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## Data Models and Query Languages Summerterm 2013

### 9. Exercise Sheet: Triple Stores

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#### Exercise 1 (RDF Storage)

Consider the RDF document that models a social graph in a music domain:

```
@prefix foaf: <http://xmlns.com/foaf/0.1/> .
@prefix lb: <http://example.org/lastfm/> .
lb:bob    foaf:knows    lb:user2, lb:user3, lb:user4 ;
          foaf:age      25 ;
          lb:listenedTo lb:track1, lb:track2 ;
          lb:topArtist  lb:artist1, lb:artist2 .
lb:user2  foaf:knows    lb:user5, lb:user6 ;
          foaf:age      40 ;
          lb:listenedTo lb:track1, lb:track2, lb:track3 ;
          lb:topArtist  lb:artist2, lb:artist4 .
lb:user3  foaf:knows    lb:user5, lb:bob, lb:user6 ;
          foaf:age      19 ;
          lb:listenedTo lb:track2, lb:track3, lb:track4 ;
          lb:topArtist  lb:artist2, lb:artist3 .
lb:user4  lb:listenedTo lb:track2, lb:track3, lb:track4 ;
          foaf:age      61 ;
          lb:topArtist  lb:artist3, lb:artist4, lb:artist5 .
lb:user5  foaf:knows    lb:user7 ;
          foaf:age      23 ;
          lb:topArtist  lb:artist1, lb:artist3 .
```

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

- Triple-Table schema with dictionary encoding
- Vertical Partitioning schema

#### Exercise 2 (SPARQL/RDF Storage)

Translate the following query into SQL and SPARQL over both relational database instances from Exercise 9.1 (without considering dictionary encoding) and write down the final result.

- Find the age of all users who refer to *artist1* as a top artist.