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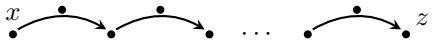
Data Models and Query Languages
Summerterm 2014

7. Exercise Sheet: TriAL & Triple Stores

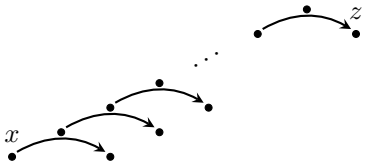
Discussion: 29.07.2014

Exercise 1 (TriAL, 6 Points)
Formulate the reachability problems from a) and b) using SPARQL 1.1 and nSPARQL or explain why they are not expressible in that particular language. (4Pts)

a) $Reach_{\rightarrow}$ defined by $(E \bowtie^{1,2,3'}_{3=1'})$

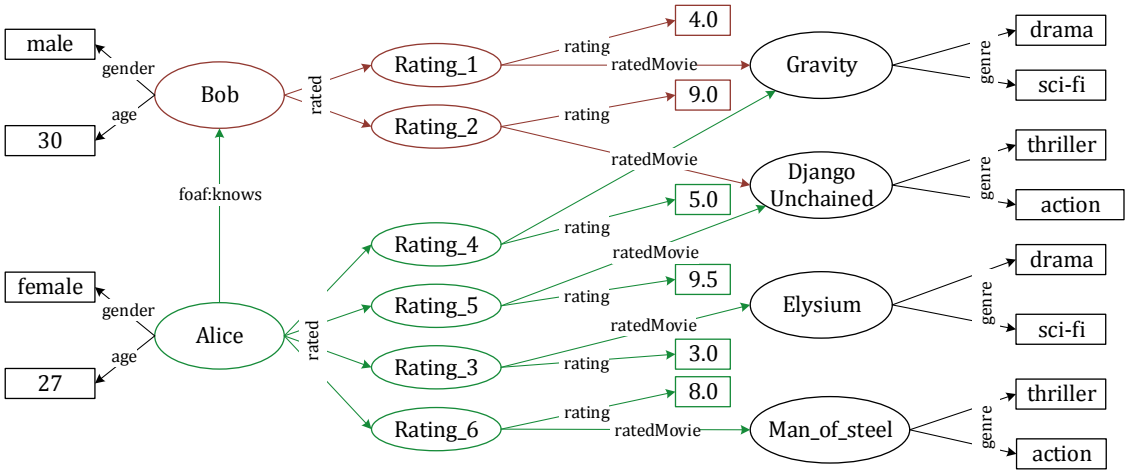


b) $Reach_{\nearrow}$ defined by $(\bowtie^{1',2',3}_{1=2'} E)$



c) Give for $Reach_{\rightarrow}$ the equivalent TriAL definition using *left Kleene closure* and for $Reach_{\nearrow}$ the equivalent TriAL definiton using *right Kleene closure*. (2Pts)

Exercise 2 (RDF Storage, 4 Points)
Consider the RDF document that models ratings in movies domain from the exercise sheet 6.1:



Provide relational database instances [1] that store the RDF graph according to a:

a) Triple-Table schema with dictionary encoding. (1Pt)

b) Vertical Partitioning schema. (1Pt)

After that, Translate the following query into SQL over both relational database instances and write down the final result.

c) Find the age of all users who rated the "Gravity" movie. (2Pts)

[1] It is not required to fill all the instances of the data in the corresponding tables, it is enough to model a subset of the given data that demonstrates your modelling.