

Animal Scouter



J O Ã O L E I T E

J O Ã O R E I S

L U Í S B A T I S T A



Schedule

- Data Transformations
- Ontology
- Inferences
- Use of DBpedia & Wikidata
- Demo



Data Transformations

```
<http://zoo.org/class/id/1> <http://zoo.org/pred/name> "Mammal" .
<http://zoo.org/class/id/2> <http://zoo.org/pred/name> "Bird" .
<http://zoo.org/class/id/3> <http://zoo.org/pred/name> "Reptile" .
<http://zoo.org/class/id/4> <http://zoo.org/pred/name> "Fish" .
<http://zoo.org/class/id/5> <http://zoo.org/pred/name> "Amphibian" .
<http://zoo.org/class/id/6> <http://zoo.org/pred/name> "Insect" .
<http://zoo.org/class/id/7> <http://zoo.org/pred/name> "Invertebrate" .
<http://zoo.org/nurt/id/1> <http://zoo.org/pred/name> "Eggs" .
<http://zoo.org/nurt/id/2> <http://zoo.org/pred/name> "Milk" .
<http://zoo.org/animal/id/turtle> <http://zoo.org/pred/name> "Turtle" .
<http://zoo.org/animal/id/turtle> <http://zoo.org/pred/class> <http://zoo.org/class/id/3> .
<http://zoo.org/animal/id/turtle> <http://zoo.org/pred/legs> "4" .
<http://zoo.org/animal/id/turtle> <http://zoo.org/pred/nurt> <http://zoo.org/nurt/id/1> .
<http://zoo.org/animal/id/turtle> <http://zoo.org/pred/has> "Tail" .
<http://zoo.org/animal/id/turtle> <http://zoo.org/pred/is> "Domestic" .
<http://zoo.org/animal/id/turtle> <http://zoo.org/pred/is> "Aquatic" .
```

.nt file

```
#####
#      Classes
#####

### http://www.w3.org/2000/01/rdf-schema#Property
rdfs:Property rdf:type owl:Class .

### http://zoo.org/class/Amphibian
animalc:Amphibian rdf:type owl:Class ;
                  owl:equivalentClass [ rdf:type owl:Restriction ;
                                          owl:onProperty zoop:class ;
                                          owl:hasValue <http://zoo.org/class/id/5>
                                        ] .

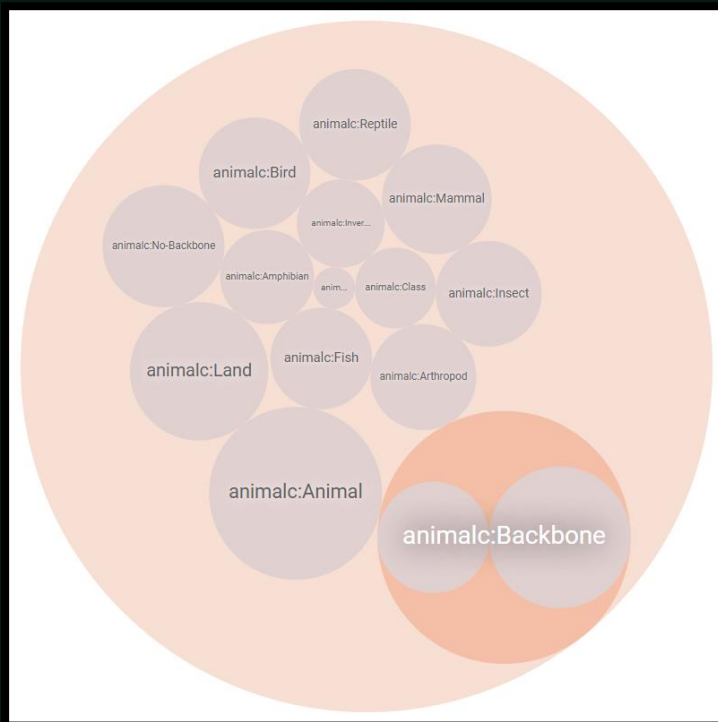
### http://zoo.org/class/Animal
animalc:Animal rdf:type owl:Class .
```

.n3 file





Ontology



Annotation properties Datatypes Individuals

Classes Object properties Data properties

Class hierarchy: Amphibian

owl:Thing

- Amphibian
- Animal
- Arthropod
- Backbone
- Bird
- Class
- Cold-Blood
- Fish
- Insect
- Invertebrate
- Land
- Mammal
- No-Backbone
- Nurt
- rdfs:Property
- Reptile
- Warm-Blood

Annotations: Amphibian

Annotations

Description: Amphibian

Equivalent To

- class value 5

SubClass Of

- Cold-Blood

General class axioms

SubClass Of (Anonymous Ancestor)

- ((nurt value 1) and (has value "Fins")) or (class value 3) or (class value 5)

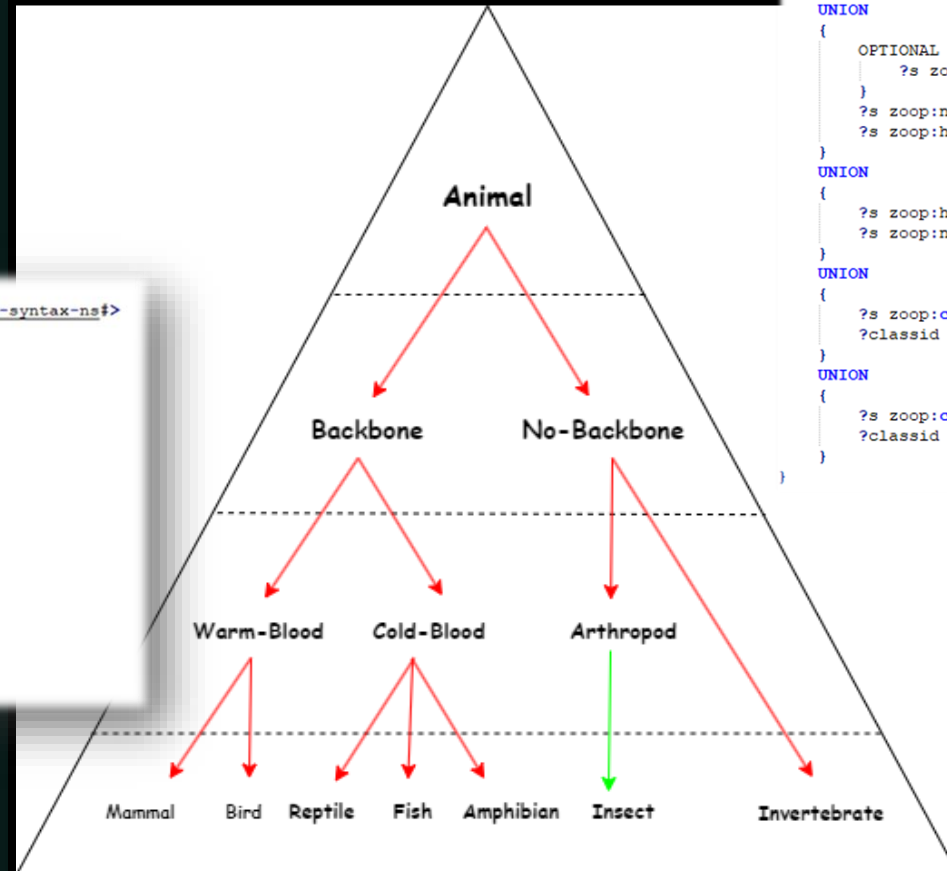
Instances

- dart_frog
- firebelly
- perereca-de-alcatrazes
- ra-flecha-azul



Inferences

```
-- Warm-Blood animals
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX animalc: <http://zoo.org/class/>
PREFIX zoop: <http://zoo.org/pred/>
CONSTRUCT {
  ?s a animalc:Warm-Blood.
}
WHERE {
  {
    ?s a animalc:Animal.
    ?s zoop:has "Feathers".
  }
  UNION
  {
    OPTIONAL {
      ?s zoop:has "Hair".
    }
    ?s zoop:nurt zoon:2.
    ?s zoop:has "Backbone".
  }
}
```



```
-- Backbone animals
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX animalc: <http://zoo.org/class/>
PREFIX zoop: <http://zoo.org/pred/>
CONSTRUCT {
  ?s a animalc:Backbone.
}
WHERE {
  {
    ?s a animalc:Animal.
    ?s zoop:has "Feathers".
  }
  UNION
  {
    OPTIONAL {
      ?s zoop:has "Hair".
    }
    ?s zoop:nurt zoon:2.
    ?s zoop:has "Backbone".
  }
  UNION
  {
    ?s zoop:has "Fins".
    ?s zoop:nurt zoon:1.
  }
  UNION
  {
    ?s zoop:class ?classid.
    ?classid zoop:name "Reptile".
  }
  UNION
  {
    ?s zoop:class ?classid.
    ?classid zoop:name "Amphibian".
  }
}
```



DBpedia





Use of DBpedia

```
# dbpedia lookup
dbpedia_dict = {
    'Animal': 'Animal',
    'Backbone': 'Bone',
    'No-Backbone': 'Bone',
    'Warm-Blood': 'Lymph',
    'Cold-Blood': 'Lymph',
    'Arthropod': 'Species',
    'Mammal': 'Mammal',
    'Bird': 'Bird',
    'Reptile': 'Reptile',
    'Fish': 'Fish',
    'Amphibian': 'Amphibian',
    'Insect': 'Insect',
    'Invertebrate': 'Species'
}

query = """
    select ?info
    where {
        ?animal rdfs:label "_animal_type"@en.
        ?animal rdfs:comment ?info.
        filter(lang(?info)='en').
    }
    """

query = query.replace('_animal_type', dbpedia_dict[inference_entity])
sparqlDBpedia.setQuery(query)
results = sparqlDBpedia.query()
```





Wikidata





Use of Wikidata

```
# wikidata lookup
sparqlWikidata.setQuery("""
PREFIX wd: <http://www.wikidata.org/entity/>
PREFIX wdt: <http://www.wikidata.org/prop/direct/>
SELECT ?item ?itemLabel
WHERE
{
  wd:Q729 wdt:P2716 ?item .
  SERVICE wikibase:label {
    bd:serviceParam
    wikibase:language "en".
  }
}
""")

# wdt:P2716 -> diversity image
# wdt:P18 -> bear image
wikidata_info = ''
for result in sparqlWikidata.query().bindings:
    #print('%s: %s' % (result["item"].value, result["itemLabel"].value))
    wikidata_info = result["itemLabel"].value
```



Thank you

Demo Time!

