Homework #1 Solutions

1. (10 pts) 0.5 pts each, -2 using rdf prefix for non-rdf vocab, -2 missing “.” or “;”

```turtle
@PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .
@PREFIX rdfs <http://www.w3.org/2000/01/rdf-schema#> .
@PREFIX u <http://www.example.org/uni#> .
@BASE <http://www.example.org/uni> .

#Person a rdfs:Class .
#Student a rdfs:Class ;
   rdfs:subClassOf #Person .
#Professor a rdfs:Class ;
   rdfs:subClassOf #Person .
#Course a rdfs:Class .
#advises a rdf:Property ;
   rdfs:domain #Professor ;
   rdfs:range #Student" ;
   rdfs:subPropertyOf #knows .
#takes a rdf:Property ;
   rdfs:domain #Student ;
   rdfs:range #Course .
#teaches a rdf:Property ;
   rdfs:domain #Professor ;
   rdfs:range #Course .
#knows a rdf:Property .
#alan a u:Professor ;
   u:teaches #cs100 ;
   u:advises #rob ;
   u:advises #sarah .
#rob a u:Student ;
   u:takes #cs100 ;
   u:takes #cs200 .
```
2. (10 pts) -1 for making up a prefix to use, -1 for extra triples, -2 incorrect literals, -1 missing
   \(<rdf:RDF> \) element, -1 for king wrote stand

   \(<rdf:RDF xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
              xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#">
      \<rdfsClass rdf:ID="Person" />
      \<rdfsClass rdf:ID="Document" />
      \<rdfs:Class rdf:ID="Book">
         \<rdfs:subClassOf rdf:resource="#Document" />
      \</rdfs:Class>
      \<Person rdf:ID="king">
         \<name>Stephen King</name>
         \<wrote rdf:resource="#stand" />
      \</Person>
      \<Book rdf:ID="stand">
         \<title>The Stand</title>
         \<year>1978</year>
      \</Book>
   \</rdf:RDF>

3. (10 pts.) New triples added: (1 pt. each)

   u:sarah rdf:type u:Student (by rdfs3)
   u:cs100 rdf:type u:Course (by rdfs3)
   u:cs200 rdf:type u:Course (by rdfs3)
   u:alan u:knows u:rob (by rdfs7)
   u:alan u:knows u:sarah (by rdfs7)
   u:alan rdf:type u:Person (by rdfs9)
   u:rob rdf:type u:Person (by rdfs9)
   u:sarah rdf:type u:Person (by rdfs9)

   Others given by a rule but already in document
   u:rob rdf:type u:Student (by rdfs2)
   u:alan rdf:type u:Professor (by rdfs2)
   u:rob rdf:type u:Student (by rdfs3)

4. (10 pts.) Additional triples are:

   \(<A> rdfs:subClassOf \<C> \).  \[compare to \<C> rdfs:subClassOf \<A> \]
   \(<B> rdfs:subClassOf \<A> \).
   \(<C> rdfs:subClassOf \<B> \).

   Since each class is both a superclass and a subclass of the others, this means all three must be
equivalent. If A, B and C are synonyms expressed in different schemas, the three triples will be
sufficient for us to recognize this fact and treat the appropriately. For example, consider the classes
Doctor, MD, and Physician.

5. (25 pts.)
   no comments -1, no rdf:type statements -2, spaces in URIs -1, URIs without proper pay-level-
domains -1, improper class/property naming convention -1, missing data (e.g., artist name, album
title) -1 per property