Foundations of Semantic Web Technologies

Tutorial 3

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WS 2023/24

Exercise 3.1. Consider the following RDFS graph:

```
@prefix ex:   <http://ex.org/>.
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>.
@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#>.

ex:Platypus ex:name "Ornitorrinco"@es-CL , "Platypus"@en ;
        ex:speciesName "Ornithorhynchus anatinus"@la ;
        a ex:NearThreatenedSpecies ; ex:genus ex:Ornithorhynchus .

ex:Knuckles a ex:TachyglossusAculeatus .

ex:TachyglossusAculeatus ex:name "Equidna"@es-CL , "Short-beaked Echidna"@en ;
        ex:speciesName "Tachyglossus aculeatus"@la ;
        a ex:OviparousSpecies ; ex:genus ex:Tachyglossus .

ex:ZaglossusBruijnii ex:name "Western long-beaked echidna"@en ;
        a ex:CriticallyEndangeredSpecies ; ex:genus ex:Zaglossus .

ex:Ornithorhynchus ex:name "Ornithorhynchus"@la ; ex:family ex:Ornithorhynchidae .

ex:Tachyglossus ex:name "Tachyglossusnchus"@la ; ex:family ex:Tachyglossidae .

ex:Zaglossus ex:name "Zaglossus"@la ; ex:family ex:Tachyglossidae .

ex:Ornithorhynchidae ex:name "Ornithorhynchidae"@la ; ex:order ex:Monotremata .

ex:Tachyglossidae ex:name "Tachyglossidae"@la ; ex:order ex:Monotremata .
```

Under the link `http://editor.notation3.org/n3/editor/s/59CryuKs` this graphs is preloaded together with some of the rules to mimic the RDFS-calculus[1]. You can execute the rules by clicking ond the "execute"-button on the left side (with option eye).[2]

(a) Add one RDFS (sub-property) triple to infer:

```
ex:Platypus ex:name "Ornithorhynchus anatinus"@la .
ex:TachyglossusAculeatus ex:name "Tachyglossus aculeatus"@la.
```

---

[1] We only use a selected rule set to keep the derivations simple.

[2] If you did not add any triples the execution should not provide any results.

(b) Add one RDFS (sub-class) triple to infer:

```
ex:ZaglossusBruijnii a ex:Species .
```

(c) Add one RDFS (domain) triple to infer:

```
ex:Platypus a ex:Species .
ex:TachyglossusAculeatus a ex:Species .
```

(d) Add three RDFS (range) triples to infer:

```
ex:Ornithorhynchus a ex:Genus .
ex:Tachyglossus a ex:Genus .
ex:Zaglossus a ex:Genus .
ex:Ornithorhynchidae a ex:Family .
ex:Tachyglossidae a ex:Family .
ex:Monotremata a ex:Order .
```

(e) Add three RDFS triples to infer:

```
ex:Platypus ex:parentTaxon ex:Ornithorhynchus .
ex:TachyglossusAculeatus ex:parentTaxon ex:Tachyglossus.
ex:ZaglossusBruijnii ex:parentTaxon ex:Zaglossus .
ex:Ornithorhynchus ex:parentTaxon ex:Ornithorhynchidae.
ex:Zaglossus ex:parentTaxon ex:Tachyglossidae .
ex:Tachyglossus ex:parentTaxon ex:Tachyglossidae .
ex:Ornithorhynchidae ex:parentTaxon ex:Monotremata .
ex:Tachyglossidae ex:parentTaxon ex:Monotremata .
```