chem-bla-ics

Coding an OWL ontology in HTML5 and RDFa

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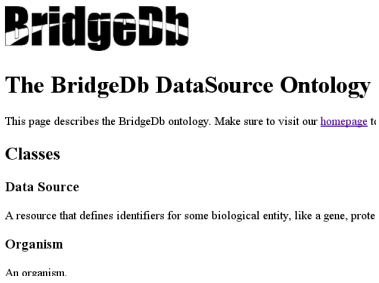
There are many fancy tools to edit ontologies. I like simple editors, like nano. And like any hacker, I can hack OWL ontologies in nano. The hacking implies OWL was never meant to be hacked on a simple text editor; I am not sure that is really true. Anyways, HTML5 and RDFa will do fine, and here is a brief write up. This post will not cover the basics of RDFa and does assume you already know how triples work. If not, read this RDFa primer first.


BridgeDb

The BridgeDb DataSource Ontology

This page describes the BridgeDb ontology. Make sure to visit our homepage t

Classes

Data Source

A resource that defines identifiers for some biological entity, like a gene, prote

Organism

An organism.

The BridgeDb DataSource Ontology

This example uses the BridgeDb DataSource Ontology, created by BridgeDb developers from Manchester University (Christian, Stian, and Alasdair). The ontology covers describing data sources of identifiers, a technology outlined in the BridgeDb paper by Martijn (see below) as well as terms from the Open PHACTS Dataset Descriptions for the Open Pharmacological Space by Alasdair et al.

Because I needed to put this online for Open PHACTS (BTW, the project won a big award!) and our previous solution did not work well enough anymore. You may also see the HTML of the result first. You may also want to verify it really is HTML: here is the HTML5 validation report. Also, you may be interested in what the ontology in RDF looks like: here is the extracted RDF for the ontology. Now follow the HTML+RDFa snippets. First, the ontology details (actually, I have it split up):

```
<div about="http://vocabularies.bridgedb.org/ops#"
     typeof="owl:Ontology">
  <h1>The <span property="rdfs:label">BridgeDb DataSource Ontology</span>
    (version <span property="owl:versionInfo">2.1.0</span>)</h1>
  <p>
    This page describes the BridgeDb ontology. Make sure to visit our
    <a property="rdfs:seeAlso" href="http://www.bridgedb.org/">homepage</a> too!
  </p>
</div>
<p about="http://vocabularies.bridgedb.org/ops#">
  The OWL ontology can be extracted
  <a property="owl:versionIRI"
     href="http://www.w3.org/2012/pyRdfa/extract?uri=http://vocabularies.bridgedb.org/ops
  The Open PHACTS specification on
  <a property="rdf:seeAlso"
    href="http://www.openphacts.org/specs/2013/WD-datadesc-20130912/#bridgedb"
  >Dataset Descriptions</a> is also useful.
</p>
```

This is the last time I show the custom color coding, but for a first time it is useful. In red are basically the predicates, where `@about` indicates a new resource is started, `@typeof` defines the

`rdf:type`, and `@property` indicates all other predicates. The blue and green blobs are literals and object resources, respectively. If you work this out, you get this OWL code (more or less):

```
bridgedb: a owl:Ontology;
  rdfs:label "BridgeDb DataSource Ontology"@en;
  rdf:seeAlso
    <http://www.openphacts.org/specs/2013/WD-datadesc-20130912/#bridgedb>;
  rdfs:seeAlso <http://www.bridgedb.org/>;
  owl:versionIRI
    <http://www.w3.org/2012/pyRdfa/extract?uri=http://vocabularies.bridgedb.org/ops#>;
  owl:versionInfo "2.1.0"@en .
```

An OWL class

Defining OWL classes are using the same approach: define the resource it is `@about`, define the `@typeOf` and giving is properties. BTW, note that I added a `@id` so that ontology terms can be looked up using the HTML # functionality. For example:

```
<div id="DataSource"
  about="http://vocabularies.bridgedb.org/ops#DataSource"
  typeof="owl:Class">
  <h3 property="rdfs:label">Data Source</h3>
  <p property="dc:description">A resource that defines
    identifiers for some biological entity, like a gene,
    protein, or metabolite.</p>
</div>
```

An OWL object property

Defining an OWL data property is pretty much the same, but note that we can arbitrary add additional things, making use of `<span>`, `<div>`, and `<p>` elements. The following example also defines the `rdfs:domain` and `rdfs:range`:

```
<div id="aboutOrganism"
  about="http://vocabularies.bridgedb.org/ops#aboutOrganism"
  typeof="owl:ObjectProperty">
  <h3 property="rdfs:label">About Organism</h3>
  <p><span property="dc:description">Organism for all entities
    with identifiers from this datasource.</span>
    This property has
    <a property="rdfs:domain"
      href="http://vocabularies.bridgedb.org/ops#DataSource">DataSource</a>
    as domain and
    <a property="rdfs:range"
      href="http://vocabularies.bridgedb.org/ops#Organism">Organism</a>
```

```
    as range.</p>
</div>
```

So, now anyone can host an OWL ontology with dereferencable terms: to remove confusion, I have used the full URLs of the terms in `@about` attributes.