

```

<?xml version="1.0" encoding="UTF-8"?>
<rdf:RDF
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
xmlns:library="http://student.agh.edu.pl/~peterm/mylibrary#">
  <rdf:Description rdf:about="http://student.agh.edu.pl/~peterm/mylibrary#book-
beginningruby">
    <library:author rdf:datatype="http://www.w3.org/2001/XMLSchema#string">Peter
Cooper</library:author>
    <library:title rdf:datatype="http://www.w3.org/2001/XMLSchema#string">Beginning
Ruby</library:title>
    <library:country
rdf:datatype="http://www.w3.org/2001/XMLSchema#string">UK</library:country>
    <library:year>2007</library:year>
  </rdf:Description>
  <rdf:Description rdf:about="http://student.agh.edu.pl/~peterm/mylibrary#book-
codecomplete">
    <library:author rdf:datatype="http://www.w3.org/2001/XMLSchema#string">Steve
McConnell</library:author>
    <library:title rdf:datatype="http://www.w3.org/2001/XMLSchema#string">Code
Complete</library:title>
    <library:country
rdf:datatype="http://www.w3.org/2001/XMLSchema#string">USA</library:country>
    <library:year>2004</library:year>
  </rdf:Description>
  <rdf:Description rdf:about="http://student.agh.edu.pl/~peterm/mylibrary#book-clrviac">
    <library:author rdf:datatype="http://www.w3.org/2001/XMLSchema#string">Jeffrey
Richter</library:author>
    <library:title rdf:datatype="http://www.w3.org/2001/XMLSchema#string">CLR via
C#</library:title>
    <library:country
rdf:datatype="http://www.w3.org/2001/XMLSchema#string">USA</library:country>
    <library:year>2010</library:year>
  </rdf:Description>
  <rdf:Description rdf:about="http://student.agh.edu.pl/~peterm/mylibrary#book-
wpfunleashed">
    <library:author rdf:datatype="http://www.w3.org/2001/XMLSchema#string">Adam
Nathan</library:author>
    <library:title rdf:datatype="http://www.w3.org/2001/XMLSchema#string">Windows
Presentation Foundation Unleashed</library:title>
    <library:country
rdf:datatype="http://www.w3.org/2001/XMLSchema#string">USA</library:country>
    <library:year>2009</library:year>
  </rdf:Description>
  <rdf:Description rdf:about="http://student.agh.edu.pl/~peterm/mylibrary#book-
rubycookbook">
    <library:authors rdf:parseType="Collection">
      <rdf:Description>
        <rdf:first rdf:datatype="http://www.w3.org/2001/XMLSchema#string">Lucas
Carlson</rdf:first>
        <rdf:second
rdf:datatype="http://www.w3.org/2001/XMLSchema#string">Leonard Richardson</rdf:second>

```

```

        </rdf:Description>
    </library:authors>
    <library:title rdf:datatype="http://www.w3.org/2001/XMLSchema#string">Ruby
Cookbook</library:title>
    <library:country
rdf:datatype="http://www.w3.org/2001/XMLSchema#string">USA</library:country>
    <library:year>2006</library:year>
</rdf:Description>
<rdf:Description rdf:about="http://student.agh.edu.pl/~peterm/mylibrary#cd-metallica">
    <library:artist
rdf:datatype="http://www.w3.org/2001/XMLSchema#string">Metallica</library:artist>
    <library:title
rdf:datatype="http://www.w3.org/2001/XMLSchema#string">Metallica</library:title>
    <library:year>1991</library:year>
</rdf:Description>
<rdf:Description rdf:about="http://student.agh.edu.pl/~peterm/mylibrary#cd-sandm">
    <library:artist
rdf:datatype="http://www.w3.org/2001/XMLSchema#string">Metallica</library:artist>
    <library:title rdf:datatype="http://www.w3.org/2001/XMLSchema#string">S and
M</library:title>
    <library:year>1999</library:year>
</rdf:Description>
<rdf:Description rdf:about="http://student.agh.edu.pl/~peterm/mylibrary#cd-thewall">
    <library:artist rdf:datatype="http://www.w3.org/2001/XMLSchema#string">Pink
Floyd</library:artist>
    <library:title rdf:datatype="http://www.w3.org/2001/XMLSchema#string">The
Wall</library:title>
    <library:year>1979</library:year>
</rdf:Description>
<rdf:Description rdf:about="http://student.agh.edu.pl/~peterm/mylibrary#cd-
wishyouwerehere">
    <library:artist rdf:datatype="http://www.w3.org/2001/XMLSchema#string">Pink
Floyd</library:artist>
    <library:title rdf:datatype="http://www.w3.org/2001/XMLSchema#string">Wish You
Were Here</library:title>
    <library:year>1975</library:year>
</rdf:Description>
<rdf:Description
rdf:about="http://student.agh.edu.pl/~peterm/mylibrary#MyFavouriteBooks">
    <library:MyFavouriteBooks>
    <rdf:Bag>
        <rdf:li rdf:resource="http://student.agh.edu.pl/~peterm/mylibrary#book-
codecomplete"/>
        <rdf:li rdf:resource="http://student.agh.edu.pl/~peterm/mylibrary#book-
rubycookbook"/>
    </rdf:Bag>
    </library:MyFavouriteBooks>
</rdf:Description>
</rdf:RDF>

```

1. Semantic vocabularies: Dublin Core

```
<?xml version="1.0" encoding="UTF-8"?>
<rdf:RDF
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:library="http://student.agh.edu.pl/~peterm/mylibrary#">
  <rdf:Description rdf:about="http://student.agh.edu.pl/~peterm/mylibrary#book-
beginningruby">
    <library:title>Beginning Ruby</library:title>
    <library:creator>Peter Cooper</library:creator>
    <library:publisher>Apress</library:publisher>
    <library:date>2007-09-01</library:date>
    <library:description>Basics of the Ruby programming language</library:description>
    <library:type>book</library:type>
    <library:language>English</library:language>
  </rdf:Description>
  <rdf:Description rdf:about="http://student.agh.edu.pl/~peterm/mylibrary#book-
codecomplete">
    <library:title>Code Complete</library:title>
    <library:creator>Steve McConnell</library:creator>
    <library:publisher>Microsoft Press</library:publisher>
    <library:date>2004-05-05</library:date>
    <library:description>Good practices in software development</library:description>
    <library:type>book</library:type>
    <library:language>English</library:language>
  </rdf:Description>
  <rdf:Description rdf:about="http://student.agh.edu.pl/~peterm/mylibrary#book-clrviac">
    <library:title>CLR via C#</library:title>
    <library:creator>Jeffrey Richter</library:creator>
    <library:publisher>Microsoft Press</library:publisher>
    <library:date>2010-11-11</library:date>
    <library:description>CLR guide with examples in C#</library:description>
    <library:type>book</library:type>
    <library:language>English</library:language>
  </rdf:Description>
  <rdf:Description rdf:about="http://student.agh.edu.pl/~peterm/mylibrary#book-
wfunleashed">
    <library:title>Windows Presentation Foundation Unleashed</library:title>
    <library:creator>Adam Nathan</library:creator>
    <library:contributor>Daniel Lehenbauer</library:contributor>
    <library:publisher>Sams</library:publisher>
    <library:date>2009-09-09</library:date>
    <library:description>Tutorial for WPF</library:description>
    <library:type>book</library:type>
    <library:language>English</library:language>
  </rdf:Description>
  <rdf:Description rdf:about="http://student.agh.edu.pl/~peterm/mylibrary#book-
rubycookbook">
    <library:title>Ruby Cookbook</library:title>
    <library:creator>Lucas Carlson</library:creator>
    <library:creator>Leonard Richardson</library:creator>
```

```
<library:publisher>O'Reilly</library:publisher>
<library:date>2006-06-06</library:date>
<library:description>Collection of recipes in Ruby</library:description>
<library:type>book</library:type>
<library:language>English</library:language>
</rdf:Description>
<rdf:Description rdf:about="http://student.agh.edu.pl/~peterm/mylibrary#cd-metallica">
  <library:title>Metallica</library:title>
  <library:creator>Metallica</library:creator>
  <library:publisher>Elektra / Wea</library:publisher>
  <library:date>1991-01-01</library:date>
  <library:description>Black Album</library:description>
  <library:type>CD</library:type>
</rdf:Description>
<rdf:Description rdf:about="http://student.agh.edu.pl/~peterm/mylibrary#cd-sandm">
  <library:title>S and M</library:title>
  <library:creator>Metallica</library:creator>
  <library:contributor>San Francisco Symphony</library:contributor>
  <library:publisher>Elektra / Vertigo</library:publisher>
  <library:date>1999-10-10</library:date>
  <library:description>Metallica with SF Symphony orchestra</library:description>
  <library:type>CD</library:type>
</rdf:Description>
<rdf:Description rdf:about="http://student.agh.edu.pl/~peterm/mylibrary#cd-thewall">
  <library:title>The Wall</library:title>
  <library:creator>Pink Floyd</library:creator>
  <library:publisher>Harvest Records / EMI Records</library:publisher>
  <library:date>1979-09-09</library:date>
  <library:description>Eleventh studio album</library:description>
  <library:type>CD</library:type>
</rdf:Description>
<rdf:Description rdf:about="http://student.agh.edu.pl/~peterm/mylibrary#cd-wishyouwerehere">
  <library:title>Wish You Were Here</library:title>
  <library:creator>Pink Floyd</library:creator>
  <library:publisher>Harvest Records / EMI Records</library:publisher>
  <library:date>1975-05-05</library:date>
  <library:description>Ninth studio album</library:description>
  <library:type>CD</library:type>
</rdf:Description>
</rdf:RDF>
```

2. RDFSchema

FIXME (class names)

```
<?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:library="http://student.agh.edu.pl/~peterm/mylibrary#">

  <rdfs:Class rdf:ID="Multimedialtem" />
  <rdfs:Class rdf:ID="MusicCD">
    <rdfs:subClassOf rdf:resource="#Multimedialtem"/>
    <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="Book">
    <rdfs:subClassOf rdf:resource="#Multimedialtem"/>
  </rdfs:Class>

  <rdf:Description rdf:about="http://student.agh.edu.pl/~peterm/mylibrary#book-
beginningruby">
    <library:author rdf:datatype="http://www.w3.org/2001/XMLSchema#string">Peter
Cooper</library:author>
    <library:title rdf:datatype="http://www.w3.org/2001/XMLSchema#string">Beginning
Ruby</library:title>
    <library:country
rdf:datatype="http://www.w3.org/2001/XMLSchema#string">UK</library:country>
    <library:year>2007</library:year>
    <rdf:type rdf:resource="http://example.org/mylibrary#Book"/>
  </rdf:Description>
  <rdf:Description rdf:about="http://student.agh.edu.pl/~peterm/mylibrary#book-
codecomplete">
    <library:author rdf:datatype="http://www.w3.org/2001/XMLSchema#string">Steve
McConnell</library:author>
    <library:title rdf:datatype="http://www.w3.org/2001/XMLSchema#string">Code
Complete</library:title>
    <library:country
rdf:datatype="http://www.w3.org/2001/XMLSchema#string">USA</library:country>
    <library:year>2004</library:year>
    <rdf:type rdf:resource="http://example.org/mylibrary#Book"/>
  </rdf:Description>
  <rdf:Description rdf:about="http://student.agh.edu.pl/~peterm/mylibrary#book-clrviac">
    <library:author rdf:datatype="http://www.w3.org/2001/XMLSchema#string">Jeffrey
Richter</library:author>
    <library:title rdf:datatype="http://www.w3.org/2001/XMLSchema#string">CLR via
C#</library:title>
    <library:country
rdf:datatype="http://www.w3.org/2001/XMLSchema#string">USA</library:country>

    <library:year>2010</library:year>
```

```

        <rdf:type rdf:resource="http://example.org/mylibrary#Book"/>
    </rdf:Description>
    <rdf:Description rdf:about="http://student.agh.edu.pl/~peterm/mylibrary#book-
wpfunleashed">
        <library:author rdf:datatype="http://www.w3.org/2001/XMLSchema#string">Adam
Nathan</library:author>
        <library:title rdf:datatype="http://www.w3.org/2001/XMLSchema#string">Windows
Presentation Foundation Unleashed</library:title>
        <library:country
rdf:datatype="http://www.w3.org/2001/XMLSchema#string">USA</library:country>
        <library:year>2009</library:year>
        <rdf:type rdf:resource="http://example.org/mylibrary#Book"/>
    </rdf:Description>
    <rdf:Description rdf:about="http://student.agh.edu.pl/~peterm/mylibrary#book-
rubycookbook">
        <library:authors rdf:parseType="Collection">
            <rdf:Description>
                <rdf:first rdf:datatype="http://www.w3.org/2001/xmlSchema#string">Lucas
Carlson</rdf:first>
                <rdf:second
rdf:datatype="http://www.w3.org/2001/xmlSchema#string">Leonard Richardson</rdf:second>
            </rdf:Description>
        </library:authors>
        <library:title rdf:datatype="http://www.w3.org/2001/XMLSchema#string">Ruby
Cookbook</library:title>
        <library:country
rdf:datatype="http://www.w3.org/2001/XMLSchema#string">USA</library:country>
        <library:year>2006</library:year>
        <rdf:type rdf:resource="http://example.org/mylibrary#Book"/>
    </rdf:Description>
    <rdf:Description rdf:about="http://student.agh.edu.pl/~peterm/mylibrary#cd-metallica">
        <library:artist
rdf:datatype="http://www.w3.org/2001/XMLSchema#string">Metallica</library:artist>
        <library:title
rdf:datatype="http://www.w3.org/2001/XMLSchema#string">Metallica</library:title>
        <library:year>1991</library:year>
        <rdf:type rdf:resource="http://example.org/mylibrary#MusicCD"/>
    </rdf:Description>
    <rdf:Description rdf:about="http://student.agh.edu.pl/~peterm/mylibrary#cd-sandm">
        <library:artist
rdf:datatype="http://www.w3.org/2001/XMLSchema#string">Metallica</library:artist>
        <library:title rdf:datatype="http://www.w3.org/2001/XMLSchema#string">S and
M</library:title>
        <library:year>1999</library:year>
        <rdf:type rdf:resource="http://example.org/mylibrary#MusicCD"/>
    </rdf:Description>
    <rdf:Description rdf:about="http://student.agh.edu.pl/~peterm/mylibrary#cd-thewall">
        <library:artist rdf:datatype="http://www.w3.org/2001/XMLSchema#string">Pink
Floyd</library:artist>
        <library:title rdf:datatype="http://www.w3.org/2001/XMLSchema#string">The
Wall</library:title>
        <library:year>1979</library:year>

```

```

        <rdf:type rdf:resource="http://example.org/mylibrary#MusicCD"/>
    </rdf:Description>
    <rdf:Description rdf:about="http://student.agh.edu.pl/~peterm/mylibrary#cd-
wishyouwerehere">
        <library:artist rdf:datatype="http://www.w3.org/2001/XMLSchema#string">Pink
Floyd</library:artist>
        <library:title rdf:datatype="http://www.w3.org/2001/XMLSchema#string">Wish You
Were Here</library:title>
        <library:year>1975</library:year>
        <rdf:type rdf:resource="http://example.org/mylibrary#MusicCD"/>
    </rdf:Description>
</rdf:RDF>

```

3. SPARQL - demo

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

Słowniki semantyczne używane w zapytaniach:

- Friend of a Friend – służy do opisu osób – użyty w zapytaniach „Info about with people with names beginning with 'da'” i „Homepages of some people Richard Cyganiak knows”
- SIOC (Semantically-Interlinked Online Communities) – służy do opisu środków komunikacji grupowej typu fora, blogi, mikroblogi, serwisy społecznościowe, listy dyskusyjne – wykorzystany w przypadku zapytania „Recent posts on the Talisians blog”
- RSS (RDF Site Summary) – służy do formułowania powiadomień o zmianach i aktualizacjach na blogach, stronach internetowych itp. – wykorzystany w zapytaniu „The 10 most recent twitcrit reviews” i „Recent activities (logged by danja) tagged with "sparql"”
- Rev (RDF Review Vocabulary) – służy do formułowania recenzji i notowań - użyty został w przypadku zapytania „The 10 most recent twitcrit reviews”
- The Dublin Core – służy do opisu zasobów multimedialnych typu książki, muzyka, filmy – w przykładowych zapytaniach został użyty w przypadku „Recent posts on the Talisians blog”, „The 10 most recent twitcrit reviews” oraz „Recent activities (logged by danja) tagged with "sparql"”

3. What do **SELECT** queries do?

Zwraca wynik zapytania w postaci tabeli.

4. What do **CONSTRUCT** queries do?

Tworzy zupełnie nowy dokument RDF na podstawie wyników zapytania.

4. SPARQL queries – basics

friends who have name and e-mail defined

```
SELECT DISTINCT ?name, ?mail
WHERE {
    ?x rdf:type foaf:Person ;
    ?x foaf:name ?name ;
    ?x foaf:mbox_sha1sum ?mail.
}
```

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/~peterm/foaf.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/~peterm/foaf.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 foaf: <http://xmlns.com/foaf/0.1/>
```



```
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
```

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

people who are older than 18 years old

```
PREFIX foaf: <http://xmlns.com/foaf/0.1/>
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
```

```
SELECT DISTINCT ?x
WHERE
{
    ?x rdf:type foaf:Person;
    foaf:age ?age.
    FILTER ?age > 18
}
```

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

```
PREFIX foaf: <http://xmlns.com/foaf/0.1/>
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
```

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

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

```
PREFIX foaf: <http://xmlns.com/foaf/0.1/>
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
```

```
SELECT DISTINCT ?x
WHERE
{
    ?x rdf:type foaf:Person;
    foaf:mbox ?mbox.
    FILTER regex(?mbox, "student\.agh\.edu\.pl$")
}
```

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

```
PREFIX foaf: <http://xmlns.com/foaf/0.1/>
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
```

```
SELECT DISTINCT ?name
WHERE
{
    ?x rdf:type foaf:Person;
    foaf:name ?name;
    foaf:homepage ?homepage;
    foaf:mbox ?mbox.
    FILTER regex(?homepage, "^http://student\.agh\.edu\.pl") ||
    regex(?mbox, "student\.agh\.edu\.pl$")
}
```

6. Open Data Sets

Dla typowego użytkownika internetu największą przeszkodą będzie konieczność używania SPARQL w celu przeszukiwania zasobów. Ponadto czas wykonania zapytania i zwrócenia rezultatu rośnie adekwatnie do wielkości RDF i stopnia rozbudowania zapytania. Należy również zauważyć, że stworzone ontologie nie obejmują całej Wikipedii, bądź są stworzone niedokładnie, co skutkuje zwróceniem niepełnych bądź nieczytelnych informacji.