Practical Session 3

> ### Objective:
> 1. Define Sparql queries on a local ontology (using Protégé)
> 2. Define Sparql queries using Dbpedia sparql endpoint

Exercise 1:

1. Open the LUBM ontology in Protégé editor

2. Instanciate the ontology as described in what follows[1]:

(02) Universities (U1 and U2)

(05) Departments (UD1, ...UD5)

(2) Departements are part of the University U1 and (3) Departmens are part of University U2

In each Department:

- 2 FullProfessors (FP) worksFor the Department
- 2 AssociateProfessors (AOP) worksFor the Department
- 2 AssistantProfessors (ASP) worksFor the Department
- 2 Lecturers (LEC) worksFor the Department
- FullProfessor (FP1) is headOf one Department (UD1)
- FullProfessor (FP2) is headOf University (U1)
- Indicate a name and the title (Prof.) for FullProfessor (FP2)
- 6 graduate courses (GC) and 3 master courses (MC)
- Every Lecturer and AssistantProfessor teaches (property: teaches) 1~2 GraduateCourses
- Every AssociateProfessor and FullProfessor teaches 1~2 MasterCourses
- 5 ResearchGroups (RG) are subOrgnization of each Department (using "*is part of*" property)
- (10) UndergraduateStudent (UGS)
- (10) GraduateStudent (GS)
- every Student is memberOf one Department
- 2 of the GraduateStudents (GS1 and GS2) are chosen as TeachingAssistant for one Graduate Course
- The Courses the GraduateStudents are TeachingAssistant of are pairwise different
- 2 of the UndergraduateStudents have a Professor as their advisor
- every GraduateStudent has a Professor as his advisor
- 2 UndergraduateStudent takesCourse 2 GraduateCourses (property "*is taking*")
- every GraduateStudent takesCourse 1 GraduateCourse
- every GraudateStudent has an undergraduateDegreeFrom a University

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1   Updated from (https://swat.cse.lehigh.edu/projects/lubm/profile.htm)

3. Run Hermit Reasoner

4. Define the Sparql queries for the following requirements:

   ○ List all the individuals and their type classes

   ○ List of the graduate students that take course GC1

   ○ List the Graduate students that are members of departments of universities they undergraduated from

   ○ List of the professors working for university U1

   ○ List of the persons working for university U1, with their related grade

   ○ What is the title and name of the head of University (U1) ?

   ○ List the students that take graduate courses that are taught by their advisors professor

   ○ Which person has the title "Prof."?

   ○ List the professors, their names and their titles

   ○ List the graduate students who are advised by associate professors or full professors

   ○ What is the number of departments for each university ?

Indication: Query 1:

PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>

PREFIX ub: <http://swat.cse.lehigh.edu/onto/univ-bench.owl#>

SELECT *

WHERE{

?s rdf:type **?o**}

Exercise 2:

Using Dbpedia sparql endpoint (OpenLink Virtuoso SPARQL Query Editor (dbpedia.org)), execute the provided queries.