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Lab 3: Resource Description Framework (RDF) in use

1. Semantic vocabularies: Dublin Core

```
<rdf:RDF    xmlns:rdf=http://www.w3.org/1999/02/22-rdf-syntax-ns#
            xmlns="http://example.org/mylibrary#"
            xmlns:dc= "http://purl.org/dc/elements/1.1/">

      <rdf:Description rdf:about="http://example.org/mylibrary#lotr1">
         <dc:creator>John Ronald Reuel Tolkien</dc:creator>
         <dc:title>Lord of The Rings: Fellowship of the Ring</dc:title>
         <dc:date>1990-03-11</dc:date>
      </rdf:Description>

      <rdf:Description rdf:about="http://example.org/mylibrary#got1">
         <dc:creator>George Raymond Richard Martin</dc:creator>
         <dc:title>Game of thrones</dc:title>
         <dc:date>1996-07-06</dc:date>
      </rdf:Description>
</rdf:RDF>
```

2. RDFSchema

```
<?xml version="1.0"?>
<rdf:RDF
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xml:base="http://example.org/schemas/vehicles"
  xmlns:dc ="http://purl.org/dc/elements/1.1/">

      <rdfs:Class rdf:ID="MultimediaItem" />
        <rdfs:Class rdf:ID="MusicCD">
            <rdfs:subClassOf rdf:resource="#MultimediaItem"/>
            <rdfs:label>Music Compact Discs class</rdfs:label>
            <rdfs:comment>Class of all the CDs in my library.</rdfs:comment>
        </rdfs:Class>
        <rdfs:Class rdf:ID="PaperBook">
            <rdfs:subClassOf rdf:resource="#MultimediaItem"/>
            <rdfs:label>Paper books class</rdfs:label>
        </rdfs:Class>
        <rdfs:Class rdf:ID="EBook">
            <rdfs:subClassOf rdf:resource="#MultimediaItem"/>
            <rdfs:label>Electronic books class</rdfs:label>
        </rdfs:Class>

        <rdf:Description rdf:about="http://example.org/mylibrary#lotr1">
         <dc:creator>John Ronald Reuel Tolkien</dc:creator>
         <dc:title>Lord of The Rings: Fellowship of the Ring</dc:title>
         <dc:date>1990-03-11</dc:date>
         <rdf:type rdf:resource="http://example.org/mylibrary#PaperBook"/>
      </rdf:Description>
```

```
      <rdf:Description rdf:about="http://example.org/mylibrary#got1">
         <dc:creator>George Raymond Richard Martin</dc:creator>
         <dc:title>Game of thrones</dc:title>
         <dc:date>1996-07-06</dc:date>
         <rdf:type rdf:resource="http://example.org/mylibrary#PaperBook"/>
      </rdf:Description>

</rdf:RDF>
```

3.1.II. What semantic vocabularies are used in the queries? What are they for?

DublinCore – opis zasobów typu klipy wideo, strony internetowe, obrazy, artykuły
Rss – publikacja często zmieniających się treści na stronach
Foaf - reprezentacja danych personalnych, opis relacji między osobami
Review – opis recenzji, ocen dowolnego aktu twórczości, np. książki, artykułu

3.3. What do SELECT queries do?

Zapytania SELECT wybierają zadane informacje z dokumentów RDF i prezentują uzyskane wyniki w formie tabeli.

3.4. What do CONSTRUCT queries do?

Zapytania CONSTRUCT wybierają zadane informacje z dokumentów RDF i prezentują uzyskane wyniki w formie dokumentu RDF.

4. SPARQL queries - basics

friends who have name and e-mail defined:

```
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX foaf: <http://xmlns.com/foaf/0.1/>

SELECT DISTINCT ?name ?mail
FROM <http://student.agh.edu.pl/~jasiura/myfoaf.rdf>
WHERE {
    ?x rdf:type foaf:Person.
    ?x foaf:name ?name.
    ?x foaf:mbox_sha1sum ?mail.
}
LIMIT 10
```

friends who have name and e-mail defined and optional homepage:

```
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX foaf: <http://xmlns.com/foaf/0.1/>

SELECT DISTINCT ?name ?mail ?homepage
FROM <http://student.agh.edu.pl/~jasiura/myfoaf.rdf>
WHERE {
    ?x rdf:type foaf:Person.
    ?x foaf:name ?name.
    ?x foaf:mbox_sha1sum ?mail.
    OPTIONAL {?x foaf:homepage ?homepage}
}
LIMIT 10
```

friends who have name and e-mail defined and optional homepage, sorted by name descending:

```
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX foaf: <http://xmlns.com/foaf/0.1/>

SELECT DISTINCT ?name ?mail ?homepage
FROM <http://student.agh.edu.pl/~jasiura/myfoaf.rdf>
WHERE {
    ?x rdf:type foaf:Person.
    ?x foaf:name ?name.
    ?x foaf:mbox_sha1sum ?mail.
    OPTIONAL {?x foaf:homepage ?homepage}
}
ORDER BY DESC(?name)
LIMIT 10
```

5. SPARQL queries - options

people whose name starts with 'K':

```
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX foaf: <http://xmlns.com/foaf/0.1/>

SELECT DISTINCT ?name
WHERE {
    ?x rdf:type foaf:Person.
    ?x foaf:name ?name.
    FILTER regex(?name,"^K")
}
LIMIT 10
```

people who are older than 18 years old:

```
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX foaf: <http://xmlns.com/foaf/0.1/>

SELECT DISTINCT ?name ?age
WHERE {
    ?x rdf:type foaf:Person.
    ?x foaf:name ?name.
    ?x foaf:age ?age.
    FILTER (?age > 18)
}
LIMIT 10
```

people whose name starts with 'K' or are older than 18 years old, make search caseinsensitive:

```
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX foaf: <http://xmlns.com/foaf/0.1/>

SELECT DISTINCT ?name ?age
WHERE {
    ?x rdf:type foaf:Person.
    ?x foaf:name ?name.
    ?x foaf:age ?age.
    FILTER (?age > 18) || regex(?name,'^K','i')
}
LIMIT 10
```

people having e-mails on student.agh.edu.pl server:

```
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX foaf: <http://xmlns.com/foaf/0.1/>

SELECT DISTINCT ?name ?email
WHERE {
    ?x rdf:type foaf:Person.
    ?x foaf:name ?name.
    ?x foaf:mbox ?email.
    FILTER regex(?email,'.*student.agh.edu.pl$','i')
}
LIMIT 10
```

name of people, who have homepage or e-mail on student.agh.edu.pl server:

```
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX foaf: <http://xmlns.com/foaf/0.1/>

SELECT DISTINCT ?name ?email ?homepage
WHERE {
    ?x rdf:type foaf:Person.
    ?x foaf:name ?name.
    ?x foaf:mbox ?email.
    ?x foaf:homepage ?homepage
    FILTER regex(?email,'.*student.agh.edu.pl$','i') ||
regex(?homepage,'^http://student.agh.edu.pl/','i')
}
LIMIT 10
```

6. What are the main limitations of using (querying for information) the RDF datasets such as DBPedia or MusicBrainz?

1. Konieczność znajomości SPARQL.
2. Długi czas oczekiwania na odpowiedź.
3. Niepełne pokrycie Wikipedii.