Medical Informatics: Tutorial 5

SPARQL Querying

- Please attempt all questions on this worksheet in advance of the tutorial, and bring with you all work. Tutorials cannot function properly unless you do the work in advance.
- You are welcome to bring along any questions you may have, e.g. from the lectures.
- Assessment is formative, meaning that tutorials do not contribute to your final grade.

Introduction

In this tutorial you will get to practise with SPARQL querying. In particular, you will get to formulate and run SPARQL queries against a small RDF dataset, which describes people and courses, and specifies who is taking which courses.

RDF dataset

Have a look at the following dataset and familiarise yourself with the terminology used. You can access the dataset at http://www.homepages.ed.ac.uk/amanatak/medinf/sampleData.ttl .

RDF Dataset

```
@prefix :    <http://usher.ed.ac.uk/medinf/ont#> .
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .
@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#> .


# People
:p6832 rdf:type :Person ;
       :firstName "Richard" ;
       :lastName  "Halpin" ;
       :email     "rhalpin@hotmail.com" ;
       :homeTel   "01312765135" ;
       :nick      "Dick" .
```

```
:p2345 rdf:type :Person ;
        :firstName "Catriona" ;
        :lastName  "Scott" ;
        :homeTel   "01316465743" ;
        :email     "cscott@gmail.com" .

:p4556 rdf:type :Person ;
        :firstName "Iain" ;
        :lastName  "Robertson" ;
        :workTel   "01319603285" ;
        :email     "iain@yahoo.com" ;
        :email     "i.robertson@ed.ac.uk" .

:p3356 rdf:type :Person ;
        :firstName "Sarah" ;
        :lastName  "Robertson" ;
        :workTel   "01319603286" ;
        :email     "sarah@yahoo.com" ;
        :email     "s.robertson@ed.ac.uk" .


# Courses
:course46 rdf:type :Course ;
            :courseTitle "Medical Informatics" ;
            :courseCredits 10 .

:course91 rdf:type :Course ;
            :courseTitle "Database Management Systems" ;
            :courseCredits 10;
            :courseLecturer :p3356 .

:course25 rdf:type :Course ;
            :courseTitle "Ethics and Governance of eHealth" .

:course33 rdf:type :Course ;
            :courseTitle "Practical Introduction to Data Science" ;
            :courseCredits 20 .


# Who's taking which courses
:p4556 :takingCourse :course33 .
:p2345 :takingCourse :course46 .
:p6832 :takingCourse :course25 .
:p6832 :takingCourse :course33 .
:p2345 :takingCourse :course33 .
:p4556 :takingCourse :course91 .


# Class declarations
:Person rdf:type rdfs:Class .
:Course rdf:type rdfs:Class .
```

SPARQL queries

For each of the following questions, formulate the corresponding SPARQL queries. You can run the queries with the use of Apache Jena ARQ (we'll learn how to use this in Lab2) or SPARQLer (at http://tw.rpi.edu/endpoint/sparql.html or http://www.sparql.org/sparql.html), where you provide the URI of the dataset in the target graph URI field and ask for Text output.

(1) Retrieve the first and last name of all the people in the dataset.

(2) Retrieve all classes that are declared in this dataset.

(3) Retrieve the title and the number of credits for each course. The results should be ordered by number of credits.

(4) Retrieve the title of each course, along with the number of credits, if such information is available.

(5) Retrieve the courses taken by each person. The results should include people's first and last names and course titles.

(6) Retrieve the first and last name of all people taking a course.

(7) Return the titles of all courses taken by Richard Halpin.

(8) Retrieve the number of people taking "Practical Introduction to Data Science".