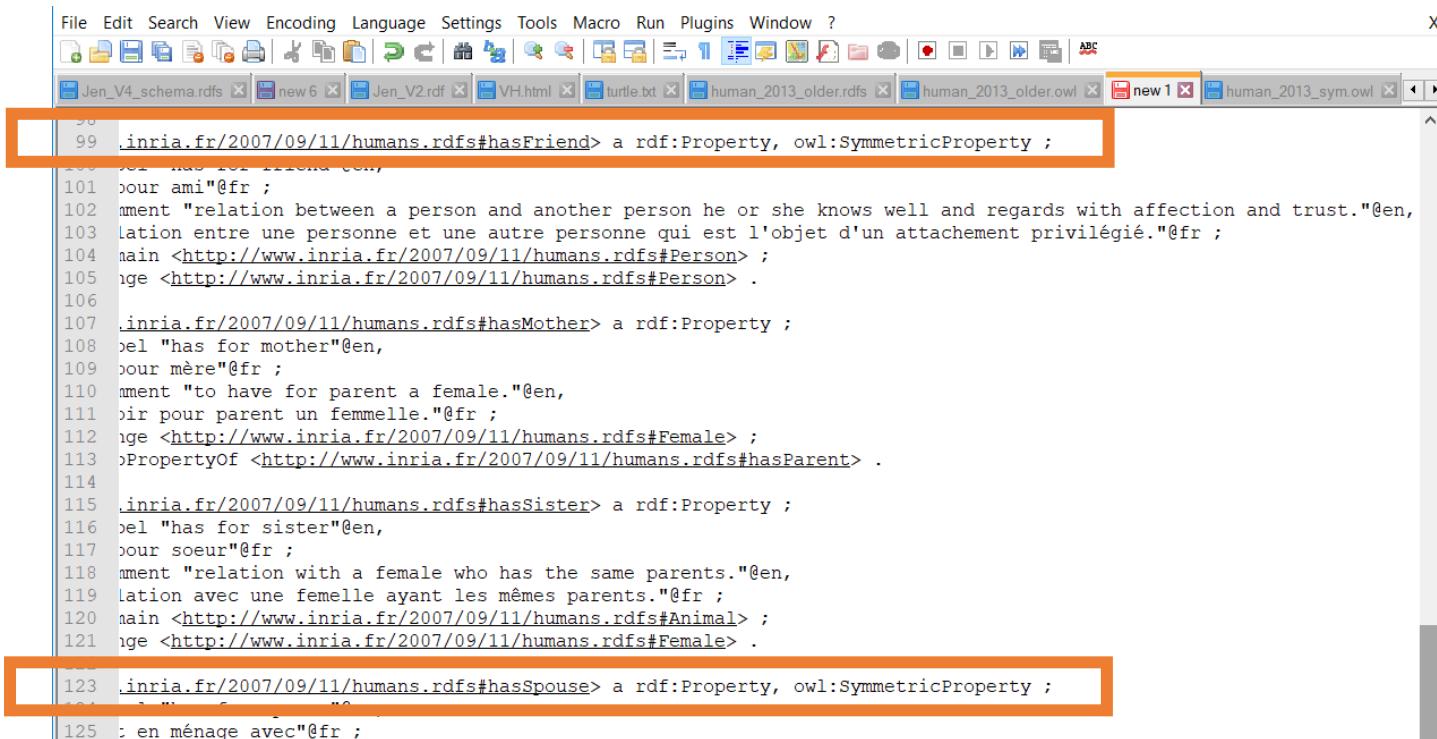
- The RDF XML online validation service by W3C: <https://www.w3.org/RDF/Validator/>
- The RDF online translator: <http://rdf-translator.appspot.com/>
- The SPARQL Corese engine: <http://wimmics.inria.fr/corese>

## A, Query data augmented by an OWL schema

Make a copy of the human.rdfs file, name it humans.owl and use it for the rest of the session. For each of the following statements, specify a SPARQL query that shows that the difference before and after running the OWL inferences: you will find that answers to these queries are different depending on whether you load the ontology humans.rdfs or the humans.owl you modified.

1. Declare that hasSpouse is a symmetrical property and do the same for and hasFriend .

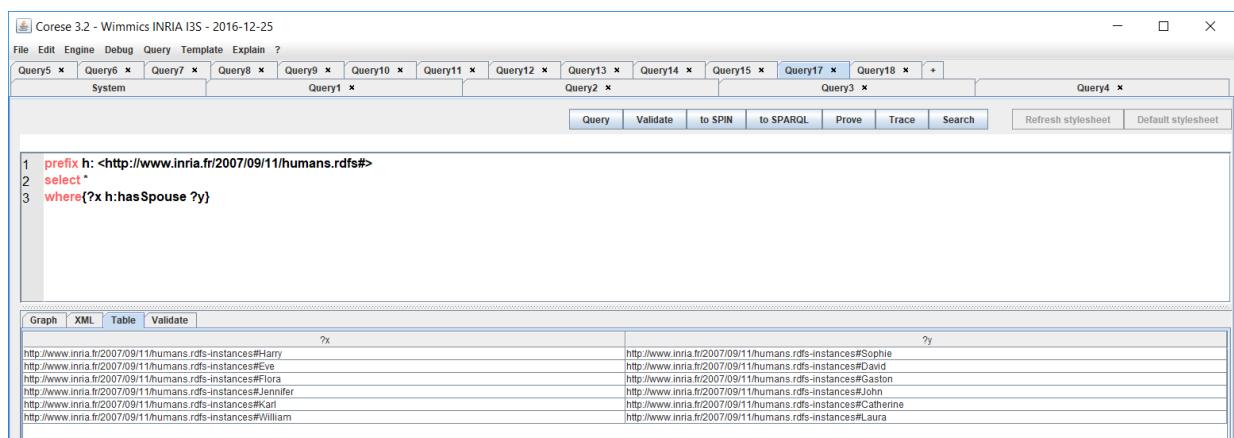
### Code added to the schema:



```
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
Jen_V4_schema.rdfs new 6 Jen_V2.rdf VH.html turtle.txt human_2013_older.rdfs human_2013_older.owl new 1 human_2013_sym.owl

99 http://inria.fr/2007/09/11/humans.rdfs#hasFriend a rdf:Property, owl:SymmetricProperty ;
100 . pour ami@fr ;
101 . relation entre une personne et une autre personne qui est l'objet d'un attachement privilégié.@en ;
102 . enain <http://www.inria.fr/2007/09/11/humans.rdfs#Person> ;
103 . age <http://www.inria.fr/2007/09/11/humans.rdfs#Person> .
104
105
106
107 http://inria.fr/2007/09/11/humans.rdfs#hasMother a rdf:Property ;
108 . sel "has for mother"@en,
109 . pour mère@fr ;
110 . ément "to have for parent a female."@en,
111 . sir pour parent un femelle."@fr ;
112 . age <http://www.inria.fr/2007/09/11/humans.rdfs#Female> ;
113 . >PropertyOf <http://www.inria.fr/2007/09/11/humans.rdfs#hasParent> .
114
115
116 http://inria.fr/2007/09/11/humans.rdfs#hasSister a rdf:Property ;
117 . sel "has for sister"@en,
118 . pour soeur@fr ;
119 . ément "relation with a female who has the same parents."@en,
120 . lation avec une femelle ayant les mêmes parents."@fr ;
121 . enain <http://www.inria.fr/2007/09/11/humans.rdfs#Animal> ;
122 . age <http://www.inria.fr/2007/09/11/humans.rdfs#Female> .
123
124
125 http://inria.fr/2007/09/11/humans.rdfs#hasSpouse a rdf:Property, owl:SymmetricProperty ;
126 . l. "en ménage avec"@fr ;
127 . en ménage avec@fr ;
```

### Query with humans.rdfs – hasSpouse – result 6



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File Engine Debug Query Template Explain ?

Query5 × Query6 × Query7 × Query8 × Query9 × Query10 × Query11 × Query12 × Query13 × Query14 × Query15 × Query17 × Query18 × +

System      Query1 ×      Query2 ×      Query3 ×      Query4 ×

Query Validate to SPIN to SPARQL Prove Trace Search Refresh stylesheet Default stylesheet

1 prefix h:<<http://www.inria.fr/2007/09/11/humans.rdfs#>>
2 select \*
3 where{?x h:hasSpouse ?y}

Graph XML Table Validate

?x	?y
<a href="http://www.inria.fr/2007/09/11/humans.rdfs-instances#Harry">http://www.inria.fr/2007/09/11/humans.rdfs-instances#Harry</a>	<a href="http://www.inria.fr/2007/09/11/humans.rdfs-instances#Sophie">http://www.inria.fr/2007/09/11/humans.rdfs-instances#Sophie</a>
<a href="http://www.inria.fr/2007/09/11/humans.rdfs-instances#Eve">http://www.inria.fr/2007/09/11/humans.rdfs-instances#Eve</a>	<a href="http://www.inria.fr/2007/09/11/humans.rdfs-instances#David">http://www.inria.fr/2007/09/11/humans.rdfs-instances#David</a>
<a href="http://www.inria.fr/2007/09/11/humans.rdfs-instances#Flora">http://www.inria.fr/2007/09/11/humans.rdfs-instances#Flora</a>	<a href="http://www.inria.fr/2007/09/11/humans.rdfs-instances#Gaston">http://www.inria.fr/2007/09/11/humans.rdfs-instances#Gaston</a>
<a href="http://www.inria.fr/2007/09/11/humans.rdfs-instances#Jennifer">http://www.inria.fr/2007/09/11/humans.rdfs-instances#Jennifer</a>	<a href="http://www.inria.fr/2007/09/11/humans.rdfs-instances#John">http://www.inria.fr/2007/09/11/humans.rdfs-instances#John</a>
<a href="http://www.inria.fr/2007/09/11/humans.rdfs-instances#Karl">http://www.inria.fr/2007/09/11/humans.rdfs-instances#Karl</a>	<a href="http://www.inria.fr/2007/09/11/humans.rdfs-instances#Catherine">http://www.inria.fr/2007/09/11/humans.rdfs-instances#Catherine</a>
<a href="http://www.inria.fr/2007/09/11/humans.rdfs-instances#William">http://www.inria.fr/2007/09/11/humans.rdfs-instances#William</a>	<a href="http://www.inria.fr/2007/09/11/humans.rdfs-instances#Laura">http://www.inria.fr/2007/09/11/humans.rdfs-instances#Laura</a>

## Query with humans.owl – hasSpouse – result 12 (instead of 6 previously)

CoReSe 3.2 - Wimmicks INRIA I3S - 2016-12-25

File Edit Engine Debug Query Template Explain ?

Query5 × Query6 × Query7 × Query8 × Query9 × Query10 × Query11 × Query12 × Query13 × Query14 × Query15 × Query17 × Query18 × +  
System      Query1 ×      Query2 ×      Query3 ×      Query4 ×

Query Validate to SPIN to SPARQL Prove Trace Search Refresh stylesheet Default stylesheet

```
1 prefix h: <http://www.inria.fr/2007/09/11/humans.rdfs#>
2 prefix o: <http://www.inria.fr/2007/09/11/humans.rdfs#>
3 select *
4 where {?x h:hasSpouse ?y}
```

Graph	XML	Table	Validate
?	?		
http://www.inria.fr/2007/09/11/humans.rdfs-instances#Harry http://www.inria.fr/2007/09/11/humans.rdfs-instances#John http://www.inria.fr/2007/09/11/humans.rdfs-instances#Sophie http://www.inria.fr/2007/09/11/humans.rdfs-instances#Eve http://www.inria.fr/2007/09/11/humans.rdfs-instances#David http://www.inria.fr/2007/09/11/humans.rdfs-instances#Gaston http://www.inria.fr/2007/09/11/humans.rdfs-instances#Flora http://www.inria.fr/2007/09/11/humans.rdfs-instances#Laura http://www.inria.fr/2007/09/11/humans.rdfs-instances#Jennifer http://www.inria.fr/2007/09/11/humans.rdfs-instances#Karl http://www.inria.fr/2007/09/11/humans.rdfs-instances#Catherine http://www.inria.fr/2007/09/11/humans.rdfs-instances#William	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Sophie http://www.inria.fr/2007/09/11/humans.rdfs-instances#Jennifer http://www.inria.fr/2007/09/11/humans.rdfs-instances#Harry http://www.inria.fr/2007/09/11/humans.rdfs-instances#David http://www.inria.fr/2007/09/11/humans.rdfs-instances#Eve http://www.inria.fr/2007/09/11/humans.rdfs-instances#Gaston http://www.inria.fr/2007/09/11/humans.rdfs-instances#Flora http://www.inria.fr/2007/09/11/humans.rdfs-instances#Laura http://www.inria.fr/2007/09/11/humans.rdfs-instances#William http://www.inria.fr/2007/09/11/humans.rdfs-instances#John http://www.inria.fr/2007/09/11/humans.rdfs-instances#Karl http://www.inria.fr/2007/09/11/humans.rdfs-instances#Catherine http://www.inria.fr/2007/09/11/humans.rdfs-instances#Laura		

## Query with humans.rdfs – hasfriend – result : 6

CoReSe 3.2 - Wimmicks INRIA I3S - 2016-12-25

File Edit Engine Debug Query Template Explain ?

Query5 × Query6 × Query7 × Query8 × Query9 × Query10 × Query11 × Query12 × Query13 × Query14 × Query15 × Query17 × Query18 × +  
System      Query1 ×      Query2 ×      Query3 ×      Query4 ×

Query Validate to SPIN to SPARQL Prove Trace Search Refresh stylesheet Default stylesheet

```
1 prefix h: <http://www.inria.fr/2007/09/11/humans.rdfs#>
2 select *
3 where {?x h:hasFriend ?y}
```

Graph	XML	Table	Validate
?	?		
http://www.inria.fr/2007/09/11/humans.rdfs-instances#Eve http://www.inria.fr/2007/09/11/humans.rdfs-instances#David http://www.inria.fr/2007/09/11/humans.rdfs-instances#Alice http://www.inria.fr/2007/09/11/humans.rdfs-instances#Jack http://www.inria.fr/2007/09/11/humans.rdfs-instances#Laura http://www.inria.fr/2007/09/11/humans.rdfs-instances#Karl	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Alice http://www.inria.fr/2007/09/11/humans.rdfs-instances#Gaston http://www.inria.fr/2007/09/11/humans.rdfs-instances#John http://www.inria.fr/2007/09/11/humans.rdfs-instances#Alice http://www.inria.fr/2007/09/11/humans.rdfs-instances#Alice http://www.inria.fr/2007/09/11/humans.rdfs-instances#Sophie		

## Query with humans.owl – hasfriend – result : 12 (instead of 6 previously)

CoReSe 3.2 - Wimmicks INRIA I3S - 2016-12-25

File Edit Engine Debug Query Template Explain ?

Query5 × Query6 × Query7 × Query8 × Query9 × Query10 × Query11 × Query12 × Query13 × Query14 × Query15 × Query17 × Query18 × +  
System      Query1 ×      Query2 ×      Query3 ×      Query4 ×

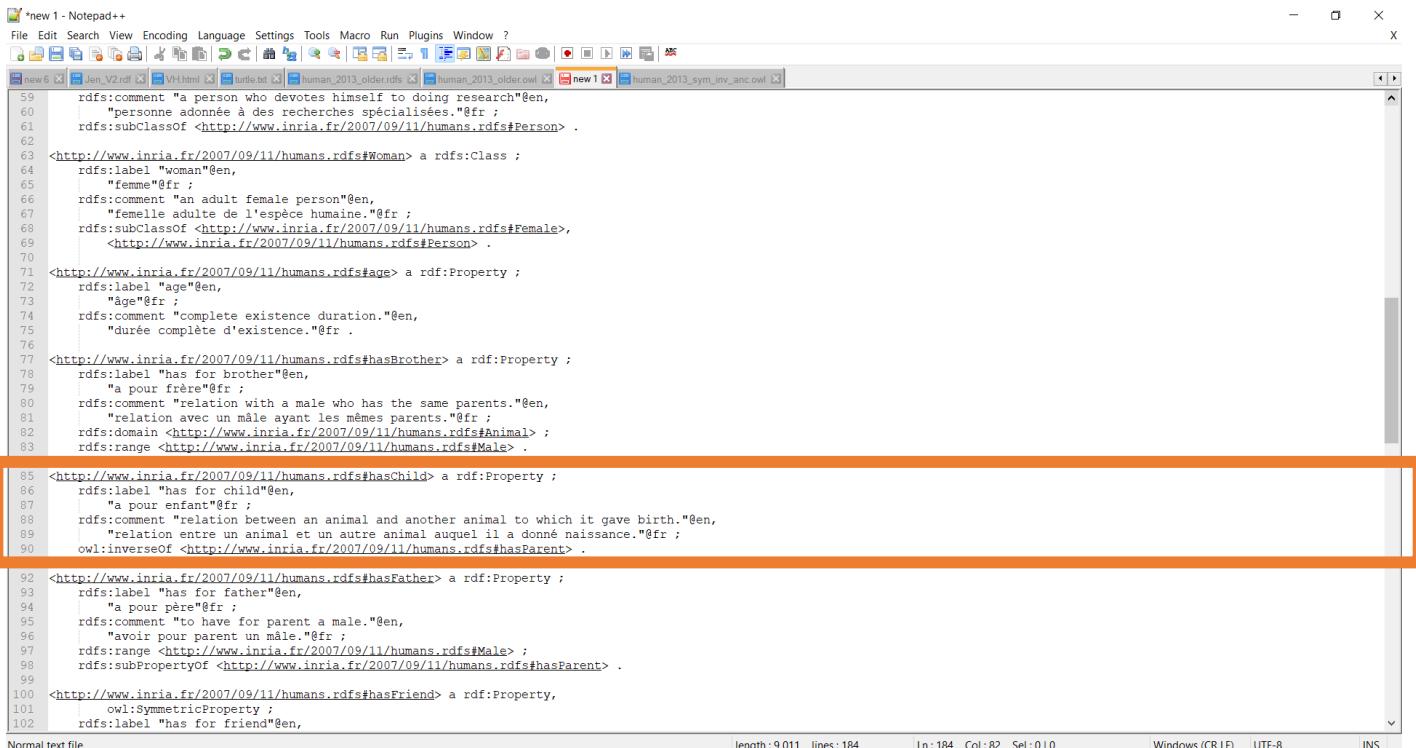
Query Validate to SPIN to SPARQL Prove Trace Search Refresh stylesheet Default stylesheet

```
1 prefix h: <http://www.inria.fr/2007/09/11/humans.rdfs#>
2 prefix o: <http://www.inria.fr/2007/09/11/humans.rdfs#>
3 select *
4 where {?x h:hasFriend ?y}
```

Graph	XML	Table	Validate
?	?		
http://www.inria.fr/2007/09/11/humans.rdfs-instances#John http://www.inria.fr/2007/09/11/humans.rdfs-instances#Sophie http://www.inria.fr/2007/09/11/humans.rdfs-instances#Eve http://www.inria.fr/2007/09/11/humans.rdfs-instances#David http://www.inria.fr/2007/09/11/humans.rdfs-instances#Alice http://www.inria.fr/2007/09/11/humans.rdfs-instances#Alice http://www.inria.fr/2007/09/11/humans.rdfs-instances#Alice http://www.inria.fr/2007/09/11/humans.rdfs-instances#Alice http://www.inria.fr/2007/09/11/humans.rdfs-instances#Gaston http://www.inria.fr/2007/09/11/humans.rdfs-instances#Jack http://www.inria.fr/2007/09/11/humans.rdfs-instances#Laura http://www.inria.fr/2007/09/11/humans.rdfs-instances#David http://www.inria.fr/2007/09/11/humans.rdfs-instances#Alice http://www.inria.fr/2007/09/11/humans.rdfs-instances#Alice http://www.inria.fr/2007/09/11/humans.rdfs-instances#Karl	http://www.inria.fr/2007/09/11/humans.rdfs-instances#Alice http://www.inria.fr/2007/09/11/humans.rdfs-instances#Karl http://www.inria.fr/2007/09/11/humans.rdfs-instances#Alice http://www.inria.fr/2007/09/11/humans.rdfs-instances#Gaston http://www.inria.fr/2007/09/11/humans.rdfs-instances#John http://www.inria.fr/2007/09/11/humans.rdfs-instances#Alice http://www.inria.fr/2007/09/11/humans.rdfs-instances#Alice http://www.inria.fr/2007/09/11/humans.rdfs-instances#Alice http://www.inria.fr/2007/09/11/humans.rdfs-instances#Flora http://www.inria.fr/2007/09/11/humans.rdfs-instances#Laura http://www.inria.fr/2007/09/11/humans.rdfs-instances#David http://www.inria.fr/2007/09/11/humans.rdfs-instances#Alice http://www.inria.fr/2007/09/11/humans.rdfs-instances#Alice http://www.inria.fr/2007/09/11/humans.rdfs-instances#Sophie		

2. Declare that `hasChild` is the inverse property of the `hasParent` property.

**Code added to the schema:**



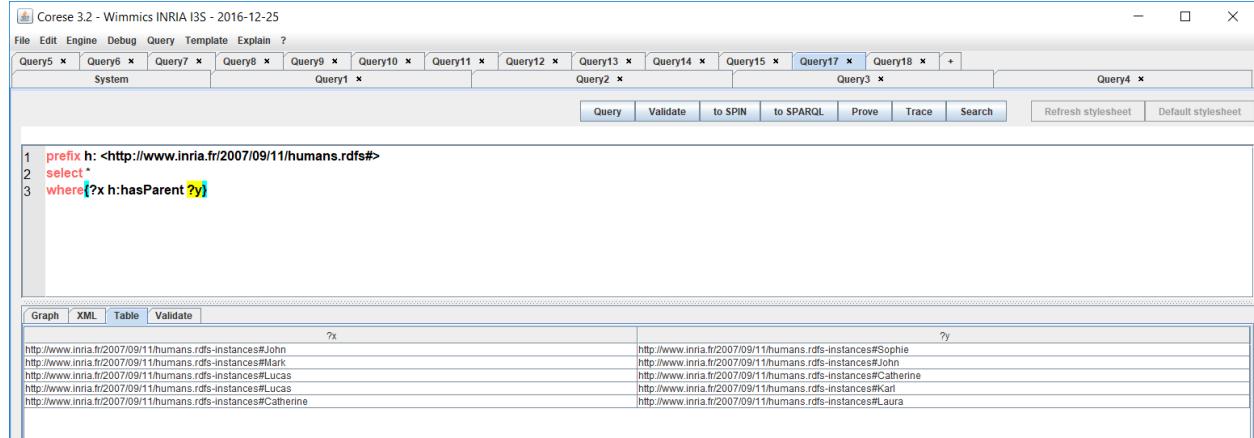
```

59 rdfs:comment "a person who devotes himself to doing research"@en,
60   "personne adonnée à des recherches spécialisées"@fr ;
61 rdfs:subClassOf <http://www.inria.fr/2007/09/11/humans.rdf#Person> .
62
63 <http://www.inria.fr/2007/09/11/humans.rdf#Woman> a rdfs:Class ;
64   rdfs:label "woman"@en,
65     "femme"@fr ;
66   rdfs:comment "adult female person"@en,
67     "femelle adulte de l'espèce humaine."@fr ;
68   rdfs:subClassOf <http://www.inria.fr/2007/09/11/humans.rdf#Female> ,
69     <http://www.inria.fr/2007/09/11/humans.rdf#Person> .
70
71 <http://www.inria.fr/2007/09/11/humans.rdf#age> a rdf:Property ;
72   rdfs:label "age"@en,
73     "âge"@fr ;
74   rdfs:comment "complete existence duration."@en,
75     "durée complète d'existence."@fr .
76
77 <http://www.inria.fr/2007/09/11/humans.rdf#hasBrother> a rdf:Property ;
78   rdfs:label "has for brother"@en,
79     "a pour frère"@fr ;
80   rdfs:comment "relation with a male who has the same parents."@en,
81     "relation avec un mâle ayant les mêmes parents."@fr ;
82   rdfs:domain <http://www.inria.fr/2007/09/11/humans.rdf#Animal> ;
83   rdfs:range <http://www.inria.fr/2007/09/11/humans.rdf#Male> .
84
85 <http://www.inria.fr/2007/09/11/humans.rdf#hasChild> a rdf:Property ;
86   rdfs:label "has for child"@en,
87     "a pour enfant"@fr ;
88   rdfs:comment "relation between an animal and another animal to which it gave birth."@en,
89     "relation entre un animal et un autre animal auquel il a donné naissance."@fr ;
90   owl:inverseOf <http://www.inria.fr/2007/09/11/humans.rdf#hasParent> .
91
92 <http://www.inria.fr/2007/09/11/humans.rdf#hasFather> a rdf:Property ;
93   rdfs:label "has for father"@en,
94     "a pour père"@fr ;
95   rdfs:comment "to have for parent a male."@en,
96     "avoir pour parent un mâle."@fr ;
97   rdfs:range <http://www.inria.fr/2007/09/11/humans.rdf#Male> ;
98   rdfs:subPropertyOf <http://www.inria.fr/2007/09/11/humans.rdf#hasParent> .
99
100 <http://www.inria.fr/2007/09/11/humans.rdf#hasFriend> a rdf:Property,
101   owl:SymmetricProperty ;
102   rdfs:label "has for friend"@en,

```

Normal text file length: 9 011 lines: 184 Ln: 184 Col: 82 Sel: 0 | 0 Windows (CR LF) UTF-8 INS

**Query with humans.rdfs – hasparent – result : 5**



File Edit Engine Debug Query Template Explain ?

Query5 x Query6 x Query7 x Query8 x Query9 x Query10 x Query11 x Query12 x Query13 x Query14 x Query15 x Query17 x Query18 x +

System      Query1 x      Query2 x      Query3 x      Query4 x

Query Validate to SPIN to SPARQL Prove Trace Search Refresh stylesheet Default stylesheet

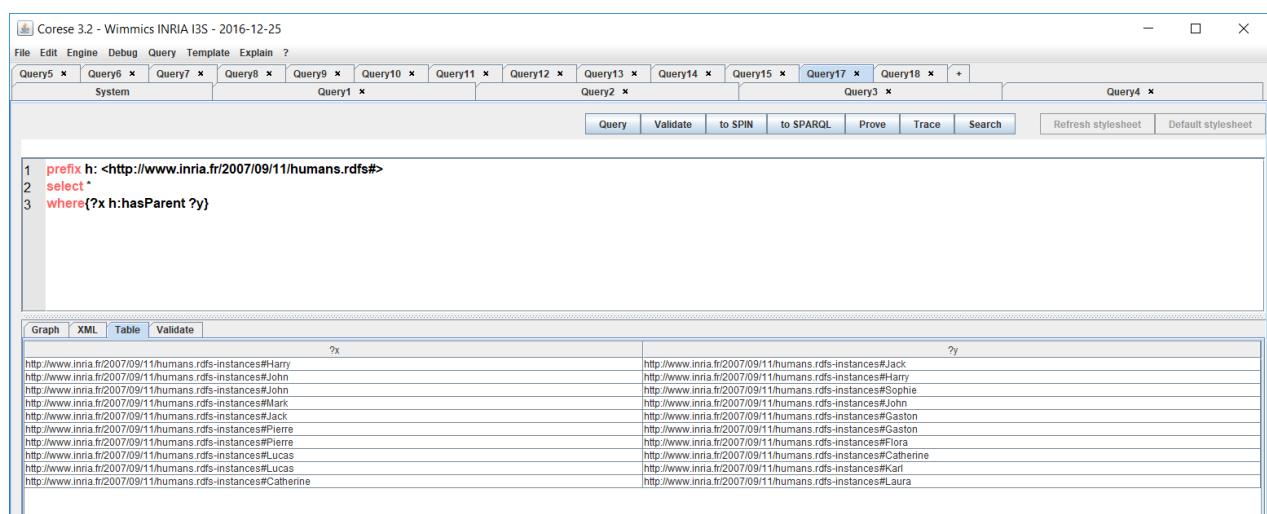
```

1 prefix h: <http://www.inria.fr/2007/09/11/humans.rdf#>
2 select *
3 where{?x h:hasParent ?y}

```

Graph	XML	Table	Validate										
<p>?x</p> <table border="1"> <tr> <td>http://www.inria.fr/2007/09/11/humans.rdf#instances#John</td> <td>http://www.inria.fr/2007/09/11/humans.rdf#instances#Sophie</td> </tr> <tr> <td>http://www.inria.fr/2007/09/11/humans.rdf#instances#Mark</td> <td>http://www.inria.fr/2007/09/11/humans.rdf#instances#John</td> </tr> <tr> <td>http://www.inria.fr/2007/09/11/humans.rdf#instances#Lucas</td> <td>http://www.inria.fr/2007/09/11/humans.rdf#instances#Catherine</td> </tr> <tr> <td>http://www.inria.fr/2007/09/11/humans.rdf#instances#Lucas</td> <td>http://www.inria.fr/2007/09/11/humans.rdf#instances#Karl</td> </tr> <tr> <td>http://www.inria.fr/2007/09/11/humans.rdf#instances#Catherine</td> <td>http://www.inria.fr/2007/09/11/humans.rdf#instances#Laura</td> </tr> </table> <p>?y</p>				http://www.inria.fr/2007/09/11/humans.rdf#instances#John	http://www.inria.fr/2007/09/11/humans.rdf#instances#Sophie	http://www.inria.fr/2007/09/11/humans.rdf#instances#Mark	http://www.inria.fr/2007/09/11/humans.rdf#instances#John	http://www.inria.fr/2007/09/11/humans.rdf#instances#Lucas	http://www.inria.fr/2007/09/11/humans.rdf#instances#Catherine	http://www.inria.fr/2007/09/11/humans.rdf#instances#Lucas	http://www.inria.fr/2007/09/11/humans.rdf#instances#Karl	http://www.inria.fr/2007/09/11/humans.rdf#instances#Catherine	http://www.inria.fr/2007/09/11/humans.rdf#instances#Laura
http://www.inria.fr/2007/09/11/humans.rdf#instances#John	http://www.inria.fr/2007/09/11/humans.rdf#instances#Sophie												
http://www.inria.fr/2007/09/11/humans.rdf#instances#Mark	http://www.inria.fr/2007/09/11/humans.rdf#instances#John												
http://www.inria.fr/2007/09/11/humans.rdf#instances#Lucas	http://www.inria.fr/2007/09/11/humans.rdf#instances#Catherine												
http://www.inria.fr/2007/09/11/humans.rdf#instances#Lucas	http://www.inria.fr/2007/09/11/humans.rdf#instances#Karl												
http://www.inria.fr/2007/09/11/humans.rdf#instances#Catherine	http://www.inria.fr/2007/09/11/humans.rdf#instances#Laura												

**Query with humans.owl – hasparent – result : 10 (previously 5)**



File Edit Engine Debug Query Template Explain ?

Query5 x Query6 x Query7 x Query8 x Query9 x Query10 x Query11 x Query12 x Query13 x Query14 x Query15 x Query17 x Query18 x +

System      Query1 x      Query2 x      Query3 x      Query4 x

Query Validate to SPIN to SPARQL Prove Trace Search Refresh stylesheet Default stylesheet

```

1 prefix h: <http://www.inria.fr/2007/09/11/humans.rdf#>
2 select *
3 where{?x h:hasParent ?y}

```

Graph	XML	Table	Validate																						
<p>?x</p> <table border="1"> <tr> <td>http://www.inria.fr/2007/09/11/humans.rdf#instances#Harry</td> <td>http://www.inria.fr/2007/09/11/humans.rdf#instances#Jack</td> </tr> <tr> <td>http://www.inria.fr/2007/09/11/humans.rdf#instances#John</td> <td>http://www.inria.fr/2007/09/11/humans.rdf#instances#Harry</td> </tr> <tr> <td>http://www.inria.fr/2007/09/11/humans.rdf#instances#John</td> <td>http://www.inria.fr/2007/09/11/humans.rdf#instances#John</td> </tr> <tr> <td>http://www.inria.fr/2007/09/11/humans.rdf#instances#Mark</td> <td>http://www.inria.fr/2007/09/11/humans.rdf#instances#John</td> </tr> <tr> <td>http://www.inria.fr/2007/09/11/humans.rdf#instances#Mark</td> <td>http://www.inria.fr/2007/09/11/humans.rdf#instances#John</td> </tr> <tr> <td>http://www.inria.fr/2007/09/11/humans.rdf#instances#Jack</td> <td>http://www.inria.fr/2007/09/11/humans.rdf#instances#Gaston</td> </tr> <tr> <td>http://www.inria.fr/2007/09/11/humans.rdf#instances#Pierre</td> <td>http://www.inria.fr/2007/09/11/humans.rdf#instances#Gaston</td> </tr> <tr> <td>http://www.inria.fr/2007/09/11/humans.rdf#instances#Pierre</td> <td>http://www.inria.fr/2007/09/11/humans.rdf#instances#Flora</td> </tr> <tr> <td>http://www.inria.fr/2007/09/11/humans.rdf#instances#Lucas</td> <td>http://www.inria.fr/2007/09/11/humans.rdf#instances#Catherine</td> </tr> <tr> <td>http://www.inria.fr/2007/09/11/humans.rdf#instances#Lucas</td> <td>http://www.inria.fr/2007/09/11/humans.rdf#instances#Karl</td> </tr> <tr> <td>http://www.inria.fr/2007/09/11/humans.rdf#instances#Catherine</td> <td>http://www.inria.fr/2007/09/11/humans.rdf#instances#Laura</td> </tr> </table> <p>?y</p>				http://www.inria.fr/2007/09/11/humans.rdf#instances#Harry	http://www.inria.fr/2007/09/11/humans.rdf#instances#Jack	http://www.inria.fr/2007/09/11/humans.rdf#instances#John	http://www.inria.fr/2007/09/11/humans.rdf#instances#Harry	http://www.inria.fr/2007/09/11/humans.rdf#instances#John	http://www.inria.fr/2007/09/11/humans.rdf#instances#John	http://www.inria.fr/2007/09/11/humans.rdf#instances#Mark	http://www.inria.fr/2007/09/11/humans.rdf#instances#John	http://www.inria.fr/2007/09/11/humans.rdf#instances#Mark	http://www.inria.fr/2007/09/11/humans.rdf#instances#John	http://www.inria.fr/2007/09/11/humans.rdf#instances#Jack	http://www.inria.fr/2007/09/11/humans.rdf#instances#Gaston	http://www.inria.fr/2007/09/11/humans.rdf#instances#Pierre	http://www.inria.fr/2007/09/11/humans.rdf#instances#Gaston	http://www.inria.fr/2007/09/11/humans.rdf#instances#Pierre	http://www.inria.fr/2007/09/11/humans.rdf#instances#Flora	http://www.inria.fr/2007/09/11/humans.rdf#instances#Lucas	http://www.inria.fr/2007/09/11/humans.rdf#instances#Catherine	http://www.inria.fr/2007/09/11/humans.rdf#instances#Lucas	http://www.inria.fr/2007/09/11/humans.rdf#instances#Karl	http://www.inria.fr/2007/09/11/humans.rdf#instances#Catherine	http://www.inria.fr/2007/09/11/humans.rdf#instances#Laura
http://www.inria.fr/2007/09/11/humans.rdf#instances#Harry	http://www.inria.fr/2007/09/11/humans.rdf#instances#Jack																								
http://www.inria.fr/2007/09/11/humans.rdf#instances#John	http://www.inria.fr/2007/09/11/humans.rdf#instances#Harry																								
http://www.inria.fr/2007/09/11/humans.rdf#instances#John	http://www.inria.fr/2007/09/11/humans.rdf#instances#John																								
http://www.inria.fr/2007/09/11/humans.rdf#instances#Mark	http://www.inria.fr/2007/09/11/humans.rdf#instances#John																								
http://www.inria.fr/2007/09/11/humans.rdf#instances#Mark	http://www.inria.fr/2007/09/11/humans.rdf#instances#John																								
http://www.inria.fr/2007/09/11/humans.rdf#instances#Jack	http://www.inria.fr/2007/09/11/humans.rdf#instances#Gaston																								
http://www.inria.fr/2007/09/11/humans.rdf#instances#Pierre	http://www.inria.fr/2007/09/11/humans.rdf#instances#Gaston																								
http://www.inria.fr/2007/09/11/humans.rdf#instances#Pierre	http://www.inria.fr/2007/09/11/humans.rdf#instances#Flora																								
http://www.inria.fr/2007/09/11/humans.rdf#instances#Lucas	http://www.inria.fr/2007/09/11/humans.rdf#instances#Catherine																								
http://www.inria.fr/2007/09/11/humans.rdf#instances#Lucas	http://www.inria.fr/2007/09/11/humans.rdf#instances#Karl																								
http://www.inria.fr/2007/09/11/humans.rdf#instances#Catherine	http://www.inria.fr/2007/09/11/humans.rdf#instances#Laura																								

### 3. Declare hasAncestor as transitive property.

#### Code added to the schema:

```

141 rdfs:domain <http://www.inria.fr/2007/09/11/humans.rdfs#Person> ;
142 rdfs:range <http://www.inria.fr/2007/09/11/humans.rdfs#Person> .
143
144 <http://www.inria.fr/2007/09/11/humans.rdfs#shirtsize> a rdf:Property ;
145   rdfs:label "shirt size"@en,
146     "size"@en,
147     "taille"@fr,
148     "taille de chemise"@fr ;
149   rdfs:comment "express in some way the approximate dimensions of the shirts of a person."@en,
150   "dimensions approximatives des chemises portées par une personne."@fr ;
151   rdfs:domain <http://www.inria.fr/2007/09/11/humans.rdfs#Person> .
152
153 <http://www.inria.fr/2007/09/11/humans.rdfs#shoeshize> a rdf:Property ;
154   rdfs:label "shoe size"@en,
155     "size"@en,
156     "pointure"@fr ;
157   rdfs:comment "express in some way the approximate length of the shoes for a person."@en,
158   "taille, exprimée en points, des chaussures d'une personne."@fr ;
159   rdfs:domain <http://www.inria.fr/2007/09/11/humans.rdfs#Person> .
160
161 <http://www.inria.fr/2007/09/11/humans.rdfs#trouserssize> a rdf:Property ;
162   rdfs:label "size"@en,
163     "crayon size"@en,
164     "taille"@en,
165     "taille de pantalon"@fr ;
166   rdfs:comment "express in some way the approximate dimensions of the trousers of a person."@en,
167   "dimensions approximatives des pantalons portés par une personne."@fr ;
168   rdfs:domain <http://www.inria.fr/2007/09/11/humans.rdfs#Person> .
169
170 <http://www.inria.fr/2007/09/11/humans.rdfs#hasAncestor> a rdf:Property,
171   owl:TransitiveProperty ;
172   rdfs:label "has for ancestor"@en,
173     "a pour ancêtre"@fr ;
174   rdfs:comment "relation between an animal and another animal from which it is descended."@en,
175   "relation entre un animal et un autre animal duquel il descend."@fr ;
176   rdfs:domain <http://www.inria.fr/2007/09/11/humans.rdfs#Animal> ;
177   rdfs:range <http://www.inria.fr/2007/09/11/humans.rdfs#Animal> .

```

#### Query with humans.rdfs – hasAncestor – result : 5

Query results for humans.rdfs with hasAncestor:

```

1 prefix h: <http://www.inria.fr/2007/09/11/humans.rdfs#>
2 select*
3 where{?x h:hasAncestor ?y}

```

Graph	XML	Table	Validate																				
		<table border="1"> <thead> <tr> <th>?x</th> <th>?y</th> </tr> </thead> <tbody> <tr><td>http://www.inria.fr/2007/09/11/humans.rdfsInstances#John</td><td>http://www.inria.fr/2007/09/11/humans.rdfsInstances#Sophie</td></tr> <tr><td>http://www.inria.fr/2007/09/11/humans.rdfsInstances#Mark</td><td>http://www.inria.fr/2007/09/11/humans.rdfsInstances#John</td></tr> <tr><td>http://www.inria.fr/2007/09/11/humans.rdfsInstances#Lucas</td><td>http://www.inria.fr/2007/09/11/humans.rdfsInstances#Catherine</td></tr> <tr><td>http://www.inria.fr/2007/09/11/humans.rdfsInstances#Lucas</td><td>http://www.inria.fr/2007/09/11/humans.rdfsInstances#Karl</td></tr> <tr><td>http://www.inria.fr/2007/09/11/humans.rdfsInstances#Catherine</td><td>http://www.inria.fr/2007/09/11/humans.rdfsInstances#Laura</td></tr> </tbody> </table>	?x	?y	http://www.inria.fr/2007/09/11/humans.rdfsInstances#John	http://www.inria.fr/2007/09/11/humans.rdfsInstances#Sophie	http://www.inria.fr/2007/09/11/humans.rdfsInstances#Mark	http://www.inria.fr/2007/09/11/humans.rdfsInstances#John	http://www.inria.fr/2007/09/11/humans.rdfsInstances#Lucas	http://www.inria.fr/2007/09/11/humans.rdfsInstances#Catherine	http://www.inria.fr/2007/09/11/humans.rdfsInstances#Lucas	http://www.inria.fr/2007/09/11/humans.rdfsInstances#Karl	http://www.inria.fr/2007/09/11/humans.rdfsInstances#Catherine	http://www.inria.fr/2007/09/11/humans.rdfsInstances#Laura	Query	Validate	to SPIN	to SPARQL	Prove	Trace	Search	Refresh stylesheet	Default stylesheet
?x	?y																						
http://www.inria.fr/2007/09/11/humans.rdfsInstances#John	http://www.inria.fr/2007/09/11/humans.rdfsInstances#Sophie																						
http://www.inria.fr/2007/09/11/humans.rdfsInstances#Mark	http://www.inria.fr/2007/09/11/humans.rdfsInstances#John																						
http://www.inria.fr/2007/09/11/humans.rdfsInstances#Lucas	http://www.inria.fr/2007/09/11/humans.rdfsInstances#Catherine																						
http://www.inria.fr/2007/09/11/humans.rdfsInstances#Lucas	http://www.inria.fr/2007/09/11/humans.rdfsInstances#Karl																						
http://www.inria.fr/2007/09/11/humans.rdfsInstances#Catherine	http://www.inria.fr/2007/09/11/humans.rdfsInstances#Laura																						

#### Query with humans.owl – hasAncestor – result : 10 (previously – 5)

Query results for humans.owl with hasAncestor:

```

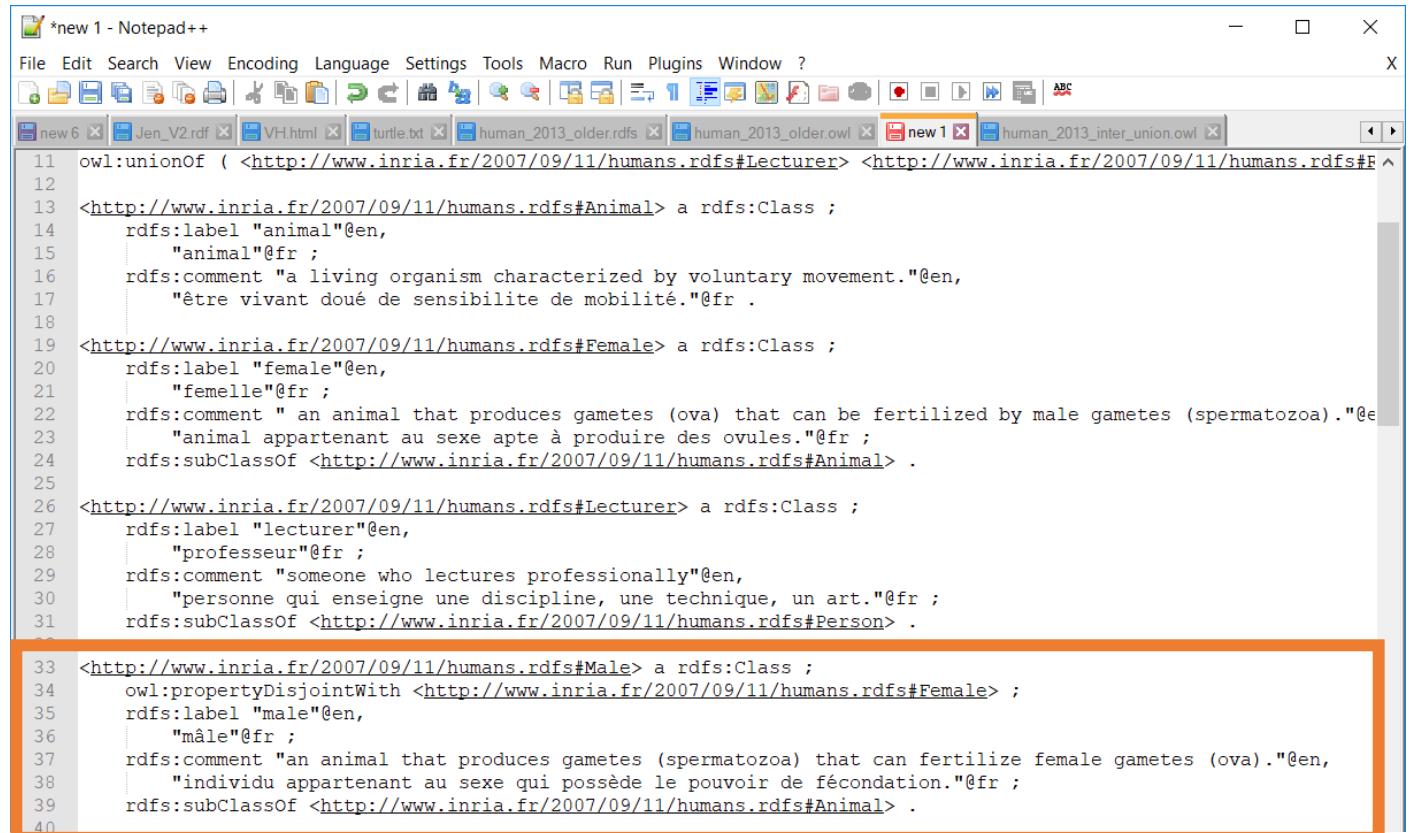
1 prefix h: <http://www.inria.fr/2007/09/11/humans.rdfs#>
2 select*
3 where{?x h:hasAncestor ?y}

```

Graph	XML	Table	Validate																														
		<table border="1"> <thead> <tr> <th>?x</th> <th>?y</th> </tr> </thead> <tbody> <tr><td>http://www.inria.fr/2007/09/11/humans.rdfsInstances#Harry</td><td>http://www.inria.fr/2007/09/11/humans.rdfsInstances#Jack</td></tr> <tr><td>http://www.inria.fr/2007/09/11/humans.rdfsInstances#John</td><td>http://www.inria.fr/2007/09/11/humans.rdfsInstances#Harry</td></tr> <tr><td>http://www.inria.fr/2007/09/11/humans.rdfsInstances#John</td><td>http://www.inria.fr/2007/09/11/humans.rdfsInstances#People</td></tr> <tr><td>http://www.inria.fr/2007/09/11/humans.rdfsInstances#Mark</td><td>http://www.inria.fr/2007/09/11/humans.rdfsInstances#John</td></tr> <tr><td>http://www.inria.fr/2007/09/11/humans.rdfsInstances#Jack</td><td>http://www.inria.fr/2007/09/11/humans.rdfsInstances#Gaston</td></tr> <tr><td>http://www.inria.fr/2007/09/11/humans.rdfsInstances#Pierre</td><td>http://www.inria.fr/2007/09/11/humans.rdfsInstances#Gaston</td></tr> <tr><td>http://www.inria.fr/2007/09/11/humans.rdfsInstances#Pierre</td><td>http://www.inria.fr/2007/09/11/humans.rdfsInstances#Igor</td></tr> <tr><td>http://www.inria.fr/2007/09/11/humans.rdfsInstances#Lucas</td><td>http://www.inria.fr/2007/09/11/humans.rdfsInstances#Catherine</td></tr> <tr><td>http://www.inria.fr/2007/09/11/humans.rdfsInstances#Lucas</td><td>http://www.inria.fr/2007/09/11/humans.rdfsInstances#Karl</td></tr> <tr><td>http://www.inria.fr/2007/09/11/humans.rdfsInstances#Catherine</td><td>http://www.inria.fr/2007/09/11/humans.rdfsInstances#Laura</td></tr> </tbody> </table>	?x	?y	http://www.inria.fr/2007/09/11/humans.rdfsInstances#Harry	http://www.inria.fr/2007/09/11/humans.rdfsInstances#Jack	http://www.inria.fr/2007/09/11/humans.rdfsInstances#John	http://www.inria.fr/2007/09/11/humans.rdfsInstances#Harry	http://www.inria.fr/2007/09/11/humans.rdfsInstances#John	http://www.inria.fr/2007/09/11/humans.rdfsInstances#People	http://www.inria.fr/2007/09/11/humans.rdfsInstances#Mark	http://www.inria.fr/2007/09/11/humans.rdfsInstances#John	http://www.inria.fr/2007/09/11/humans.rdfsInstances#Jack	http://www.inria.fr/2007/09/11/humans.rdfsInstances#Gaston	http://www.inria.fr/2007/09/11/humans.rdfsInstances#Pierre	http://www.inria.fr/2007/09/11/humans.rdfsInstances#Gaston	http://www.inria.fr/2007/09/11/humans.rdfsInstances#Pierre	http://www.inria.fr/2007/09/11/humans.rdfsInstances#Igor	http://www.inria.fr/2007/09/11/humans.rdfsInstances#Lucas	http://www.inria.fr/2007/09/11/humans.rdfsInstances#Catherine	http://www.inria.fr/2007/09/11/humans.rdfsInstances#Lucas	http://www.inria.fr/2007/09/11/humans.rdfsInstances#Karl	http://www.inria.fr/2007/09/11/humans.rdfsInstances#Catherine	http://www.inria.fr/2007/09/11/humans.rdfsInstances#Laura	Query	Validate	to SPIN	to SPARQL	Prove	Trace	Search	Refresh stylesheet	Default stylesheet
?x	?y																																
http://www.inria.fr/2007/09/11/humans.rdfsInstances#Harry	http://www.inria.fr/2007/09/11/humans.rdfsInstances#Jack																																
http://www.inria.fr/2007/09/11/humans.rdfsInstances#John	http://www.inria.fr/2007/09/11/humans.rdfsInstances#Harry																																
http://www.inria.fr/2007/09/11/humans.rdfsInstances#John	http://www.inria.fr/2007/09/11/humans.rdfsInstances#People																																
http://www.inria.fr/2007/09/11/humans.rdfsInstances#Mark	http://www.inria.fr/2007/09/11/humans.rdfsInstances#John																																
http://www.inria.fr/2007/09/11/humans.rdfsInstances#Jack	http://www.inria.fr/2007/09/11/humans.rdfsInstances#Gaston																																
http://www.inria.fr/2007/09/11/humans.rdfsInstances#Pierre	http://www.inria.fr/2007/09/11/humans.rdfsInstances#Gaston																																
http://www.inria.fr/2007/09/11/humans.rdfsInstances#Pierre	http://www.inria.fr/2007/09/11/humans.rdfsInstances#Igor																																
http://www.inria.fr/2007/09/11/humans.rdfsInstances#Lucas	http://www.inria.fr/2007/09/11/humans.rdfsInstances#Catherine																																
http://www.inria.fr/2007/09/11/humans.rdfsInstances#Lucas	http://www.inria.fr/2007/09/11/humans.rdfsInstances#Karl																																
http://www.inria.fr/2007/09/11/humans.rdfsInstances#Catherine	http://www.inria.fr/2007/09/11/humans.rdfsInstances#Laura																																

4. Declare the disjunction between Male and Female. Violate the constraint in the data, check the results and then remove the violation you created.

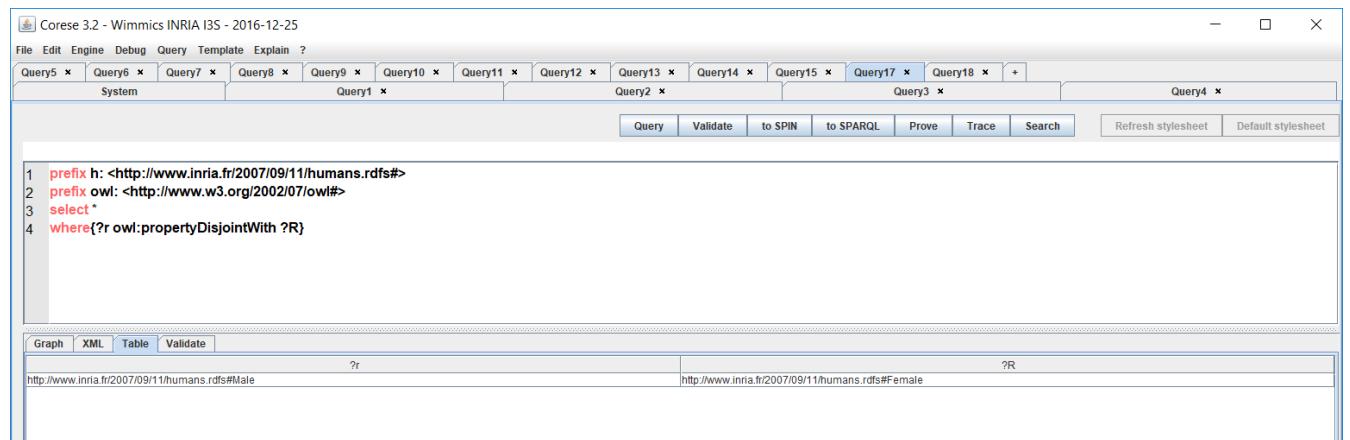
Code added to the schema:



```

new 1 - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
new 6 Jen_V2.rdf VH.html turtle.txt human_2013_older.rdfs human_2013_older.owl new 1 human_2013_inter_union.owl
11 owl:unionOf ( <http://www.inria.fr/2007/09/11/humans.rdfs#Lecturer> <http://www.inria.fr/2007/09/11/humans.rdfs#F^
12
13 <http://www.inria.fr/2007/09/11/humans.rdfs#Animal> a rdfs:Class ;
14     rdfs:label "animal"@en,
15     "animal"@fr ;
16     rdfs:comment "a living organism characterized by voluntary movement."@en,
17     "être vivant doué de sensibilité de mobilité."@fr .
18
19 <http://www.inria.fr/2007/09/11/humans.rdfs#Female> a rdfs:Class ;
20     rdfs:label "female"@en,
21     "femelle"@fr ;
22     rdfs:comment "an animal that produces gametes (ova) that can be fertilized by male gametes (spermatozoa)."@en
23     "animal appartenant au sexe apte à produire des ovules."@fr ;
24     rdfs:subClassOf <http://www.inria.fr/2007/09/11/humans.rdfs#Animal> .
25
26 <http://www.inria.fr/2007/09/11/humans.rdfs#Lecturer> a rdfs:Class ;
27     rdfs:label "lecturer"@en,
28     "professeur"@fr ;
29     rdfs:comment "someone who lectures professionally"@en,
30     "personne qui enseigne une discipline, une technique, un art."@fr ;
31     rdfs:subClassOf <http://www.inria.fr/2007/09/11/humans.rdfs#Person> .
32
33 <http://www.inria.fr/2007/09/11/humans.rdfs#Male> a rdfs:Class ;
34     owl:propertyDisjointWith <http://www.inria.fr/2007/09/11/humans.rdfs#Female> ;
35     rdfs:label "male"@en,
36     "mâle"@fr ;
37     rdfs:comment "an animal that produces gametes (spermatozoa) that can fertilize female gametes (ova)."@en,
38     "individu appartenant au sexe qui possède le pouvoir de fécondation."@fr ;
39     rdfs:subClassOf <http://www.inria.fr/2007/09/11/humans.rdfs#Animal> .
40

```



Corese 3.2 - WimMics INRIA IBS - 2016-12-25

File Edit Engine Debug Query Template Explain ?

Query5 x Query6 x Query7 x Query8 x Query9 x Query10 x Query11 x Query12 x Query13 x Query14 x Query15 x Query17 x Query18 x +

System      Query1 x      Query2 x      Query3 x      Query4 x

Query Validate to SPIN to SPARQL Prove Trace Search Refresh stylesheet Default stylesheet

```

1 prefix h: <http://www.inria.fr/2007/09/11/humans.rdfs#>
2 prefix owl: <http://www.w3.org/2002/07/owl#>
3 select *
4 where{?r owl:propertyDisjointWith ?R}

```

Graph XML Table Validate

?r	?R
<a href="http://www.inria.fr/2007/09/11/humans.rdfs#Male">http://www.inria.fr/2007/09/11/humans.rdfs#Male</a>	<a href="http://www.inria.fr/2007/09/11/humans.rdfs#Female">http://www.inria.fr/2007/09/11/humans.rdfs#Female</a>

5. Declare that the class Professor is the intersection of the class Lecturer and Researcher class.

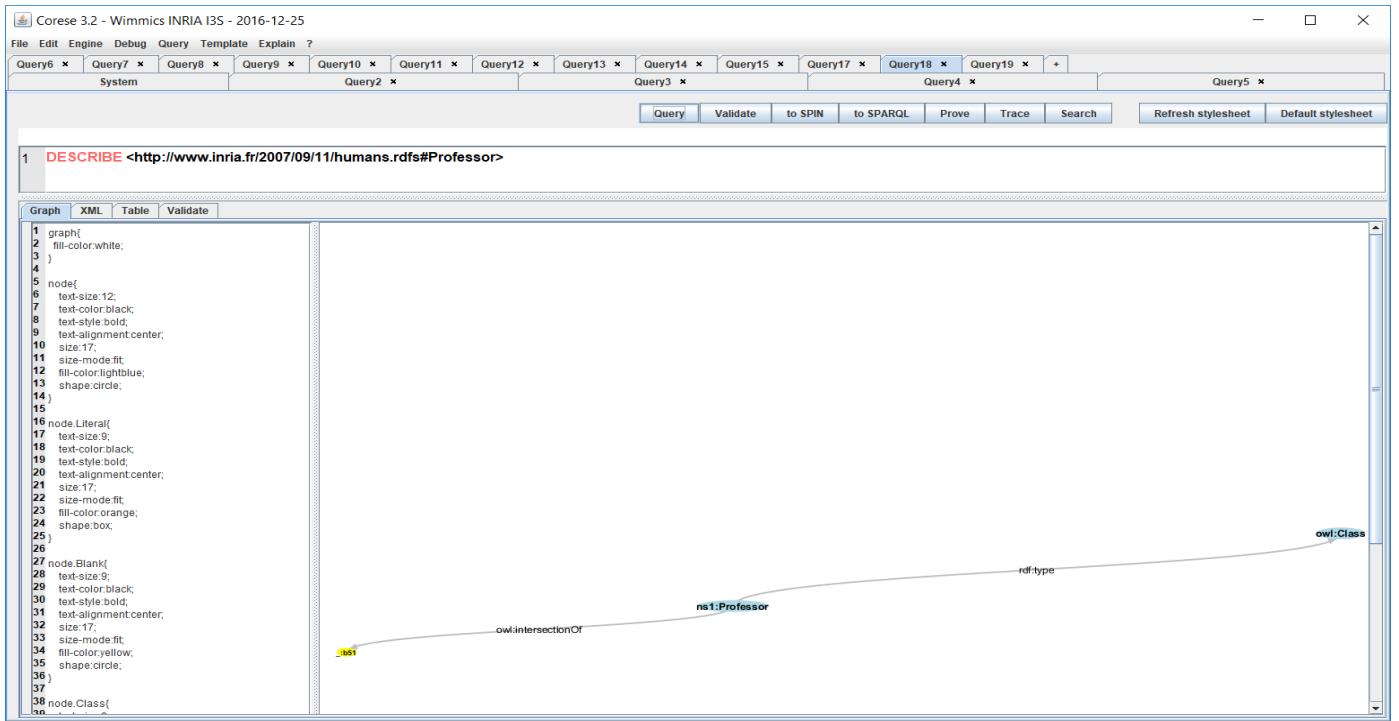
Code added to the schema:

```

182 <http://www.inria.fr/2007/09/11/humans.rdfs#hasParent> a rdf:Property ;
183     rdfs:label "has for parent"@en,
184     "a pour parent"@fr ;
185     rdfs:comment "relation between an animal and another animal which gave birth to it."@en,
186     "relation entre un animal et un autre animal qui lui a donné naissance."@fr ;
187     rdfs:subPropertyOf <http://www.inria.fr/2007/09/11/humans.rdfs#hasAncestor> .
188
189 <http://www.inria.fr/2007/09/11/humans.rdfs#Professor> a owl:Class ;
190     owl:intersectionOf ( <http://www.inria.fr/2007/09/11/humans.rdfs#Lecturer> <http://www.inria.fr/2007/09/11/humans.rdfs#Researcher> ) .
191

```

## Query + result: to check that the class has been created



6. Declare that the Academic class is the union of classes Lecturer and Researcher.

### Code added to the schema:

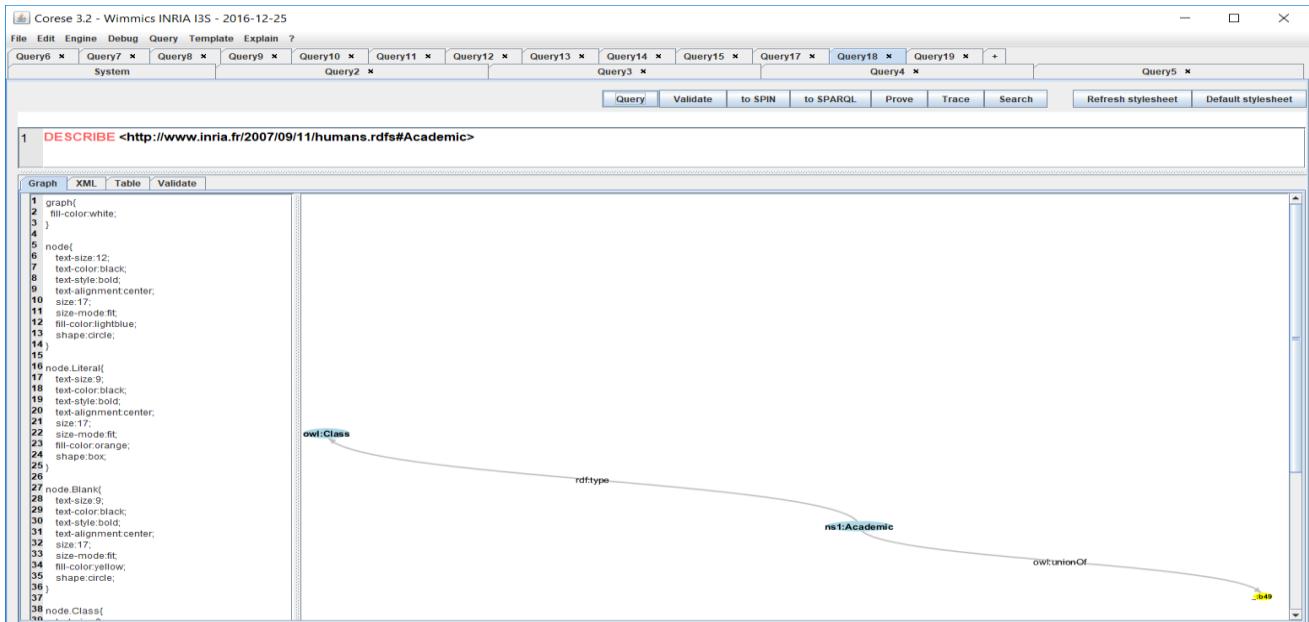
```

182  <http://www.inria.fr/2007/09/11/humans.rdf#hasParent> a rdf:Property ;
183    rdfs:label "has for parent"@en,
184      "a pour parent"@fr ;
185    rdfs:comment "relation between an animal and another animal which gave birth to it."@en,
186      "relation entre un animal et un autre animal qui lui a donné naissance."@fr ;
187    rdfs:subPropertyOf <http://www.inria.fr/2007/09/11/humans.rdf#hasAncestor> .
188
189  <http://www.inria.fr/2007/09/11/humans.rdf#Academic> a owl:Class ;
190    owl:unionOf ( <http://www.inria.fr/2007/09/11/humans.rdf#Lecturer> <http://www.inria.fr/2007/09/11/humans.rdf#Researcher> ) .

```

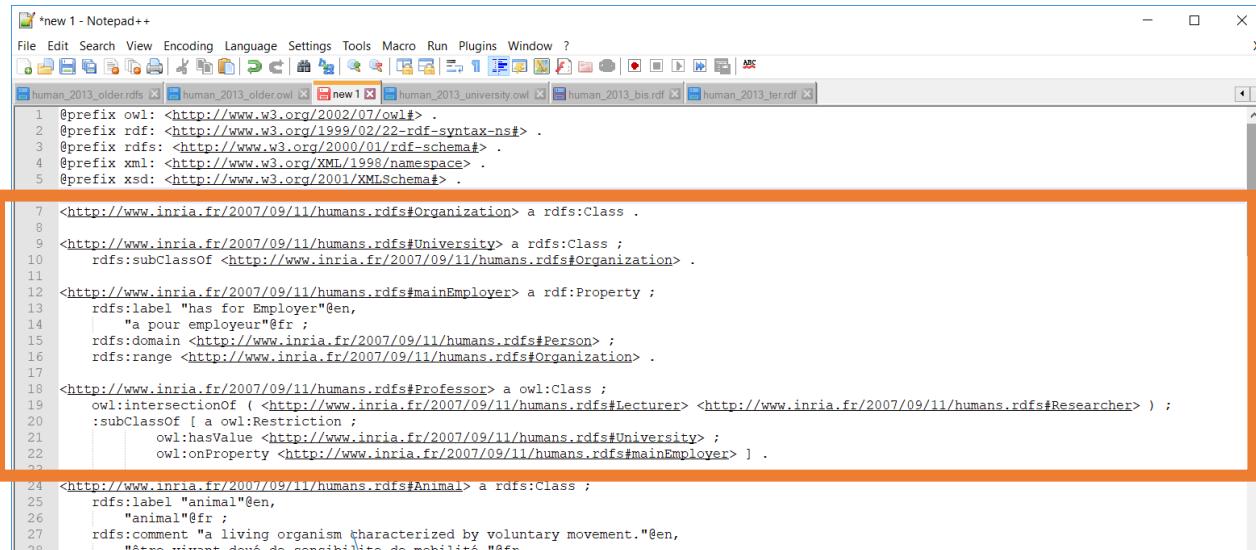
Normal text file length: 9 343 lines: 190 Ln: 181 Col: 1 Sel: 0 | 0 Windows (CR LF) UTF-8 INS

## Query + result: to check that the class has been created



7. Create a class Organization and its sub class University. Create a new property mainEmployer, with domain Person and range Organization. Use a restriction to declare that any Professor has for main employer a University.

Code added to the schema (new property, new classes and new restriction):

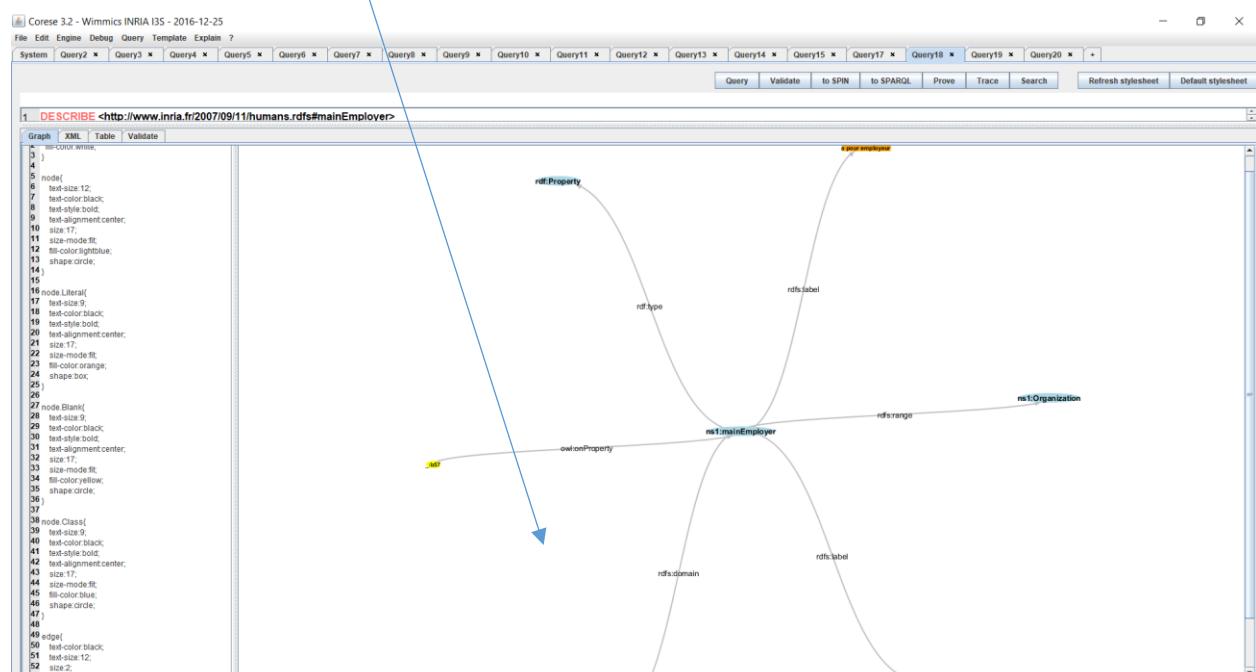


```

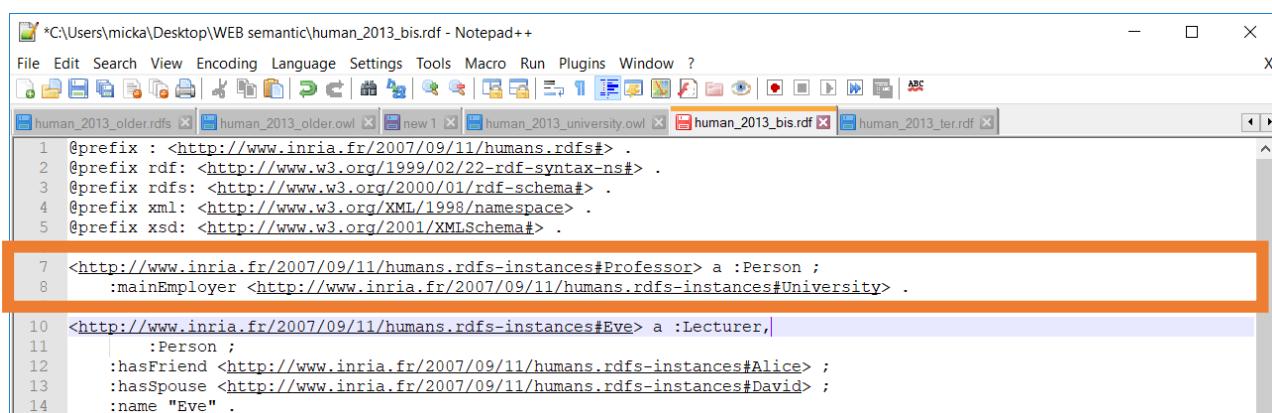
1 @prefix owl: <http://www.w3.org/2002/07/owl#> .
2 @prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .
3 @prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#> .
4 @prefix xml: <http://www.w3.org/XML/1998/namespace> .
5 @prefix xsd: <http://www.w3.org/2001/XMLSchema#> .

7 <http://www.inria.fr/2007/09/11/humans.rdfs#Organization> a rdfs:Class .
8
9 <http://www.inria.fr/2007/09/11/humans.rdfs#University> a rdfs:Class ;
10 rdfs:subClassOf <http://www.inria.fr/2007/09/11/humans.rdfs#Organization> .
11
12 <http://www.inria.fr/2007/09/11/humans.rdfs#mainEmployer> a rdf:Property ;
13 rdfs:label "has for Employer"@en,
14 | "a pour employeur"@fr ;
15 rdfs:domain <http://www.inria.fr/2007/09/11/humans.rdfs#Person> ;
16 rdfs:range <http://www.inria.fr/2007/09/11/humans.rdfs#Organization> .
17
18 <http://www.inria.fr/2007/09/11/humans.rdfs#Professor> a owl:Class ;
19 owl:intersectionOf ( <http://www.inria.fr/2007/09/11/humans.rdfs#Lecturer> <http://www.inria.fr/2007/09/11/humans.rdfs#Researcher> ) ;
20 :subClassOf [ a owl:Restriction ;
21 | owl:hasValue <http://www.inria.fr/2007/09/11/humans.rdfs#University> ;
22 | owl:onProperty <http://www.inria.fr/2007/09/11/humans.rdfs#mainEmployer> ] .
23
24 <http://www.inria.fr/2007/09/11/humans.rdfs#Animal> a rdfs:Class ;
25 rdfs:label "animal"@en,
26 | "animal"@fr ;
27 rdfs:comment "a living organism characterized by voluntary movement."@en,
28 | "être vivant doué de sensibilité de mobilité."@fr .

```



Code added to the data (just declare the main employer of a Professor):



```

1 @prefix : <http://www.inria.fr/2007/09/11/humans.rdfs#> .
2 @prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .
3 @prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#> .
4 @prefix xml: <http://www.w3.org/XML/1998/namespace> .
5 @prefix xsd: <http://www.w3.org/2001/XMLSchema#> .

7 <http://www.inria.fr/2007/09/11/humans.rdfs-instances#Professor> a :Person ;
8 :mainEmployer <http://www.inria.fr/2007/09/11/humans.rdfs-instances#University> .

10 <http://www.inria.fr/2007/09/11/humans.rdfs-instances#Eve> a :Lecturer,
11 | :Person ;
12 | :hasFriend <http://www.inria.fr/2007/09/11/humans.rdfs-instances#Alice> ;
13 | :hasSpouse <http://www.inria.fr/2007/09/11/humans.rdfs-instances#David> ;
14 | :name "Eve" .

```

The screenshot shows the Wimmicks interface with a query editor at the top and a results table below. The query is:

```

1 prefix h: <http://www.inria.fr/2007/09/11/humans.rdfs#>
2 prefix owl: <http://www.w3.org/2002/07/owl#>
3 select *
4 where{?p h:mainEmployer ?r}

```

The results table has columns for Graph, XML, Table, and Validate. The Table view shows the following data:

	?p	?r
	<a href="http://www.inria.fr/2007/09/11/humans.rdfsInstances#Professor">http://www.inria.fr/2007/09/11/humans.rdfsInstances#Professor</a>	<a href="http://www.inria.fr/2007/09/11/humans.rdfsInstances#University">http://www.inria.fr/2007/09/11/humans.rdfsInstances#University</a>

8. Use a restriction to declare that any person must have a parent who is a woman. For this last statement, you need to run the rule engine after loading the ontology and data.

#### Code added to the schema:

The Notepad++ window displays the schema code. The code defines the 'Person' class and a restriction for it:

```

48 rdfs:comment "an animal that produces gametes (spermatozoa) that can fertilize female gametes (ova)."@en,
49 "individu appartenant au sexe qui possède le pouvoir de fécondation."@fr ;
50 rdfs:subClassOf <http://www.inria.fr/2007/09/11/humans.rdfs#Animal> ;
51 owl:propertyDisjointWith <http://www.inria.fr/2007/09/11/humans.rdfs#Female> .
52
53 <http://www.inria.fr/2007/09/11/humans.rdfs#Man> a rdfs:Class ;
54 rdfs:label "man"@en,
55 "homme"@fr ;
56 rdfs:comment "an adult male person"@en,
57 "mâle adulte de l'espèce humaine."@fr ;
58 rdfs:subClassOf <http://www.inria.fr/2007/09/11/humans.rdfs#Male>,
59 <http://www.inria.fr/2007/09/11/humans.rdfs#Person> .
60
61 <http://www.inria.fr/2007/09/11/humans.rdfs#Person> a rdfs:Class ;
62 rdfs:label "human"@en,
63 "human being"@en,
64 "person"@en,
65 "homme"@fr,
66 "humain"@fr,
67 "personne"@fr,
68 "être humain"@fr ;
69 rdfs:comment "a member of the human species"@en,
70 "un membre de l'espèce humaine."@fr ;
71 rdfs:subClassOf <http://www.inria.fr/2007/09/11/humans.rdfs#Animal> ;
72 :subClassOf [ a owl:Restriction ;
73 ..... owl:hasValue <http://www.inria.fr/2007/09/11/humans.rdfs#Woman> ;
74 ..... owl:onProperty <http://www.inria.fr/2007/09/11/humans.rdfs#hasParent> ].

```

## B, Make your own OWL models:

For each one of the following OWL primitives imagine a definition that could use it and provide that definition in OWL using your preferred syntax (RDF/XML or N3/Turtle). For instance a possible definition using owl:TransitiveProperty would be a definition of the Ancestor property. For each primitive in the following list you imagine the definition of a class or property that was not given in the course and you give that definition in English and in OWL.

### THEME SELECTED : Basketball

1. **owl:oneOf**
  - a. <BasketCatU13Boys> rdf:type owl:Class ; owl:oneOf ( <BasketCatU13Team1> <BasketCatU13Team2> <BasketCatU13Team3>).
  - b. Def : All the members of The Basket Category U13 Boys are Team 1 / Team 2 and Team
2. **owl:unionOf**
  - a. <BasketCatU13> rdf:type owl:Class ; owl:unionOf ( <BasketCatU13Boys> <BasketCatU13Girls>).
  - b. Def : The Basket Cat U13 is composed by Cat U13 Boys and Cat U13 Girls
3. **owl:intersectionOf**
  - a. <BasketCatU13BoysTeam1> rdf:type owl:Class ; owl:intersectionOf ( <BasketCatU13Boys1styear> <BasketCatU13Boys2ndyear>).
  - b. Def : The Basket Cat U13 Boys Team 1 is a combinaison of by Cat U13 Boys 1<sup>st</sup> year and Cat U13 Boys 2<sup>nd</sup> year
4. **owl:complementOf**
  - a. <BasketCatU13> rdf:type owl:Class ; owl:complementOf <BasketSLV>.
  - b. Def : The Basket Cat U13 is a category of the Saint Laurent du var (SLV) Basket Club
5. **owl:disjointWith / or owl:AllDisjointClasses or owl:disjointUnionOf**
  - a. <BasketCatU13Boys> rdf:type owl:Class ; owl:disjointWith <BasketCatU13Girls>.
  - b. Def : The Basket Cat U13 Boys is incompatible with the Basket Cat U13 Girls
6. **owl:ObjectProperty**
  - a. <hasCoach> a owl:objectProperty .
  - b. Def : 2 players of a same team (eg : BasketCatU13BoysTeam1) have the same Coach
7. **owl:DatatypeProperty**
  - a. <hasCatU13Age> a owl:DatatypeProperty .
  - b. Def : all players of the CatU13Age have 13years which has to be an integer
8. **owl:SymmetricProperty or owl:AsymmetricProperty**
  - a. <hasTeamPartner> a owl:SymmetricProperty .
  - b. Def : if Ugo has a team partner named Enzo / Enzo has also Ugo as team partner
9. **owl:inverseOf**
  - a. <hasTeamPlayer> owl:inverseOf <hasCoach>.
  - b. Def : a basket coach has many team player / team players have only one coach
10. **owl:TransitiveProperty**
  - a. <isOlderthan> a owl:TransitiveProperty .
  - b. Def : BasketCatU13 players are older than BasketCatU11 who are older than BasketCatU9
11. **owl:propertyDisjointWith**
  - a. <hasBoysCategory> owl:propertyDisjointWith <hasGirlsCategory>.
  - b. Def : Saint Laurent du var (SLV) Basket Club has Boys categories and has Girls categories which have each others disjoints properties

12. **owl:ReflexiveProperty**  
or **owl:IrreflexiveProperty**
- <hasrelativeBasketCatU13Boys> a owl:ReflexiveProperty>.
  - Def : all team players which has a relation hasrelativeBasketCatU13Boys are linked together
13. **owl:propertyChainAxiom**
- <TeamCaptain> ref:type owl:ObjectProperty> ; owl:propertyChainAxiom ( <TeamPlayer> , <TechnicalLeader>).
  - Def : One team player which is the TechnicalLeader is defined as the Captain of the team
14. **owl:FunctionalProperty**
- <GameNumber> a owl:FunctionalProperty.
  - Def : During one game each Basket player has a unique number
15. **owl:InverseFunctionalProperty**
- <Playerlicense> a owl:InverseFunctionalProperty.
  - Def : Each Basket player has a unique Basket ID
16. **owl:hasKey**
- < BasketCatU13Boys > owl:hasKey (<name> <firstname> <birthdate> <GameNumber>).
  - Def : Before starting a game all the following properties are checked to be sure the player is unique (Name / Firstname / Birthdate / GameNumber)
17. **owl:allValuesFrom**
- < BasketCatU13BoysTeam1 > owl:allValuesfrom < BasketCatU13Boys>.
  - Def : All Basket U13 players of team1 are coming from Basket U13 boys category
18. **owl:someValuesFrom**
- < BasketCatU13BoysTeam1Startparty > owl:someValuesfrom < BasketCatU13BoysTeam1>.
  - Def : to start the game 5 teamplayers are selected by the coach among the Basket U13 boys team1
19. **owl:hasValue**
- < BasketoutsidezoneShoot > owl:hasValue 3.
  - Def : all shoot outside the zone scores 3 points
20. **owl:maxCardinality**  
or **owl:minCardinality**
- < BasketPlayerMaxFault > owl:maxCardinality 5.
  - Def : During a game a player could not do more than 5 faults
21. **owl:qualifiedCardinality**
- < BasketNumberSelectionWeekEnd > owl:qualifiedCardinality 1.
  - Def : During a week end a player could not be selected to perform more than 1 game

---

## Day 05: questions from the course on Vocabularies.

### Q6.1 What do you think of the annotation?

```
@prefix skos: <http://www.w3.org/2004/02/skos/core#>.  
<#B-A-Ba> a skos:Concept ;  
    skos:prefLabel "B.A.-BA"@en , "b.a.-ba"@en ;  
    skos:altLabel "B-A-BA"@en , "b-a-ba"@en ;  
    skos:hiddenLabel "BABA"@en , "baba"@en .
```

Answer : selected answer is highlighted in green ; the problem here : we have 2 prefLabel in English langage which is not allowed – Considered as Error

### Q6.2 practice:

1. Using the site prefix.cc find back the namespace usually associated to the SKOS prefix
2. Access the URL of the namespace and find the RDF source file defining the SKOS vocabulary
3. Find the definition of the property narrowMatch and give all the relations it has with other properties

Answer :

- SKOS URI is <http://www.w3.org/2004/02/skos/core#>
- The properties of narrowMatch are the following ones :
  - narrower
  - mapping relation
  - broadMatch relations free

<a href="#">skos:narrowMatch</a>	
URI:	<a href="http://www.w3.org/2004/02/skos/core#narrowMatch">http://www.w3.org/2004/02/skos/core#narrowMatch</a>
Definition:	<a href="#">Section 10. Mapping Properties</a>
Label:	has narrower match
Super-properties:	<a href="#">skos:mappingRelation</a> <a href="#">skos:narrower</a>
Inverse of:	<a href="#">skos:broadMatch</a>

### Q6.3 practice:

1. Open the source file of Dublin Core Terms:  
<http://dublincore.org/2012/06/14/dcterms.rdf>  
Look at the definition of the class `FileFormat` and find the class it inherits from.
2. Choose your preferred book on Amazon, Fnac, etc. and describe it in an RDF annotation using as many DC primitives as necessary .
3. Add the most restrictive CC license to your preferred book ; is this license appropriate?

## Answer : DublinCore RDF content (in N3)

URI    Input Field

http://dublincore.org/2012/06/14/dcterms.rdf

Submit

Input ... automatically    Output N3

```
@prefix dcam: <http://purl.org/dc/dcam/> .
@prefix dcterms: <http://purl.org/dc/terms/> .
@prefix owl: <http://www.w3.org/2002/07/owl#> .
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .
@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#> .
@prefix skos: <http://www.w3.org/2004/02/skos/core#> .
@prefix xml: <http://www.w3.org/XML/1998/namespace> .
@prefix xsd: <http://www.w3.org/2001/XMLSchema#> .

dcterms:Agent a dcterms:AgentClass,
    rdfs:Class ;
    rdfs:label "Agent"@en ;
    dcterms:description "Examples of Agent include person, organization, and software agent."@en ;
    dcterms:hasVersion <http://dublincore.org/usage/terms/history/#Agent-001> ;
    dcterms:issued "2008-01-14"^^xsd:date ;
    rdfs:comment "A resource that acts or has the power to act."@en ;
    rdfs:isDefinedBy dcterms: .

dcterms:AgentClass a rdfs:Class ;
    rdfs:label "Agent Class"@en ;
    dcterms:description "Examples of Agent Class include groups seen as classes, such as students, women, charities, lecture" ;
    dcterms:hasVersion <http://dublincore.org/usage/terms/history/#AgentClass-003> ;
    dcterms:issued "2008-01-14"^^xsd:date ;
    dcterms:modified "2012-06-14"^^xsd:date ;
    rdfs:comment "A group of agents."@en ;
    rdfs:isDefinedBy dcterms: ;
    rdfs:subClassOf rdfs:Class .

dcterms:BibliographicResource a rdfs:Class ;
    rdfs:label "Bibliographic Resource"@en ;
    dcterms:hasVersion <http://dublincore.org/usage/terms/history/#BibliographicResource-001> ;
    dcterms:issued "2008-01-14"^^xsd:date ;
```

## Answer : FileFormat – is a subclass of “Mediatype” which is a subclass of “MediatypeorExtent”

```
dcterms:FileFormat a rdfs:Class ;
    rdfs:label "File Format"@en ;
    dcterms:description "Examples include the formats defined by the list of Internet Media Types."@en ;
    dcterms:hasVersion <http://dublincore.org/usage/terms/history/#FileFormat-001> ;
    dcterms:issued "2008-01-14"^^xsd:date ;
    rdfs:comment "A digital resource format."@en ;
    rdfs:isDefinedBy dcterms: ;
    rdfs:subClassOf dcterms:MediaType .
```

## Question 2 - Asnwer: Selected book – “Zidane – de Yazid à Zizou”

\*C:\Users\micka\Desktop\WEB semantic\Zidane\_Book.txt - Notepad++

File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?

human\_2013\_older.rdfx human\_2013\_older.owlx new1x human\_2013\_university.owlx human\_2013\_bis.rdfx human\_2013\_ter.rdfx Zidane\_Book.txt

```
1 @prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .
2 @prefix dc: <http://purl.org/dc/elements/1.1/> .
3 @prefix dcterms: <http://purl.org/dc/terms/> .
4 @prefix skos: <http://www.w3.org/2004/02/skos/core#> .
5 <https://www.amazon.fr/Zidane-Yazid-Zizou-Patrick-Fort/dp/2841878902>
6 dc:creator <https://fr.wikipedia.org/wiki/Patrick_Fort> , <https://fr.wikipedia.org/wiki/Jean-Philippe_Toussaint> ;
7 dc:title "Zidane De Yazid A Zizou"@fr ;
8 dc:language "fr" ;
9 dc:subject <#Bibliographie> ;
10 dc:date "2006-08-23" ;
11 dc:publisher <https://www.editionsarchipel.com> ;
12 dc:collection "ARCHIPEL.ARCHIP" ;
13 dc:format "text/html" ; dc:type dcterms:Text .
14
```

### Question 3 – add the most restrictive CC to the book

License add

### Q6.4 practice:

1. Get the source of the Foaf schema: <http://xmlns.com/foaf/spec/index.rdf>
2. Find the property `weblog`
3. What are the types of this property?
4. Does it inherit from other properties?
5. What is its signature?

```
foaf:weblog a rdf:Property,  
    owl:InverseFunctionalProperty,  
    owl:ObjectProperty ;  
    rdfs:label "weblog" ;  
    rdfs:comment "A weblog of some thing (whether person, group, company etc.)." ;  
    rdfs:domain foaf:Agent ;  
    rdfs:isDefinedBy foaf: ;  
    rdfs:range foaf:Document ;  
    rdfs:subPropertyOf foaf:page ;  
    vs:term_status "stable" .
```

#### Property :

- **Owl : inverseFunctionalProperty** : if people have same blog they are same person
- **Owl : objectProperty**

#### Subproperty :

- **Foaf:Page**

#### Property :

- **Domain : foaf:Agent**
- **Range : foaf:Document**

### Q6.5 practice:

1. Find the FOAF-a-Matic web page
2. Use this tool to generate your FOAF profile in RDF/XML
3. Translate it into Turtle, save and give the result in your answers.
4. Add five specific relationships to your FOAF file using RELATIONSHIPS:  
<http://purl.org/vocab/relationship/>

Answer – see below My FOAF in Turtle

```

@prefix admin: <http://webns.net/mvcb/> .
@prefix foaf: <http://xmlns.com/foaf/0.1/> .
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .
@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#> .
@prefix xml: <http://www.w3.org/XML/1998/namespace> .
@prefix xsd: <http://www.w3.org/2001/XMLSchema#> .

<> a foaf:PersonalProfileDocument ;
    admin:errorReportsTo <mailto:leigh@ldodds.com> ;
    admin:generatorAgent <http://www.ldodds.com/foaf/foaf-a-matic> ;
    foaf:maker <#me> ;
    foaf:primaryTopic <#me> .

<#me> a foaf:Person ;
    foaf:family_name "Caillon" ;
    foaf:givenname "Mickael" ;
    foaf:mbox_sha1sum "163727a1218e4fac3246476d8179bad32896ceb1" ;
    foaf:name "Mickael Caillon" ;
    foaf:nick "Mike" ;
    foaf:title "Mr" .

```

### With Relationship added

```

@prefix admin: <http://webns.net/mvcb/> .
@prefix foaf: <http://xmlns.com/foaf/0.1/> .
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .
@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#> .
@prefix rel: <http://purl.org/vocab/relationship/> .
@prefix xml: <http://www.w3.org/XML/1998/namespace> .
@prefix xsd: <http://www.w3.org/2001/XMLSchema#> .

<file:///base/data/home/apps/s%7Erdf-translator/2.408516547054015808/> a foaf:PersonalProfileDocument ;
    admin:errorReportsTo <mailto:leigh@ldodds.com> ;
    admin:generatorAgent <http://www.ldodds.com/foaf/foaf-a-matic> ;
    foaf:maker <file:///base/data/home/apps/s%7Erdf-translator/2.408516547054015808/#me> ;
    foaf:primaryTopic <file:///base/data/home/apps/s%7Erdf-translator/2.408516547054015808/#me> .

<file:///base/data/home/apps/s%7Erdf-translator/2.408516547054015808/#me> a foaf:Person ;
    rel:employedBy <http://DSTI/yyyyy/foaf.html#Cindy> ;
    rel:friendOf <http://DSTI/yyyyy/foaf.html#Nadjat> ;
    rel:hasMet <http://DSTI/yyyyy/foaf.html#Fabien> ;
    rel:neighborOf <http://DSTI/yyyyy/foaf.html#Maher> ;
    rel:worksWith <http://DSTI/yyyyy/foaf.html#Patrick> ;
    foaf:family_name "Caillon" ;
    foaf:givenname "Mickael" ;
    foaf:mbox_sha1sum "163727a1218e4fac3246476d8179bad32896ceb1" ;
    foaf:name "Mickael Caillon" ;
    foaf:nick "Mike" ;
    foaf:title "Mr" .

```

### Q6.6 What does this mean?

```

:BioRDF2DBLP a void:Linkset;
    void:target :BioRDF;
    void:target :DBLP;
    void:linkPredicate skos:exactMatch;
    void:triples 8936 .

```

**Answer :**

The object is a Linkset of 2 datasets (BioRDF & DBLP)

Using the predicate exact match to indicate when triples are linked

8936 triples are linked through this linkset

## Q6.7 practice:

1. Connect to the Void Store SPARQL endpoint:  
<http://void.rkbexplorer.com/sparql/>
2. What is the meaning of the default SPARQL query in the interface, run it and look at the results.
3. Write a SPARQL query to find the dataset that has for label "DBpedia-fr" and all its properties.

**DEFAULT QUERY IS :**

**SELECT DISTINCT ?endpoint WHERE { ?ds a void:Dataset . ?ds void:sparqlEndpoint ?endpoint }**

**All dataset which have SPARQL end point (way to ask SPARQL query) and we want distinct endpoint known in this dataset**

**NEW QUERY : 31 properties**

# void store

## SPARQL Query Interface

This interface permits queries to be made over the void documents held within this repository, using the [SPARQL Query Language](#). There are also some [example queries](#) which may be of interest. Please read the [known limitations](#).

```
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX owl: <http://www.w3.org/2002/07/owl#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX foaf: <http://xmlns.com/foaf/0.1/>
PREFIX dcterms: <http://purl.org/dc/terms/>
PREFIX scovo: <http://purl.org/NET/scovo#>
PREFIX void: <http://rdfs.org/ns/void#>
PREFIX akt: <http://www.aktors.org/ontology/portal#>
```

```
SELECT * WHERE { ?ds rdfs:label "DBpedia-fr" ; ?P ?endpoint }
```

Result format:  ▾

```

?P http://purl.org/dc/terms/rights
? Data comprising DBpedia release 3.4 and subsequent releases is licensed under the terms of the Creative Commons
endpoint Attribution-ShareAlike 3.0 license and the GNU Free Documentation License. Data comprising DBpedia releases up to and
including release 3.3 is licensed only under the terms of the GNU Free Documentation License.

27 ?ds http://dbpedia.org/dataid.ttl#DBpedia_fr_3.9
?P http://dataid.dbpedia.org/ns#licenseName
? Creative Commons Attribution-ShareAlike 4.0
endpoint

28 ?ds http://dbpedia.org/dataid.ttl#DBpedia_fr_3.9
?P http://dataid.dbpedia.org/ns#ontologyLocation
? http://downloads.dbpedia.org/3.9/dbpedia_3.9.owl
endpoint

29 ?ds http://dbpedia.org/dataid.ttl#DBpedia_fr_3.9
?P http://www.w3.org/ns/dcat#contactPoint
? http://dbpedia.org/dataid.ttl#Sylvain_Boissel
endpoint

30 ?ds http://dbpedia.org/dataid.ttl#DBpedia_fr_3.9
?P http://www.w3.org/ns/dcat#contactPoint
? http://dbpedia.org/dataid.ttl#_Julien_Cojan
endpoint

31 ?ds http://dbpedia.org/dataid.ttl#DBpedia_fr_3.9
?P http://dataid.dbpedia.org/ns#latestVersion
? http://dbpedia.org/dataid.ttl#DBpedia_fr_3.9
endpoint

```

### Q6.8 What does this mean?

```

ex:plot prov:used ex:stats1998 .
ex:bar-chart prov:wasGeneratedBy ex:plot .
ex:stats1998 a dcat:Distribution ;
    dcat:format [ rdfs:label "CSV" ] ;
    dcat:mediaType "text/csv" .

```

**Answer :**

**Plot used the resource stats 1998 (which is database with distribution as csv)**

**Plot product bar-chart as output**

## Q6.9 What does this mean?

```
@prefix dcat: <http://www.w3.org/ns/dcat#> .
@prefix void: <http://rdfs.org/ns/void#> .
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .
@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#> .
@prefix prov: <http://www.w3.org/ns/prov#> .
@prefix dct: <http://purl.org/dc/terms/> .
@prefix foaf: <http://xmlns.com/foaf/0.1/> .
@prefix xsd: <http://www.w3.org/2001/XMLSchema#> .
@base <http://inria.fr/data> .

:db-employ
  a dcat:Distribution ;
  dcat:downloadURL <http://wimmics.inria.fr/docs/employ-2014.sql> ;
  dct:title "SQL Dump of the employees" ;
  dct:spatial <http://www.geonames.org/6640252> ;
  dct:issued "2015-01-12"^^xsd:date ;
  dct:temporal <http://reference.data.gov.uk/id/year/2014> ;
  dct:publisher <http://inria.fr> ;
  dcat:mediaType "application/sql" ;
  dcat:format [ rdfs:label "SQL" ] ;
  dct:language <http://id.loc.gov/vocabulary/iso639-1/fr> ;
  dcat:byteSize "38729"^^xsd:decimal .

:R2RTransform12 prov:used :db-employ ;
  prov:used :R2R-employ-mapping ;
  prov:used <http://xmlns.com/foaf/0.1/> .

:FoaFDump a void:Dataset;
  void:feature <http://www.w3.org/ns/formats/RDF_XML>;
  void:dataDump <http://wimmics.inria.fr/docs/employ-2014.rdf>;
  void:exampleResource <http://ns.inria.fr/fabien.gandon#me> ;
  void:vocabulary <http://xmlns.com/foaf/0.1/>;
  void:triples 12875;
  dct:title "RDF Dump of the employees" ;
  prov:wasGeneratedBy :R2RTransform12 ;
  prov:generatedAtTime "2015-01-14T11:38:27"^^xsd:dateTime ;
  prov:wasDerivedFrom :db-employ .
```

### Answer

**Db-employ distribution SQL dump**

**R2RTransform12 Used this database**

**FoaF is a void dataset**

**Was generated by previous object (R2RTransform12)**

**Know the date and knowing it's derived from Db-employ**

**Use RDF annotation to precise this dump is a transformation of our Db-employ and to do that we used foaf vocabulary**

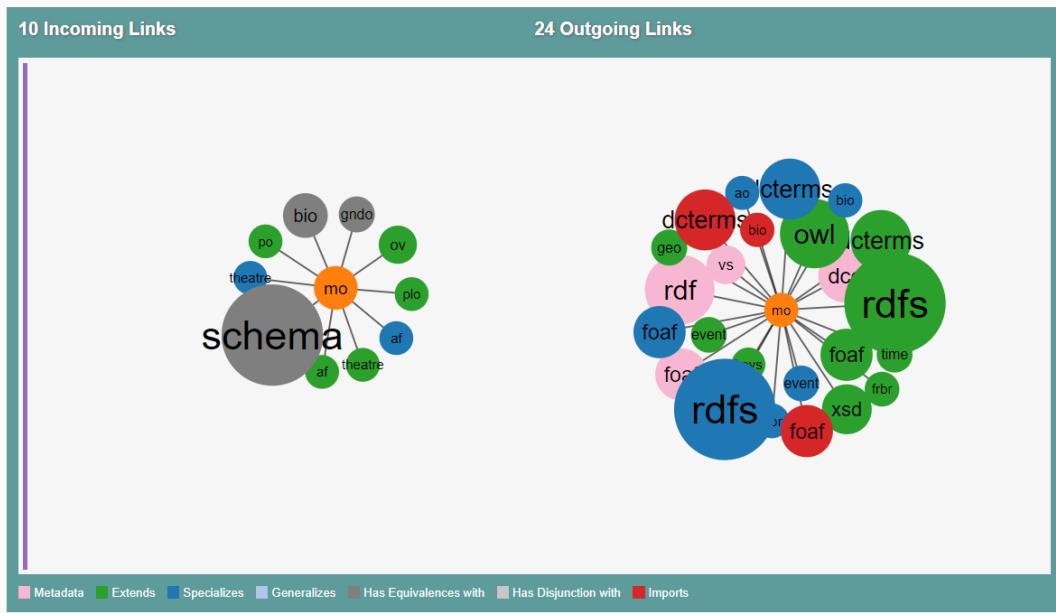
## Q6.10 practice:

1. Connect to the LOV directory: <https://lov.linkeddata.es/>
2. Search for schemas talking about “music artist”.
3. What is the top ontology you find?
4. What is its version number?
5. Is it reused by other ontologies?
6. How many classes and properties does it have?
7. What expressivity does it use? (RDFS, OWL)

Answer : By clicking on the following link <http://purl.org/ontology/mo/MusicArtist> we obtain the following information

The screenshot shows the LOV (Linked Open Vocabularies) interface for the Music Ontology (mo). The top navigation bar includes links for VOCABS, TERMS, AGENTS, and SPARQL/DUMP. The main title is "Music Ontology (mo)". On the left, there's a "Metadata" section with fields like URI (<http://purl.org/ontology/mo/>), Namespace (<http://purl.org/ontology/mo/>), homepage (<http://musicontology.com/>), Description (The Music Ontology Specification provides main concepts and properties for describing music (i.e. artists, albums and tracks) on the Semantic Web @en), and Language. The "Creator" section lists several individuals with their URIs. The "Comment" section contains a detailed history of the ontology's development. To the right, there are sections for "Statistics" (Classes: 60, Properties: 166, Datatypes: 0, Instances: 13), "Expressivity" (RDF, RDFS, OWL), "Tags" (Music), and "LOD" (Vocabulary used in 7 datasets).

- **The top ontology fund is Music Ontology ( <http://purl.org/ontology/mo/>)**
- **The last revision number is V2.15 (2013)**
- **<http://purl.org/ontology/mo/> is reused by others ontologies**
- **Number of properties : 166**
- **Classes : 60**
- **Expressivity is RDF / RDFS / OWL**



#### Vocabulary Version History



## RDF in Purple : it uses Creative Commons Rights Expression Language (CC REL)

http://purl.org/ontology/mo/MusicArtist

Input ... automatically ▾ Output N3 ▾

```

@prefix ao: <http://purl.org/ontology/ao/core#> .
@prefix bio: <http://purl.org/vocab/bio/0.1/> .
@prefix cc: <http://web.resource.org/cc/> .
@prefix dc: <http://purl.org/dc/elements/1.1/> .
@prefix dcterms: <http://purl.org/dc/terms/> .
@prefix event: <http://purl.org/NET/cdm/event.owl#> .
@prefix foaf: <http://xmlns.com/foaf/0.1/> .
@prefix frbr: <http://purl.org/vocab/frbr/core#> .
@prefix geo: <http://www.opengis.net/ont/geosparql#> .
@prefix geol: <http://www.w3.org/2003/01/geo/wgs84_pos#> .
@prefix keys: <http://purl.org/NET/c4dm/keys.owl#> .
@prefix mo: <http://purl.org/ontology/mo/> .
@prefix owl: <http://www.w3.org/2002/07/owl#> .
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .
@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#> .
@prefix time: <http://www.w3.org/2006/time#> .
@prefix vann: <http://purl.org/vocab/vann/> .
@prefix vs: <http://www.w3.org/2003/06/sw-vocab-status/ns#> .
@prefix wot: <http://xmlns.com/wot/0.1/> .
@prefix xml: <http://www.w3.org/XML/1998/namespace> .
@prefix xsd: <http://www.w3.org/2001/XMLSchema#> .

mo:Arranger a owl:Class ;
    rdfs:label "arranger" ;
    mo:level "2" ;
    rdfs:subClassOf foaf:Agent ;
    owl:equivalentClass [ a owl:Restriction ;
        owl:onProperty event:isAgentIn ;
        owl:someValuesFrom mo:Arrangement ] ;
    vs:term_status "unstable" .

mo:CD a owl:Class ;
    rdfs:label "CD" ;
    mo:level "1" ;
    rdfs:comment "Compact Disc used as medium to record a musical manifestation." ;
    rdfs:isDefinedBy mo: ;
    rdfs:subClassOf mo:Medium ;
    vs:term_status "unstable" .

```

## Day 05: questions from the course on other data formats.

Q7.1 What are the triples produced with this mapping and this table?

```
:My_Table rdf:type rr:TriplesMap ;  
    rr:subjectMap [ rr:template  
"https://www.ietf.org/rfc/rfc{NUM}.txt"; ];  
    rr:predicateObjectMap [  
        rr:predicateMap [ rr:predicate dc:title ];  
        rr:objectMap [ rr:column "ttl" ]  
    ].
```

ID	NUM	ttl
87	2616	Hypertext Transfer Protocol -- HTTP/1.1
88	2396	Uniform Resource Identifiers (URI): Generic Syntax

Answer : 2 triples are generated

<https://www.ietf.org/rfc/rfc2616.txt> with dc:title Hypertext Transfer Protocol -- HTTP/1.1

<https://www.ietf.org/rfc/rfc2396.txt> with dc:title Uniform Resource Identifiers (URI): Generic Syntax

Q7.2 What are the triples encoded in this HTML?

```
<div vocab="http://xmlns.com/foaf/0.1/" resource="#cathy"  
typeof="Person">  
  <p> <span property="name">Catherine Faron</span>  
    (mail: <span property="mbox">faron@i3s.unice.fr</span>) is a  
    friend of  
    <span property="knows"  
    resource="http://ns.inria.fr/fabien.gandon#me">Fabien Gandon</span>  
  </p>  
</div>
```

Answer :

Triples encoded are the following ones

- Use Foaf : Resource Cathy is a foaf Person
- Resource Cathy has for foaf name Catherine Faron
- Resource Cathy has for foaf mbox faron@i3s.unice.fr
- Resource Cathy foaf knows this URI  
<http://ns.inria.fr/fabien.gandon#me> - Fabien Gandon

### Q7.3 practice:

1. Look at the Web Page

<https://www.w3.org/TR/xhtml-rdfa-scenarios/scenario-2.html>

2. Call the translator on this Web page to get Turtle:

<http://rdf-translator.appspot.com/>

3. What does the extracted triple say?

4. Do the same with:

[http://schema.org/docs/schema\\_org\\_rdfa.html](http://schema.org/docs/schema_org_rdfa.html)

What kind of data is represented in that page?

5. Again, what are the different subjects described in RDFa in this page:

<http://iricelino.org/rdfa/sample-annotated-page.html>

**1 – For the following link (<https://www.w3.org/TR/xhtml-rdfa-scenarios/scenario-2.html>) / after translation in Turtle we obtain Only one triple**

The screenshot shows the RDF Translator interface. At the top, there is a URL input field containing "https://www.w3.org/TR/xhtml-rdfa-scenarios/scenario-2.htm". Below it is a "Submit" button. Underneath the input field is a dropdown menu with "Input ... automatically" and "Output N3". The main area displays the generated Turtle code:

```
@prefix dc: <http://purl.org/dc/terms/> .
@prefix dcterms: <http://purl.org/dc/terms/> .
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .
@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#> .
@prefix xml: <http://www.w3.org/XML/1998/namespace> .
@prefix xsd: <http://www.w3.org/2001/XMLSchema#> .

<https://www.w3.org/TR/xhtml-rdfa-scenarios/scenario-2.html> dc:creator "Paul"@en .
```

Below the code, a note says: "You might pick one of the following persistent URIs of the output above to share with others or to integrate into your own applications:" followed by two options: "highlighted (HTML-rendered)" and "raw (delivered with respective media type)".

**2 – For the following link ([http://schema.org/docs/schema\\_org\\_rdfa.html](http://schema.org/docs/schema_org_rdfa.html)) / after translation in Turtle we obtain many triples – it's an RDF schema**

The screenshot shows the RDF Translator interface. At the top, there is a "URI" tab and an "Input Field" containing "http://schema.org/docs/schema\_org\_rdfa.html". Below it is a "Submit" button. Underneath the input field is a dropdown menu with "Input ... automatically" and "Output N3". The main area displays the generated Turtle code, which is very long and contains numerous triples defining various schema.org classes and their properties.

```
@prefix dc: <http://purl.org/dc/terms/> .
@prefix dcterms: <http://purl.org/dc/terms/> .
@prefix owl: <http://www.w3.org/2002/07/owl#> .
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .
@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#> .
@prefix schema: <http://schema.org/> .
@prefix xml: <http://www.w3.org/XML/1998/namespace> .
@prefix xsd: <http://www.w3.org/2001/XMLSchema#> .

schema:APIReference a rdfs:Class ;
  rdfs:label "APIReference"@en ;
  rdfs:comment "Reference documentation for application programming interfaces (APIs)."@en ;
  rdfs:subClassOf schema:TechArticle .

schema:AboutPage a rdfs:Class ;
  rdfs:label "AboutPage"@en ;
  rdfs:comment "Web page type: About page."@en ;
  rdfs:subClassOf schema:WebPage .

schema:AcceptAction a rdfs:Class ;
  rdfs:label "AcceptAction"@en ;
  rdfs:comment "The act of committing to/adopting an object.\n\nRelated actions:\n* [[RejectAction]]: The antonym of AcceptAction .
  rdfs:subClassOf schema:AllocateAction .

schema:Accommodation a rdfs:Class ;
  rdfs:label "Accommodation"@en ;
  dc:source <https://www.w3.org/wiki/WebSchemas/SchemaDotOrgSources#STI_Accommodation_Ontology> ;
  rdfs:comment "An accommodation is a place that can accommodate human beings, e.g. a hotel room, a camping pitch, or a For more specific types of accommodations not defined in schema.org, one can use additional type with external vocabularies.
  <br /><br />
  See also the <a href="#">dedicated document on the use of schema.org for marking up hotels and other forms of
  accommodation."@en .
```

3 – For the following link (<http://iricelino.org/rdfa/sample-annotated-page.html>) / after translation in Turtle we obtain many triples – Use RDFa for a schema : definition of ontology and ontology it self – very useful

```
@prefix cc: <http://creativecommons.org/ns#> .
@prefix dc: <http://purl.org/dc/terms/> .
@prefix dcterms: <http://purl.org/dc/terms/> .
@prefix foaf: <http://xmlns.com/foaf/0.1/> .
@prefix ns1: <cal:> .
@prefix ns2: <dbp:> .
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .
@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#> .
@prefix xml: <http://www.w3.org/XML/1998/namespace> .
@prefix xsd: <http://www.w3.org/2001/XMLSchema#> .

<dbr:Baruch_Spinoza> a foaf:Person ;
    ns2:influenced <dbr:Albert_Einstein>,
        <dbr:Arthur_Schopenhauer>;
    foaf:familyName "Spinoza"@en .

<http://iricelino.org/rdfa/sample-annotated-page.html> cc:license <http://creativecommons.org/licenses/by-nc-sa/3.0/> ;
    dc:creator "Irene Celino"@en ;
    dc:title "Sample page annotated with RDFa 1.1"@en .

<http://iricelino.org/rdfa/sample-annotated-page.html#me> a foaf:Person ;
    foaf:givenName "Giovanni"@it ;
    foaf:homepage <http://example.org/blog> ;
    foaf:knows [] a foaf:Person ;
        foaf:mbox <mailto:sue@example.org> ;
        foaf:name "Sue"@en ] ;
    foaf:mbox <mailto:john@example.org> ;
    foaf:name "John Doe"@en .

<urn:ISBN:0091808189> a <biblio:book> ;
    dc:title "Canteen Cuisine"@en .

<urn:ISBN:1596913614> a <biblio:book> ;
    dc:description "White's autobiography"@en .

<dbr:Albert_Einstein> ns2:birthPlace <dbr:Germany> ;
    ns2:citizenship <dbr:Germany>,
        <dbr:United_States> ;
    ns2:dateOfBirth "1879-03-14"^^xsd:date ;
    foaf:depiction <http://upload.wikimedia.org/wikipedia/commons/thumb/d/d3/Albert\_Einstein\_Head.jpg/460px-Albert\_Einstein\_Head.jpg> ;
    foaf:name "Albert Einstein"@en .

<dbr:Arthur_Schopenhauer> a foaf:Person .

<http://example.org/blog> dc:title "Understanding Semantics"@en ;
    foaf:primaryTopic <http://iricelino.org/rdfa/sample-annotated-page.html#semantics> .

<dbr:Germany> ns2:conventionalLongName "Federal Republic of Germany"@en .

[] a ns1:VEvent ;
    ns1:dtstart "2015-09-16T16:00:00-05:00"^^xsd:dateTime ;
    ns1:summary "one last summer Barbecue"@en .
```

## Q7.4 Use the online tool to play with RDFa adding for instance a “creator” property <https://rdfa.info/play/>

The screenshot shows the rdfa.info/play/ interface. On the left, there is a code editor containing RDFa code. On the right, there are two panes: 'Manu Sporny, Founder/CEO' and 'Mickael Caillon, Data Scientist'. Below these panes is a 'Raw Data' section. At the bottom is a 'Visualization' section containing a graph diagram. The graph has a central node labeled 'Item 1' (with a blue border) connected by lines to twelve circular nodes, each representing a different RDF triple extracted from the input code.

Raw Data:

```
<div>
  <a href="mailto:msporny@digitalbazaar.com" property="email" rdfs:label="msporny@digitalbazaar.com">msporny@digitalbazaar.com</a>
</div>
<div>
  Links: <a href="http://manu.sporny.org/" property="url" rdfs:label="Manu's homepage">Manu's homepage</a>
</div>
<div>
  <a href="http://mickael.caillon.org/images/mike.png" property="image" rdfs:label="mickael.caillon.org/images/mike.png"></a>
  <span property="name" rdfs:label="Mickael Caillon">Mickael Caillon</span>
  <span property="jobTitle" rdfs:label="Data Scientist">Data Scientist</span>
</div>
<div>
  Phone: <span href="tel:+33492501286" property="telephone" rdfs:label="(+33) 492501286">(+33) 492501286</span>
</div>
<div>
  E-mail: <a href="mailto:mickael.caillon@edu.dsti.com" property="email" rdfs:label="mailto:mickael.caillon@edu.dsti.com">msporny@digitalbazaar.com</a>
</div>
<div>
  Links: <a href="http://mike.caillon.org/" property="url" rdfs:label="Mike's homepage">Mike's homepage</a>
</div>
```

Visualization:

```
graph TD
  Item1((Item 1)) --- Node1(( ))
  Item1 --- Node2(( ))
  Item1 --- Node3(( ))
  Item1 --- Node4(( ))
  Item1 --- Node5(( ))
  Item1 --- Node6(( ))
  Item1 --- Node7(( ))
  Item1 --- Node8(( ))
  Item1 --- Node9(( ))
  Item1 --- Node10(( ))
  Item1 --- Node11(( ))
  Item1 --- Node12(( ))
```

## Q7.5 IMDB uses RDFa – OGP for the I like button

1. Choose a movie on IMDB <http://www.imdb.com>
2. Copy the URL of the page of the movie
3. Go to the RDFa 1.0 RDFa Distiller and Parser:  
<https://www.w3.org/2007/08/pyRdfa/>
4. Open the URI option, past the URL of the movie page and configure and perform the extraction to get Turtle
5. Try also the transformation on the translator:  
<http://rdf-translator.appspot.com/>

Movie : Dragon 3 – very few triples (5 triples) – way to generate data

```
@prefix ns1: <http://www.facebook.com/2008/> .
@prefix og: <http://ogp.me/ns#> .
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .
@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#> .
@prefix xml: <http://www.w3.org/XML/1998/namespace> .
@prefix xsd: <http://www.w3.org/2001/XMLSchema#> .

<https://www.imdb.com/news/ni62387189?pf_rd_m=A2FGELUUN0QJNL&pf_rd_p=73ff69c3-cf0f-4468-ab90-5a2ea2639a0b&pf_rd_r=ACNSQ1T5B4t
  og:image "https://m.media-amazon.com/images/G/01/imdb/images-ANDW73HA/imdb_fb_logo._CB1542065250_.png" ;
  og:site_name "IMDb" ;
  og:title "'How to Train Your Dragon 3' Looks to End February on a High Note" ;
  og:url "http://www.imdb.com/news/ni62387189" ;
  ns1:fbmlapp_id "116109575169727" .
```

## Q7.6 Test JSON-LD online

1. Transform your FOAF profile in JSON-LD with the translator:  
<http://rdf-translator.appspot.com/>
2. Use the following online tool to generate different variations of JSON-LD of your profile (expanded, collapsed, flattened, etc.)  
<http://json-ld.org/playground/>

Answer : Question 1 – transformation of my foaf in JSON-LD



```
{
  "@context": {
    "admin": "http://webns.net/mvcb/",
    "foaf": "http://xmlns.com/foaf/0.1/",
    "rdf": "http://www.w3.org/1999/02/22-rdf-syntax-ns#",
    "rdfs": "http://www.w3.org/2000/01/rdf-schema#",
    "rel": "http://purl.org/vocab/relationship/",
    "xsd": "http://www.w3.org/2001/XMLSchema#"
  },
  "@graph": [
    {
      "@id": "file:///base/data/home/apps/s%7Erdf-translator/2.408516547054015808/",
      "@type": "foaf:PersonalProfileDocument",
      "admin:errorReportsTo": {
        "@id": "mailto:leigh@ldodds.com"
      },
      "admin:generatorAgent": {
        "@id": "http://www.ldodds.com/foaf/foaf-a-matic"
      },
      "foaf:maker": {
        "@id": "file:///base/data/home/apps/s%7Erdf-translator/2.408516547054015808/#me"
      },
      "foaf:primaryTopic": {
        "@id": "file:///base/data/home/apps/s%7Erdf-translator/2.408516547054015808/#me"
      }
    },
    {
      "@id": "file:///base/data/home/apps/s%7Erdf-translator/2.408516547054015808/#me",
      "@type": "foaf:Person",
      "foaf:family_name": "Caillon",
      "foaf:givenname": "Mickael",
      "foaf:mbox_sha1sum": "163727a1218e4fac3246476d8179bad32896ceb1",
      "foaf:name": "Mickael Caillon",
      "foaf:nick": "Mike",
      "foaf:title": "Mr",
      "rel:employedBy": {
        "@id": "http://DSTI/yyyyy/foaf.html#Cindy"
      },
      "rel:friendOf": {
        "@id": "http://DSTI/yyyyy/foaf.html#Nadjat"
      },
      "rel:hasMet": {
        "@id": "http://DSTI/yyyyy/foaf.html#Fabien"
      },
      "rel:neighborOf": {
        "@id": "http://DSTI/yyyyy/foaf.html#Maher"
      },
      "rel:worksWith": {
        "@id": "http://DSTI/yyyyy/foaf.html#Patrick"
      }
    }
  ]
}
```

Question 2 : the following link (<http://json-ld.org/playground/>) is inactive – not possible to answer



**Q7.7** To provide the metadata of a CSV file I can...

- include them in a special column of the CSV.
- put them in a file with the same name plus “-metadata.json”.
- put them in the first line of my CSV file.
- put them in a file called “csv-metadata.json” in the same directory.
- add the URL of the metadata file to the content of my CSV file.

Answers are highlighted in green

**Q7.8** TV Catalog : Imagine we submit the following call to an LDP platform

```
GET /catalog/tv/ HTTP/1.1  
Host: example.org  
Accept: text/turtle; charset=UTF-8
```

and we receive the following answer:

```
HTTP/1.1 200 OK  
Content-Type: text/turtle; charset=UTF-8  
Link: <http://www.w3.org/ns/ldp#Resource>; rel="type",  
<http://www.w3.org/ns/ldp#DirectContainer>; rel="type"  
Allow: OPTIONS,HEAD,GET,POST,PUT  
Accept-Post: text/turtle, application/ld+json  
Content-Length: 232  
ETag: W/"90231678"  
@prefix ldp: <http://www.w3.org/ns/ldp#> .  
@prefix dcterms: <http://purl.org/dc/terms/> .  
@prefix cat: <http://example.org/vocab/catalog#> .  
<> a ldp:DirectContainer; ldp:membershipResource <#cat>;  
ldp:hasMemberRelation cat:hasProduct;  
    dcterms:title "Container of the TV descriptions";  
    ldp:contains <tv1>, <tv2> .  
<#cat> a cat:Catalog; dcterms:title "Catalog of TVs"; cat:hasProduct <tv1>,  
<tv2> .
```

Which ones of the following statements are true?

- the container is just a basic container.
- the container is a direct container.
- the container is an indirect container.
- the platform accepts the GET calls.
- the platform accepts the PATCH calls.
- the platform accepts RDF/XML format.
- the platform accepts RDF Turtle.
- the platform accepts RDF JSON-LD.
- a link hasProduct is automatically created between the resource #cat and the resources of this container

Answers are highlighted in green