

COMP 872 Social Semantic Web Fall 2014 Assignment 6

Due Wednesday, Oct. 15 by 11:00 PM

Each of problems 1-3 below asks for just a couple of just a couple of RDFS triples, not an entire document. They basically ask you to apply some of the inference patterns we discussed with regard to modeling with RDF. Problem 4 asks for an entire RDFS document and an entire RDF document.

Some standard prefixes:

```
@prefix foaf: <http://xmlns.com/foaf/0.1/> .
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .
@prefix dc: <http://purl.org/dc/elements/1.1/> .
@prefix xsd: <http://www.w3.org/2001/XMLSchema> .
@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#> .
```

1 (3 pts.). An organization tracks admissions at colleges & universities using the properties below, all with the same domain (`foaf:Person`) and range (`ed:Institution`).

- `ed:sentApplication`—meaning the person sent their application to the institution
- `ed:paidFee`—meaning the person paid the application fee to the institution
- `ed:applied`—meaning the person applied to the institution

Indicate in RDFS that applying to an institution requires (among other things) sending your application to it and paying it the application fee.

2 (3 pts.). One organization uses the property `org1:residesAt` to indicate that a person lives at a certain address while another uses the property `org2:locatedAt` for the same relation. We want to federate the data involving either of these relations under a single property, `info:livesAt`. Write the required RDFS.

3 (3 pts.). Write the RDFS that indicates that, at a particular university, the students (class `cgnu:Student`) and faculty (`cgnu:Faculty`), and perhaps others, are counted as members (`cgnu:Member`) of that university.

4 (11 pts.). Manor Farm keeps a relation, called `Cow`, with info on its cows. It is located at <http://www.ManorFarm.com>. The following shows a few of the rows in this relation

Cow

Registration Number	Born	Weaned	Castrated	Peak Daily Milk Production (gal./day)
12	2008-03-12	2008-09-16	2008-09-20	
14	2011-02-24			
8	2008-03-05	2008-09-16		8.2

You are to write an RDF document that captures the information in the first row of this table. But first you must write an RDFS document that defines the classes and properties. Specify a range for each property. For this, you should use the `date`, `integer`, and `float` XML Schema types; indicate that they are datatypes. Use the properties to define subclasses `Steer` (it's been castrated) and `MilkCow` of `Cow`. Assume that the namespace for RDFS document is <http://www.ManorFarm.com/terms/>. Use the `@base` directive so that you may use the empty prefix (just the ':').

What classes can you infer the cow in the first row belongs to? Show how.

One kind of biological miracle would be represented by a row that has a non-null value under both the "Castrated" and "Peak Milk Production" columns. Define a class `MiracleCow` that includes such cases.