

Lecture Questions

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Day 01: questions from the course.

Q1.1 Practice XML replace missing parts

```
<archi_book>
  <short_title>Architecture Now</short_title>
  <main_author>Jodidio, Philip</main_author>
  <ID isbn10="3822840912" />
</archi_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>

HTML

Fabien Gandon (Q23014205)

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computer science researcher

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Language	Label	Description	Also known as
English	Fabien Gandon	computer science researcher	
French	Fabien Gandon	chercheur en informatique	

JSON

```
{
  "entities": {
    "Q23014205": {
      "pageid": 25028548,
      "ns": 0,
      "title": "Q23014205",
      "lastrevid": 1346743353,
      "modified": "2021-01-23T14:23:53Z",
      "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"
        }
      }
    }
  }
}
```

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:skos="http://www.w3.org/2004/02/skos/core#" xmlns:schema="http://schema.org/"
  xmlns:cc="http://creativecommons.org/ns#" xmlns:geo="http://www.opengis.net/ont/geosparql#"
  xmlns:prov="http://www.w3.org/ns/prov#" xmlns:wd="http://www.wikidata.org/entity/"
  xmlns:data="https://www.wikidata.org/wiki/Special:EntityData/"
  xmlns:s="http://www.wikidata.org/entity/statement/" xmlns:ref="http://www.wikidata.org/reference/"
```

Turtle

```
@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 skos: <http://www.w3.org/2004/02/skos/core#> .
@prefix schema: <http://schema.org/> .
@prefix cc: <http://creativecommons.org/ns#> .
@prefix geo: <http://www.opengis.net/ont/geosparql#> .
@prefix prov: <http://www.w3.org/ns/prov#> .
@prefix wd: <http://www.wikidata.org/entity/> .
@prefix data: <https://www.wikidata.org/wiki/Special:EntityData/> .
@prefix s: <http://www.wikidata.org/entity/statement/> .
```

N-Triples

```
<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>
  <http://schema.org/softwareVersion>
    "1.0.0" .
```

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?

dbp:populationDemonym : **Londoner (en)**

Vienna URI : **<http://dbpedia.org/resource/Vienna>**

Vienna native name : **Wien (en)**

Q1.4 WHO.IS?

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

inria.fr : **Florian DUFOUR**

fabien.info : **(This information is hidden)**

lemonde.fr : **SOCIETE EDITRICE DU MONDE**

Q1.5 CURL

1. Ten first lines:

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

```
curl -o Paris-rdf-xml.txt -L -H "Accept: application/rdf+xml" http://dbpedia.org/resource/Paris
```

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`

<http://dbpedia.org/resource/Paris>

HTML:

```
<!DOCTYPE html>
<html
  prefix="
    dbp: http://dbpedia.org/property/
    dbo: http://dbpedia.org/ontology/
    dct: http://purl.org/dc/terms/ "
  lang="en" >
<!-- header -->
<head profile="http://www.w3.org/1999/xhtml/vocab">
  <meta charset="utf-8" />
  <meta http-equiv="X-UA-Compatible" content="IE=edge" />
  <meta name="viewport" content="width=device-width, initial-scale=1, shrink-to-fit=no" />
```

RDF-XML

```
<?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:foaf="http://xmlns.com/foaf/0.1/"
  xmlns:skos="http://www.w3.org/2004/02/skos/core#"
  xmlns:dbp="http://dbpedia.org/property/"
  xmlns:geo="http://www.w3.org/2003/01/geo/wgs84_pos#"
  xmlns:dbo="http://dbpedia.org/ontology/"
```

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

`curl -o Fabien.html -L -H "Accept: text/html" http://ns.inria.fr/fabien.gandon#me`

`curl -o Fabien-rdf.xml.txt -L -H "Accept: application/rdf+xml" http://ns.inria.fr/fabien.gandon#me`

HTML:

```
<?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>
```

RDF-XML

```
<?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: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"/>
  </foaf:PersonalProfileDocument>
```

<http://dbpedia.org/resource/Vienna>

```
curl -o Vienna.html -L -H "Accept: text/html" http://dbpedia.org/resource/Vienna
```

```
curl -o Vienna-rdf-xml.txt -L -H "Accept: application/rdf+xml" http://dbpedia.org/resource/Vienna
```

HTML:

```
<!DOCTYPE html>
<html
  prefix="
    dbp: http://dbpedia.org/property/
    dbo: http://dbpedia.org/ontology/
    dct: http://purl.org/dc/terms/"
  lang="en">
<!-- header -->
<head profile="http://www.w3.org/1999/xhtml/vocab">
  <meta charset="utf-8" />
  <meta http-equiv="X-UA-Compatible" content="IE=edge" />
  <meta name="viewport" content="width=device-width, initial-scale=1, shrink-to-fit=no" />
```

RDF-XML

```
<?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:foaf="http://xmlns.com/foaf/0.1/"
  xmlns:skos="http://www.w3.org/2004/02/skos/core#"
```

```
xmlns:dbp="http://dbpedia.org/property/"
xmlns:geo="http://www.w3.org/2003/01/geo/wgs84_pos#"
xmlns:dbo="http://dbpedia.org/ontology/"
xmlns:dct="http://purl.org/dc/terms/"
xmlns:georss="http://www.georss.org/georss/"
```

<http://id.loc.gov/authorities/names/n79091479>

```
curl -o Hugo.html -L -H "Accept: text/html" http://id.loc.gov/authorities/names/n79091479
```

```
curl -o Hugo-rdf-xml.txt -L -H "Accept: application/rdf+xml" http://id.loc.gov/authorities/names/n79091479
```

HTML:

```
<!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" />
```

RDF-XML

```
<rdf:RDF xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:madsrdf="http://www.loc.gov/mads/rdf/v1#">
    <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>Hugo, Victor, 1802-1885</madsrdf:authoritativeLabel>
        <madsrdf:elementList rdf:parseType="Collection">
            <madsrdf:FullNameElement>
                <madsrdf:elementValue>Hugo, Victor,</madsrdf:elementValue>
            </madsrdf:FullNameElement>
            <madsrdf:DateNameElement>
                <madsrdf:elementValue>1802-1885</madsrdf:elementValue>
            </madsrdf:DateNameElement>
        </madsrdf:elementList>
        <madsrdf:hasVariant>
            <madsrdf:PersonalName>
                <rdf:type rdf:resource="http://www.loc.gov/mads/rdf/v1#Variant" />
```

<http://purl.uniprot.org/uniprot/P43121>

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

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

HTML:

```
<!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 & 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.css2021_01"
type="text/css" rel="stylesheet"/><link href="/tippy.css" type="text/css" rel="stylesheet"/><script
type="text/javascript">
    var BASE = '/';
</script><script src="/js-compr.js2021_01" type="text/javascript"></script><script
type="text/javascript">
    uniprot.isInternal = false;
    uniprot.namespace = 'uniprot';
    uniprot.releasedate = '2021_01';
</script><script type="text/javascript">
    ;
```

RDF-XML

```
<?xml version='1.0' encoding='UTF-8'?>
<rdf:RDF xml:base="http://purl.uniprot.org/uniprot/" xmlns="http://purl.uniprot.org/core/"
xmlns:ECO="http://purl.obolibrary.org/obo/ECO_" xmlns:annotation="http://purl.uniprot.org/annotation/"
xmlns:citation="http://purl.uniprot.org/citations/" xmlns:dcterms="http://purl.org/dc/terms/"
xmlns:disease="http://purl.uniprot.org/diseases/" xmlns:enzyme="http://purl.uniprot.org/enzyme/"
xmlns:faldo="http://biohackathon.org/resource/faldo#" xmlns:foaf="http://xmlns.com/foaf/0.1/"
xmlns:go="http://purl.obolibrary.org/obo/GO_" xmlns:isoform="http://purl.uniprot.org/isoforms/"
xmlns:keyword="http://purl.uniprot.org/keywords/" xmlns:location="http://purl.uniprot.org/locations/"
xmlns:owl="http://www.w3.org/2002/07/owl#" xmlns:position="http://purl.uniprot.org/position/"
xmlns:pubmed="http://purl.uniprot.org/pubmed/" xmlns:range="http://purl.uniprot.org/range/"
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:taxon="http://purl.uniprot.org/taxonomy/"
xmlns:tissue="http://purl.uniprot.org/tissues/">
<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">2021-02-10</modified>
```

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

`curl -o json.txt -L -H "Accept: application/json" https://www.wikidata.org/wiki/Special:EntityData/Q551861`

Format : **JSON**

Topic : **Xavier Dolan**

http://dx.doi.org/10.1007/3-540-45741-0_18

`curl -o turtle.txt -L -H "Accept: text/turtle" http://dx.doi.org/10.1007/3-540-45741-0_18`

Format : **Turtle**

Topic : **Book titled “Distributed Artificial Intelligence for Distributed Corporate Knowledge Management” written by : Fabien Gandon and Rose Dieng-Kuntz.**

Q1.6 Recall five best practices of linked open data



When you put data on the web, it should be :

1. Open license;
2. Machine-readable;
3. In non-proprietary format;
4. Compliant with RDF standards;
5. Linked RDF, that is to include as many links as possible to others resources.

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.

Original text from Wikipedia:

Harry Potter is a series of seven fantasy novels written by British author, J. K. Rowling. The novels chronicle the lives of a young wizard, Harry Potter, and his friends Hermione Granger and Ron Weasley, all of whom are students at Hogwarts School of Witchcraft and Wizardry. The main story arc concerns Harry's struggle against Lord Voldemort, a dark wizard who intends to become immortal, overthrow the wizard governing body known as the Ministry of Magic and subjugate all wizards and Muggles (non-magical people).

Annotated text from DBpedia Spotlight :



Confidence:

0.5

Language:

English

☐ n-best candidates

SELECT TYPES...

ANNOTATE

[Harry Potter](#) is a series of seven [fantasy](#) novels written by [British](#) author, J. K. Rowling. The novels chronicle the lives of a young [wizard](#), [Harry Potter](#), and his friends [Hermione Granger](#) and [Ron Weasley](#), all of whom are students at [Hogwarts](#) School of [Witchcraft](#) and [Wizardry](#). The main [story arc](#) concerns Harry's struggle against [Lord Voldemort](#), a dark [wizard](#) who intends to become immortal, overthrow the [wizard](#) governing body known as the Ministry of Magic and subjugate all wizards and Muggles (non-magical people).

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)

Directed labeled multigraph

Directed : Edges have a direction

Labeled : Edges and nodes have labels

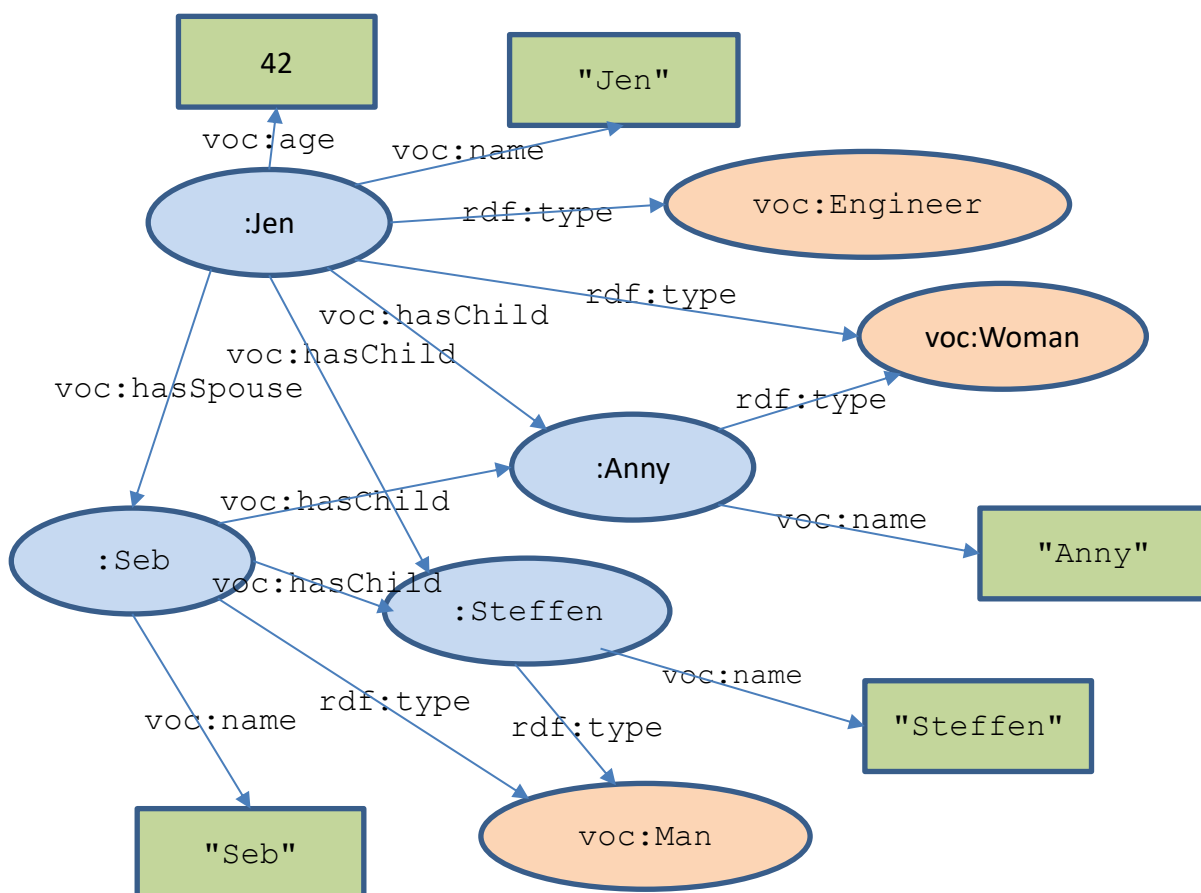
Multigraph : 2 nodes can be linked with multiple edges

Q2.1 Fill the blanks

"Jen is an engineer woman, 42-year old, married to Seb who is a man with whom she had two children: Anny who is a woman and Steffen who is a man". For each person we also explicitly specify the name.

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

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;#" xml:base="http://www.unice.fr/data">
  <voc:Woman rdf:about="#Jen">
    <voc:name>Jen</voc:name>
    <voc:age rdf:datatype="http://www.w3.org/2001/XMLSchema#integer">42
</voc:age>
    <voc:hasSpouse rdf:resource="#Seb"></voc:hasSpouse>
    <voc:hasChild rdf:resource="#Steffen"></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>
  </voc:Woman>
  <voc:Man rdf:about="#Seb">
    <voc:name>Seb</voc:name>
    <voc:hasChild rdf:resource="#Steffen"></voc:hasChild>
    <voc:hasChild rdf:resource="#Anny"></voc:hasChild>
  </voc:Man>
  <voc:Man rdf:about="#Steffen">
    <voc:name>Steffen</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 "42"^^xsd:string ;
    voc:hasChild <http://www.unice.fr/data#Anny>,
<http://www.unice.fr/data#Steffen>;
    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#Steffen> ;
    voc:name "Seb" .
<http://www.unice.fr/data#Anny> a voc:Woman ;
    voc:name "Anny" .
<http://www.unice.fr/data#Steffen> a voc:Man ;
    voc:name "Anny" .
```



```
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/> .
```

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#Danse"/>
    <exs:nbPages
rdf:datatype="http://www.w3.org/2001/XMLSchema#int">73</exs:nbPages>
  </rdf:Description>
</rdf:RDF>
```

This RDF describes a document doc.html. It states that the document is a Report of 73 pages, that has for theme both Music and Danse.

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?

Syntax : **RDF/XML**

Languages aren't specified.

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/data/algebra>
{
  <http://inria.fr/rr/doc.html>
    dcterms:subject
      <http://data.bnf.fr/ark:/12148/cb121105993> .
}
```

TriG

The triple (doc.html of subject (specified URI)) belongs to the graph Algebra

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?

Syntax : **RDF/XML**

Metadata using reification by statements.

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 . }
```

8 results corresponding to 8 Person objects.

```
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
```

It matches all which have Paris as a label in French, and then extracts all related properties and values.

x	p	v
:Paris [http]	rdf:type [http]	owl:Thing [http]
:Paris [http]	rdf:type [http]	dbpedia:ontology/Place [http]
:Paris [http]	rdf:type [http]	dbpedia:ontology/Location [http]
:Paris [http]	rdf:type [http]	<http://www.w3.org/2003/01/geo/wgs84_pos#SpatialThing> [http]
:Paris [http]	rdf:type [http]	dbpedia:class/yago/Object100002684 [http]
:Paris [http]	rdf:type [http]	dbpedia:class/yago/PhysicalEntity100001930 [http]
:Paris [http]	rdf:type [http]	dbpedia:class/yago/Prefecture108626947 [http]
:Paris [http]	rdf:type [http]	dbpedia:class/yago/Region108630985 [http]
:Paris [http]	rdf:type [http]	dbpedia:class/yago/Seat108647945 [http]
:Paris [http]	rdf:type [http]	dbpedia:class/yago/Site108651247 [http]

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

The query returns the qualified-name and the english full name of the presidents of the USA

wd:Q30 : **United States of America**

p:P6 : **Head of government (President)**

Qualified-name of “given name” : **p:P735**

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

```
SELECT ?p
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

```
SELECT ?p
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

```

SELECT ?age
WHERE { ?x c:name "Fabien";
        c:age ?age }

```

```

SELECT ?name
WHERE { ?x c:name ?name;
        c:age ?age.
        FILTER( ?age < 50 ) }

```

```

SELECT ?p ?v
WHERE { ?x ?p ?v;
        c:name "Fabien";
        c:age ?age.
        FILTER( ?age < 50 ) }

```

```

SELECT ?name
WHERE { ?x c:name "Fabien", ?name.
        FILTER ( ?name != "Fabien" ) }

```

```

SELECT ?x
WHERE { ?x ?p ?v;
        ?q ?v.
        FILTER ( ?p != ?q ) }

```

```

SELECT ?x
WHERE { ?x ?p ?v, ?y.
        FILTER ( ?v != ?y ) }

```

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 }
}

```

There's no shared variable, so it'll return all members of organisations, which include cases where `ex:a c:memberOf ex:b`.

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

```

SELECT ?x
WHERE { ?x c:memberOf ?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))
```

Authors with their number of documents in descending orders.

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

First option : **?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 }
}
```

People and names of who they know, but if the name is unavailable, put John Doe.

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
```

People and the average age of the people they know.

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

```
SELECT ?x
WHERE { ?x c:study ?subject. VALUES(?subject)( c:Informatics c:Mathematics ) }
```

```
SELECT ?x ?name
WHERE { ?x c:study ?subject.
        VALUES(?subject)( c:Informatics c:Mathematics )
        OPTIONAL { ?x c:name ?name } }
```

```
SELECT ?x ?name ?g
WHERE { ?x c:study ?subject.
        VALUES(?subject)( c:Informatics 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 } }
```

- ?x ?p ?y on ex:g1 because we are using from
- graph ?g { ?y ?q ?z } on ex:g2 because we are using from named

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

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

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)
  }
}
```

It replaces all age values that were of string datatype with new ones of integer datatype.

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 {...} ...

CONSTRUCT {} WHERE {...} ...

Q3.18 What is the difference between these two queries?

```
prefix ex: <http://example.org/>
insert { ?x a ex:Parent }
where { ?x ex:hasChild ?y }

prefix ex: <http://example.org/>
construct { ?x a ex:Parent }
where { ?x ex:hasChild ?y }
```

The first inserts data into existing RDF dataset, while the second gives a new RDF dataset/triples as a result.

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

2, 3, 4 and 5

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

1, 3 and 4

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 .
```

- Smartphone, Phone and Computer are subclasses of Device
- Smartphone is a subclass of both Phone and Computer

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 .
```

- employeeOf, hasControl, isCEOof, isShareholderOf are subproperties of proRelationWith
- isCEOof and isShareholderOf are subproperties of hasControlOver
- isCEOof is subproperty of employeeOf

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 :isControlling .
:piloteOf rdfs:subPropertyOf :isControlling .
:isControlling rdfs:domain :Human ; rdfs:range :Object .
:driverOf rdfs:range :Car .
:piloteOf rdfs:domain :Adult ; rdfs:range :Plane .
```

- driverOf and piloteOf are subproperties of isControlling
- We defined domains and ranges for these properties. If we create a driverOf or piloteOf relation, the signature of domain Human and range Object will also apply to the parties of the relation, on top of their declared domain/range.

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

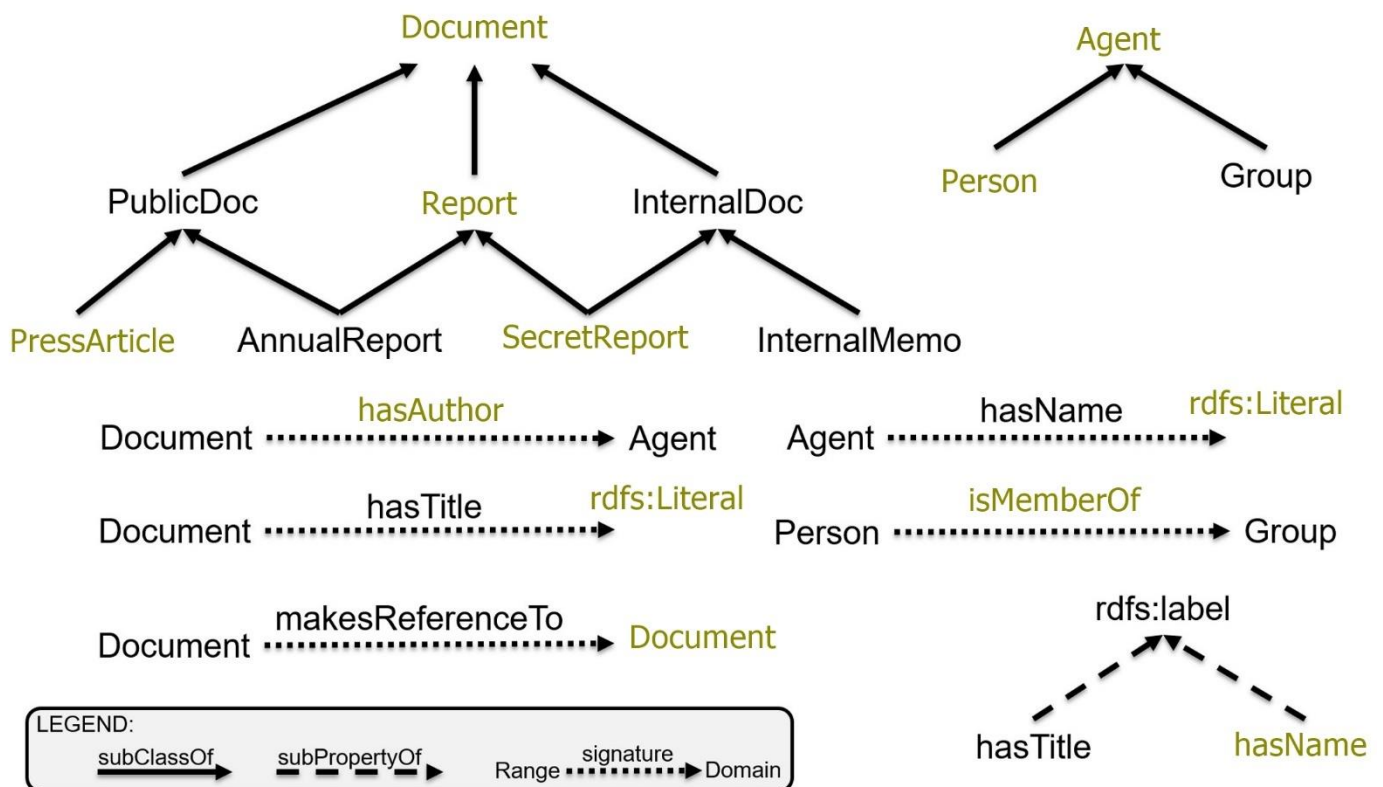
```
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#>
@base <http://inria.fr/2005/humans.rdfs>
<p1> a rdf:Property ; rdfs:label "age"@fr .
<c1> a rdfs:Class; rdfs:comment "un être humain"@fr .
```

- ☐ <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 .

3, 4 and 6.

Q4.7. (a) Fill the blanks with: Document, PublicDoc, PressArticle, 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.



@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>.

@prefix : <http://www.w3.org/2000/01/rdf-schema#>.

@base <http://my-namespace.org/2021/rdfs>.

<#Document> a :Class.

<#PublicDoc> a :Class ; :subClassOf <#Document>.

<#Report> a :Class ; :subClassOf <#Document>.

<#InternalDoc> a :Class ; :subClassOf <#Document>.

<#PressArticle> a :Class ; :subClassOf <#PublicDoc>.

<#AnnualReport> a :Class ; :subClassOf <#PublicDoc>, <#Report>.

<#SecretReport> a :Class ; :subClassOf <#InternalDoc>, <#Report>.

<#InternalMemo> a :Class ; :subClassOf <#InternalDoc>.

<#Agent> a :Class.

<#Person> a :Class ; :subClassOf <#Agent>.

<#Group> a :Class ; :subClassOf <#Agent>.

<#hasAuthor> a rdf:Property ; :domain <#Document> ; :range <#Agent>.

<#hasTitle> a rdf:Property ; :subPropertyOf :label ; :domain <#Document> ; :range :Literal.


```
<#makesReferenceTo> a rdf:Property; :domain <#Document>; :range <#Document>.
```



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 .
```

- Jane is a woman because she is human and female
- John is a man, so he's a male and human
- James is a male, that's all we can say.

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 .
```

- Jack is a grandfather so he is a parent and a man
- Jim is only a parent and a 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 .
```

Jane hasParent Jim since Jim hasChild Jane and hasChild is inverse of hasParent.

Now we have Jane hasParent Jim and Jim hasParent James, if we add the facts of hasParent being a subproperty of has Ancestor and has Ancestor being transitive, we get that Jane hasAncestor James.

John hasSpouse Jane since hasSpouse is symmetric.

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 .
```

JimmyPage and JamesPatrickPage are 2 URIs that refer to the same human, which is also a foaf:Person.

JimmyPage and JimmyHendrix are 2 URIs that represent different things.

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 ]
  )
] .
```

A an unlucky person is the intersection of a person and the 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:Tom a ex:Human .
ex:Tom ex:hasParent ex:James, ex:Jane.
```

James and Jane have to be humans.

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) .
```

Recursively defining all elements of the PersonList to be Persons.

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:Jane a ex:Human ;
        ex:hasBiologicalFather ex:James , ex:Jhon .
```

The system will conclude that the URIs of James and John referring to the same person.

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 .
```

There's a mistake, there cannot be more than 2 preferred labels in a language.

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

skos : <http://www.w3.org/2004/02/skos/core#>

The relations `narrowMatch` has with other properties are:

```
<rdfs:subPropertyOf rdf:resource="#mappingRelation"/>
```

```
<rdfs:subPropertyOf rdf:resource="#narrower"/>
```

```
<owl:inverseOf rdf:resource="#broadMatch"/>
```

Q6.3 practice:

1. Find and open the source file of Dublin Core Terms:
<https://dublincore.org/schemas/rdfs/>
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?

`FileFormat` is a subclass of **MediaType**.

```
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .
```

```
@prefix dc: <http://purl.org/dc/elements/1.1/> .
```

```
@prefix dcterms: <http://purl.org/dc/terms/> .
```

```
@prefix xhtml: <http://www.w3.org/1999/xhtml/vocab#> .
```

<<https://www.amazon.com/Angels-Demons-Robert-Langdon-Brown/dp/1416524797>>

```
dc:creator <https://www.amazon.com/Dan-Brown/e/B000AP9DSU/ref=dp\_byline\_cont\_book\_1> ;
dc:title "Angels and Demons" ;
dc:language "en" ;
dc:subject " Robert Langdon, Thriller" ;
dc:date "2006-04-01" ;
dc:publisher <http://www.simonandschuster.com> ;
dc:format "text/html" ; dc:type dcterms:Text ;
xhtml:license <http://creativecommons.org/licenses/by-nc-nd/4.0/>.
```

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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" .
```

Types : `rdf:Property`, `owl:InverseFunctionalProperty`, `owl:ObjectProperty` ;

It inherits from : `foaf:page`

Signature : Domain is `foaf:Agent` and Range is `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/>

RDF/XML:

```
<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:foaf="http://xmlns.com/foaf/0.1/"
    xmlns:admin="http://webns.net/mvcb/">
<foaf:PersonalProfileDocument rdf:about="">
  <foaf:maker rdf:resource="#me"/>
  <foaf:primaryTopic rdf:resource="#me"/>
  <admin:generatorAgent rdf:resource="http://www.ldodds.com/foaf/foaf-a-matic"/>
  <admin:errorReportsTo rdf:resource="mailto:leigh@ldodds.com"/>
</foaf:PersonalProfileDocument>
<foaf:Person rdf:ID="me">
  <foaf:name>Yassine Assafi</foaf:name>
  <foaf:title>Mr</foaf:title>
  <foaf:givenname>Yassine</foaf:givenname>
  <foaf:family_name>Assafi</foaf:family_name>
  <foaf:mbox rdf:resource="mailto:yassine@edu.dsti.institute"/>
  <foaf:homepage rdf:resource="https://www.linkedin.com/in/yassineassafi"/>
  <foaf:phone rdf:resource="tel:+33622620784"/>
  <foaf:workInfoHomepage rdf:resource="https://github.com/yassinassafi"/>
  <foaf:schoolHomepage rdf:resource="https://www.datasciencetech.institute"/>
  <foaf:knows>
    <foaf:Person>
      <foaf:name>Kamila</foaf:name>
      <foaf:mbox rdf:resource="mailto:Kamila@edu.dsti.institute"/></foaf:Person></foaf:knows>
    <foaf:knows>
      <foaf:Person>
        <foaf:name>Caio</foaf:name>
        <foaf:mbox rdf:resource="mailto:Caio@edu.dsti.institute"/></foaf:Person></foaf:knows></foaf:Person>
  </rdf:RDF>

```

Turtle (including relationships)

```

@prefix admin: <http://webns.net/mvcb/> .
@prefix foaf: <http://xmlns.com/foaf/0.1/> .
@prefix rel: <http://purl.org/vocab/relationship#> .

```

```

<> 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 "Assafi" ;
  foaf:givenname "Yassine" ;
  foaf:homepage <https://www.linkedin.com/in/yassineassafi/> ;
  foaf:knows [ a foaf:Person ;
    foaf:mbox <mailto:Kamila@edu.dsti.institute> ;
    foaf:name "Kamila" ],
  [ a foaf:Person ;
    foaf:mbox <mailto:Caio@edu.dsti.institute> ;
    foaf:name "Caio" ] ;
  foaf:mbox <mailto:yassine@edu.dsti.institute> ;
  foaf:name "Yassine Assafi" ;

```

```
foaf:phone <tel:+33622620784> ;
foaf:schoolHomepage <https://www.datasciencetech.institute/> ;
foaf:title "Mr" ;
foaf:workInfoHomepage <https://github.com/yassinassafi> ;

rel:apprenticeTo "Fabien Gandon";
rel:SiblingOf "Issam";
rel:lifePartnerOf "Noa";
rel:friendOf "Youssef";
rel:influencedBy "IU".
```

Q6.6 What does this mean?

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

BioRDF2DBLP is a collection of RDF links between the 2 datasets BioRDF and DBLP. It established 8936 links that describe a skos:exactMatch, which is used to describe that two concepts can be used interchangeably.

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

Meaning : Retrieve endpoints of all the datasets that have a sparql endpoint.

Query : SELECT ?p WHERE { ?ds a void:Dataset; rdfs:label "DBpedia-fr"; ?p ?v }

Meaning : Find the dataset that has for label "DBpedia-fr" and all its properties.

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" .
```

A Bar chart was generated by ex:plot by using the input of the distribution ex:stats1998 that is of format csv.

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#> .
@prefix : <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 .
```

:FoaFDump is a dataset an RDF/XML datasets of the employees with 12875 triples. It was generated by :R2RTransform12 using db-employ, R2R-employ-mapping and foaf. db-employ is actually an SQL dump of the employees.

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)

Top Ontology : Music Ontology (<http://purl.org/ontology/mo/>)

Version : 2.1.5

Reused by : theatre, af (audio features)

Classes : 60

Properties : 166

Expressivity : RDF, RDFS, OWL

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

<https://www.ietf.org/rfc/rfc2616.txt> dc:title "Hypertext Transfer Protocol -- HTTP/1.1"

<https://www.ietf.org/rfc/rfc2396.txt> 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>
```

@prefix foaf: <http://xmlns.com/foaf/0.1/> .

<#cathy> a foaf:Person;

foaf:name "Catherine Faron";

foaf:mbox "faron@i3s.unice.fr";

foaf:knows <http://ns.inria.fr/fabien.gandon#me>.

Q7.3 practice:

1. Look at the Web Page
<https://www.w3.org/TR/xhtml1-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?

Turtle :

@prefix dc: <http://purl.org/dc/terms/> .

<https://www.w3.org/TR/xhtml1-rdfa-scenarios/scenario-2.html> dc:creator "Paul"@en .

Meaning :

The web page creator is called Paul.

Q7.4 Use the online tool to play with RDFa adding for instance a “creator” property

<https://rdfa.info/play/>

```
<span vocab="http://schema.org/" typeof="TechArticle">  
  <a property="url" href="http://www.w3.org/TR/rdfa-primer/">  
    <span property="name">RDFa 1.1 Primer</span></a>.  
    <span property="creator">Yassine</span></a>.  
</span>
```

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/>

IMDB Movie : <https://www.imdb.com/title/tt0241527/>

Parsing results in Turtle format:

@prefix fb: <http://www.facebook.com/2008/fbml> .

@prefix og: <http://ogp.me/ns#> .

@prefix xhv: <http://www.w3.org/1999/xhtml/vocab#> .

<https://www.imdb.com/title/tt0241527/> og:description "Directed by Chris Columbus. With Daniel Radcliffe, Rupert Grint, Richard Harris, Maggie Smith. An orphaned boy enrolls in a school of wizardry, where he learns the truth about himself, his family and the terrible evil that haunts the magical world." ;

```
og:image "https://m.media-
amazon.com/images/M/MV5BNjQ3NWNINmQtMTE5ZS00MDdmLTlkZjUtZTBIM2UxMGFiMTU3XkEyXkFqcGdeQXVyN
jUwNzk3NDc@._V1_UY1200_CR90,0,630,1200_AL_.jpg" ;
og:site_name "IMDb" ;
og:title "Harry Potter and the Sorcerer's Stone (2001) - IMDb" ;
og:type "video.movie" ;
og:url "http://www.imdb.com/title/tt0241527/" ;
fb:app_id "115109575169727" .
```

```
<https://www.imdb.com/title/tt0241527/#imdbHeader-navDrawerOpen> xhv:role xhv:button .
<https://www.imdb.com/title/tt0241527/#imdbHeader-navDrawerOpen--desktop> xhv:role xhv:button .
<https://www.imdb.com/title/tt0241527/#imdbHeader-searchClose> xhv:role xhv:button .
<https://www.imdb.com/title/tt0241527/#imdbHeader-searchOpen> xhv:role xhv:button .
<https://www.imdb.com/title/tt0241527/#nav-search-form> xhv:role xhv:search .
```

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/>

Collapsed format of JSON-LD :

```
{
  "@graph": [
    {
      "@id": "./",
      "@type": "http://xmlns.com/foaf/0.1/PersonalProfileDocument",
      "http://webns.net/mvcb/errorReportsTo": {
        "@id": "mailto:leigh@ldodds.com"
      },
      "http://webns.net/mvcb/generatorAgent": {
        "@id": "http://www.ldodds.com/foaf/foaf-a-matic"
      },
      "http://xmlns.com/foaf/0.1/maker": {
        "@id": "#me"
      },
      "http://xmlns.com/foaf/0.1/primaryTopic": {
        "@id": "#me"
      }
    },
    {
      "@id": "_:N994727f32f0a4abc94d7656a4d607a82",
      "@type": "http://xmlns.com/foaf/0.1/Person",
      "http://xmlns.com/foaf/0.1/mbox": {
        "@id": "mailto:Caio@edu.dsti.institute"
      },
      "http://xmlns.com/foaf/0.1/name": "Caio"
    }
  ]
}
```

```

"@id": "#me",
"@type": "http://xmlns.com/foaf/0.1/Person",
"http://xmlns.com/foaf/0.1/family_name": "Assafi",
"http://xmlns.com/foaf/0.1/givenname": "Yassine",
"http://xmlns.com/foaf/0.1/homepage": {
  "@id": "https://www.linkedin.com/in/yassineassafi/"
},
"http://xmlns.com/foaf/0.1/knows": [
  {
    "@id": "_:Nf3d8151f192e43cb92820825fe5f2d90"
  },
  {
    "@id": "_:N994727f32f0a4abc94d7656a4d607a82"
  }
],
"http://xmlns.com/foaf/0.1/mbox": {
  "@id": "mailto:yassine@edu.dsti.institute"
},
"http://xmlns.com/foaf/0.1/name": "Yassine Assafi",
"http://xmlns.com/foaf/0.1/phone": {
  "@id": "tel:+33622620784"
},
"http://xmlns.com/foaf/0.1/schoolHomepage": {
  "@id": "https://www.datasciencetech.institute/"
},
"http://xmlns.com/foaf/0.1/title": "Mr",
"http://xmlns.com/foaf/0.1/workInfoHomepage": {
  "@id": "https://github.com/yassinassafi"
}
],
{
  "@id": "_:Nf3d8151f192e43cb92820825fe5f2d90",
  "@type": "http://xmlns.com/foaf/0.1/Person",
  "http://xmlns.com/foaf/0.1/mbox": {
    "@id": "mailto:Kamila@edu.dsti.institute"
  },
  "http://xmlns.com/foaf/0.1/name": "Kamila"
}
]
}

```

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.

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**