CITS3005 Knowledge Representation Homework 2

September 14, 2023

Worth:10% of final grade
Due: 5pm, Friday October 6, 2023.
Submit: `https://secure.csse.uwa.edu.au/run/cssubmit/`

This home exercise requires you to build your own knowledge graph in any area of your choosing. It could describe a particular sports league, the characters in a book or television series, a set of recipes, or a board game[1].

You should choose something that of which you have a good understanding, and something that is not too complex:

1. Ideally there should be at between 10 and 100 entities (but there can be more literals)
2. There should be between three and 10 types of entities.
3. There should be at least three different types of relations.

The tasks you should complete are:

1. Describe the context for which you are building a knowledge graph. Give a textual description of each of the types and each of the relations that your knowledge graph will use. 3 marks
2. Describe a set of useful queries that your knowledge graph could be used to answer. 1 mark
3. Describe the constraints of your knowledge graph. What are valid relations and what is disallowed. 1 mark
4. Construct the knowledge graph using RDFLib. 2 marks
5. Demonstrate your queries using SPARQL. 2 marks
6. Implement some of the constraints using SHACL and demonstrate that your knowledge graph conforms to these constraints. 1 mark

You should submit a pdf report containing your answers to 1-3 (less than 1000 words), a provide an RDF/XML file, a SHACL file and a python script to demonstrate parts 4-6. All files should be submitted to cssubmit (not zipped).

[1] For the opportunists among you, it may *not* be handbook of your university!