

Laboratory 5

The purpose of this lab is to learn about semantic web technologies, in particular: RDF and RDFS.

As a first step, RDF schema is designed:

I have 2 main classes, Product and Service.

I wrote ComputerPart and Cleaning as subclasses of mentioned classes.

PSU, CPU, Motherboard are subclasses of ComputerPart HouseCleaning and CarCleaning are subclasses of Cleaning

```
<rdf:RDF xml:lang="en" xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#" xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#">

  <rdf:Description ID="Product" rdf:about="http://example.org/Product">
    <rdf:type resource="http://www.w3.org/2000/01/rdf-schema#Class"/>
    <rdfs:subClassOf
      rdf:resource="http://www.w3.org/2000/01/rdf-schema#Resource"/>
  </rdf:Description>

  <rdf:Description ID="Service" rdf:about="http://example.org/Service">
    <rdf:type resource="http://www.w3.org/2000/01/rdf-schema#Class"/>
    <rdfs:subClassOf
      rdf:resource="http://www.w3.org/2000/01/rdf-schema#Resource"/>
  </rdf:Description>

  <rdf:Description ID="ComputerPart" rdf:about="http://example.org/ComputerPart">
    <rdf:type resource="http://www.w3.org/2000/01/rdf-schema#Class"/>
    <rdfs:subClassOf rdf:resource="#Product"/>
  </rdf:Description>

  <rdf:Description ID="PSU" rdf:about="http://example.org/PSU">
    <rdf:type resource="http://www.w3.org/2000/01/rdf-schema#Class"/>
    <rdfs:subClassOf rdf:resource="#ComputerPart"/>
  </rdf:Description>

  <rdf:Description ID="Motherboard" rdf:about="http://example.org/Motherboard">
    <rdf:type resource="http://www.w3.org/2000/01/rdf-schema#Class"/>
    <rdfs:subClassOf rdf:resource="#ComputerPart"/>
  </rdf:Description>

  <rdf:Description ID="CPU" rdf:about="http://example.org/CPU">
    <rdf:type resource="http://www.w3.org/2000/01/rdf-schema#Class"/>
    <rdfs:subClassOf rdf:resource="#ComputerPart"/>
  </rdf:Description>

  <rdf:Description ID="Cleaning" rdf:about="http://example.org/Cleaning">
    <rdf:type resource="http://www.w3.org/2000/01/rdf-schema#Class"/>
    <rdfs:subClassOf rdf:resource="#Service"/>
  </rdf:Description>

  <rdf:Description ID="HouseCleaning" rdf:about="http://example.org/HouseCleaning">
    <rdf:type resource="http://www.w3.org/2000/01/rdf-schema#Class"/>
    <rdfs:subClassOf rdf:resource="#Cleaning"/>
  </rdf:Description>

  <rdf:Description ID="CarCleaning" rdf:about="http://example.org/CarCleaning">
    <rdf:type resource="http://www.w3.org/2000/01/rdf-schema#Class"/>
    <rdfs:subClassOf rdf:resource="#Cleaning"/>
  </rdf:Description>
</rdf:RDF>
```

To convert rdf to Turtle Terse, I used easyrdf.org/converter

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

```
<http://example.org/Product>  
  a rdfs:Class ;  
  rdfs:subClassOf rdfs:Resource .
```

```
<http://example.org/Service>  
  a rdfs:Class ;  
  rdfs:subClassOf rdfs:Resource .
```

```
<http://example.org/ComputerPart>  
  a rdfs:Class ;  
  rdfs:subClassOf <http://njh.me/#Product> .
```

```
<http://example.org/PSU>  
  a rdfs:Class ;  
  rdfs:subClassOf <http://njh.me/#ComputerPart> .
```

```
<http://example.org/Motherboard>  
  a rdfs:Class ;  
  rdfs:subClassOf <http://njh.me/#ComputerPart> .
```

```
<http://example.org/CPU>  
  a rdfs:Class ;  
  rdfs:subClassOf <http://njh.me/#ComputerPart> .
```

```
<http://example.org/Cleaning>  
  a rdfs:Class ;  
  rdfs:subClassOf <http://njh.me/#Service> .
```

```
<http://example.org/HouseCleaning>  
  a rdfs:Class ;  
  rdfs:subClassOf <http://njh.me/#Cleaning> .
```

```
<http://example.org/CarCleaning>  
  a rdfs:Class ;  
  rdfs:subClassOf <http://njh.me/#Cleaning> .
```

I wrote 3 different queries to get data from triple store

```
String queryString = "PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>\n" + "SELECT ?class ?type ?parent WHERE { ?class ?type ?parent }";  
String queryString1 = "PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>\n" + "SELECT ?class ?parent WHERE { ?class <http://example.org/Product> ?parent }";  
String queryString2 = "PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>\n" + "SELECT ?class ?type WHERE { ?class ?type <http://example.org/Product> }";
```