Ontologies & the Semantic Web Project
Sports Ontology

Team Members:

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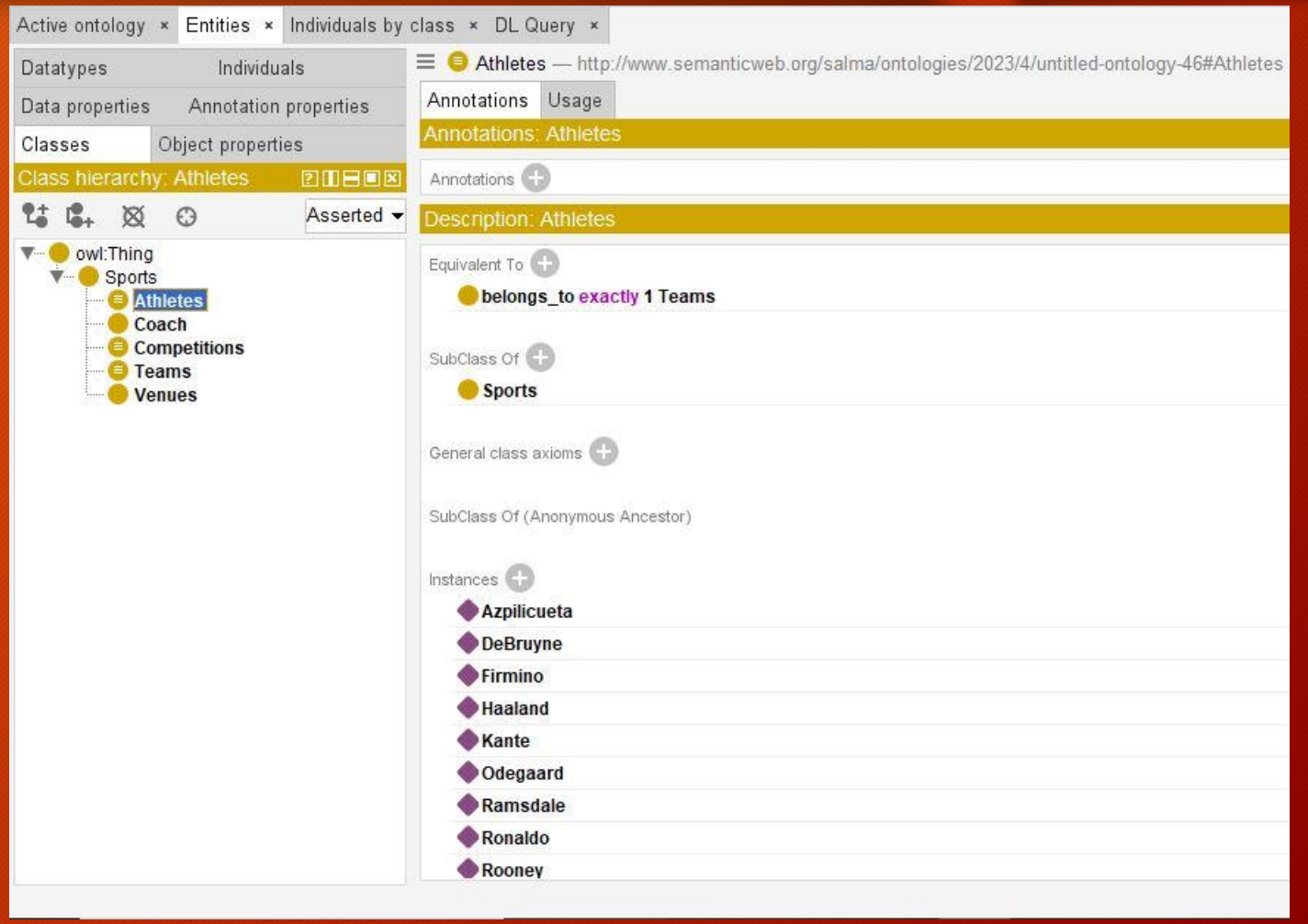
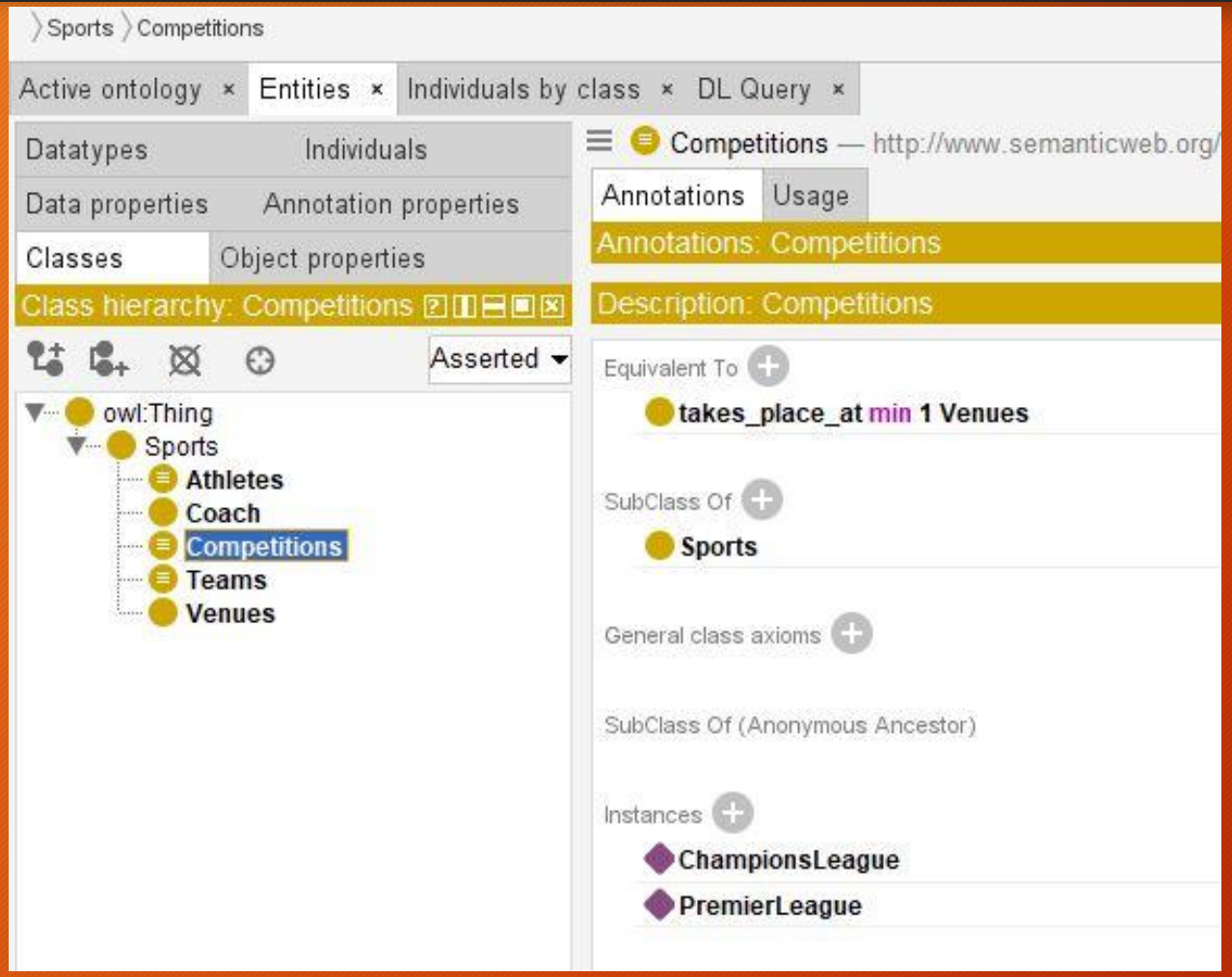
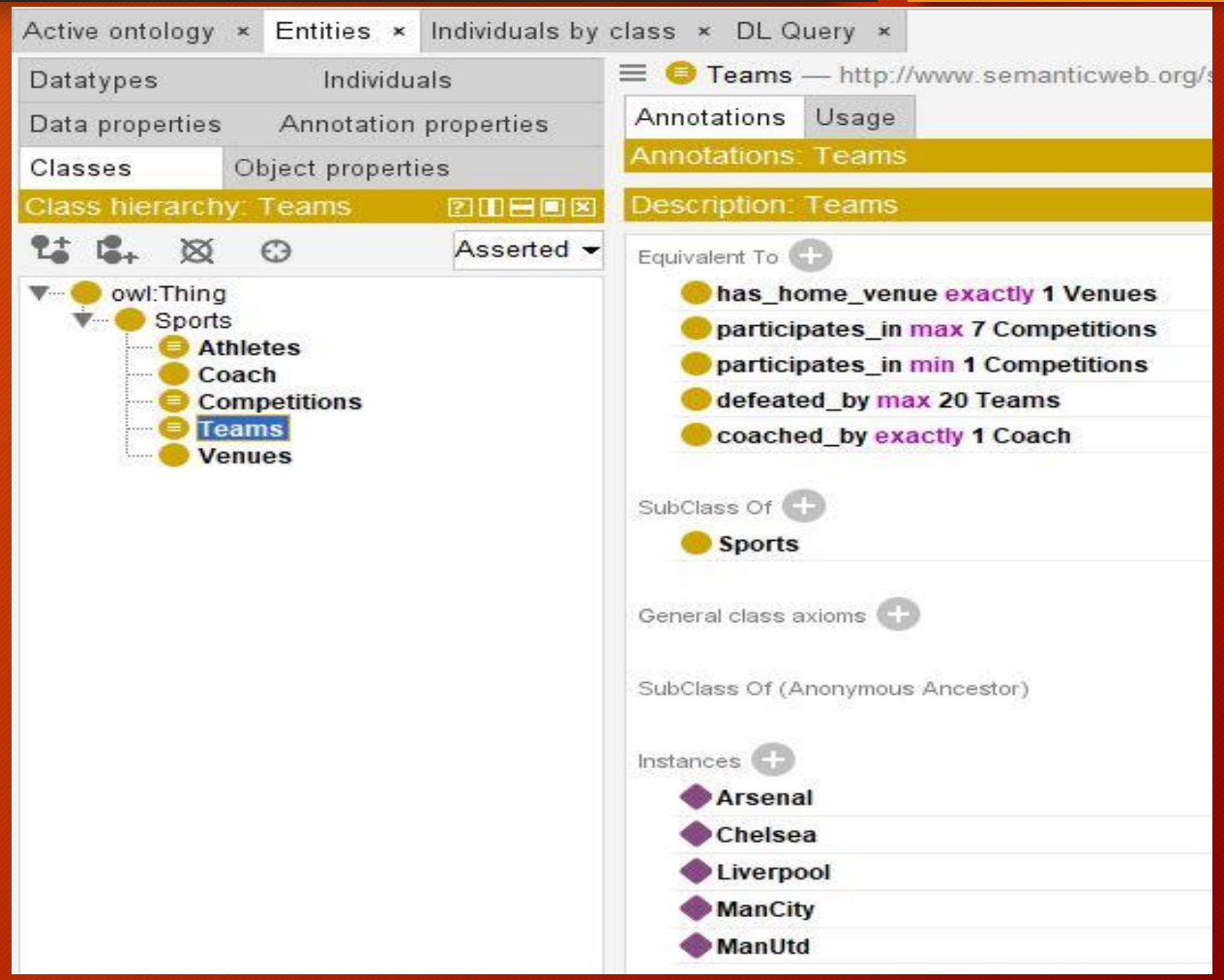
Classes

- Sports (Main Class)
- Athletes
- Coaches
- Teams
- Venues
- Competitions



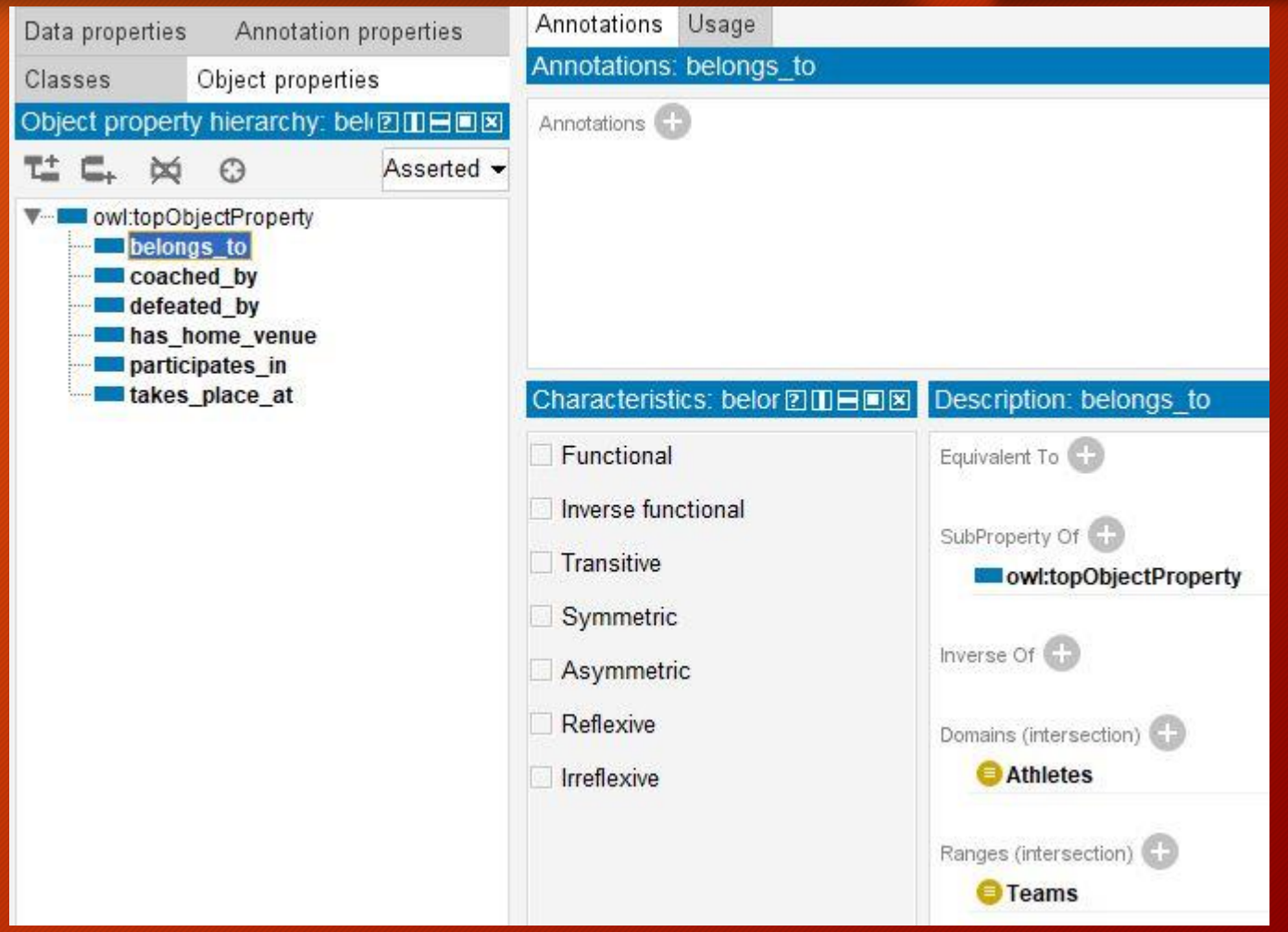
Classes (Cont.)



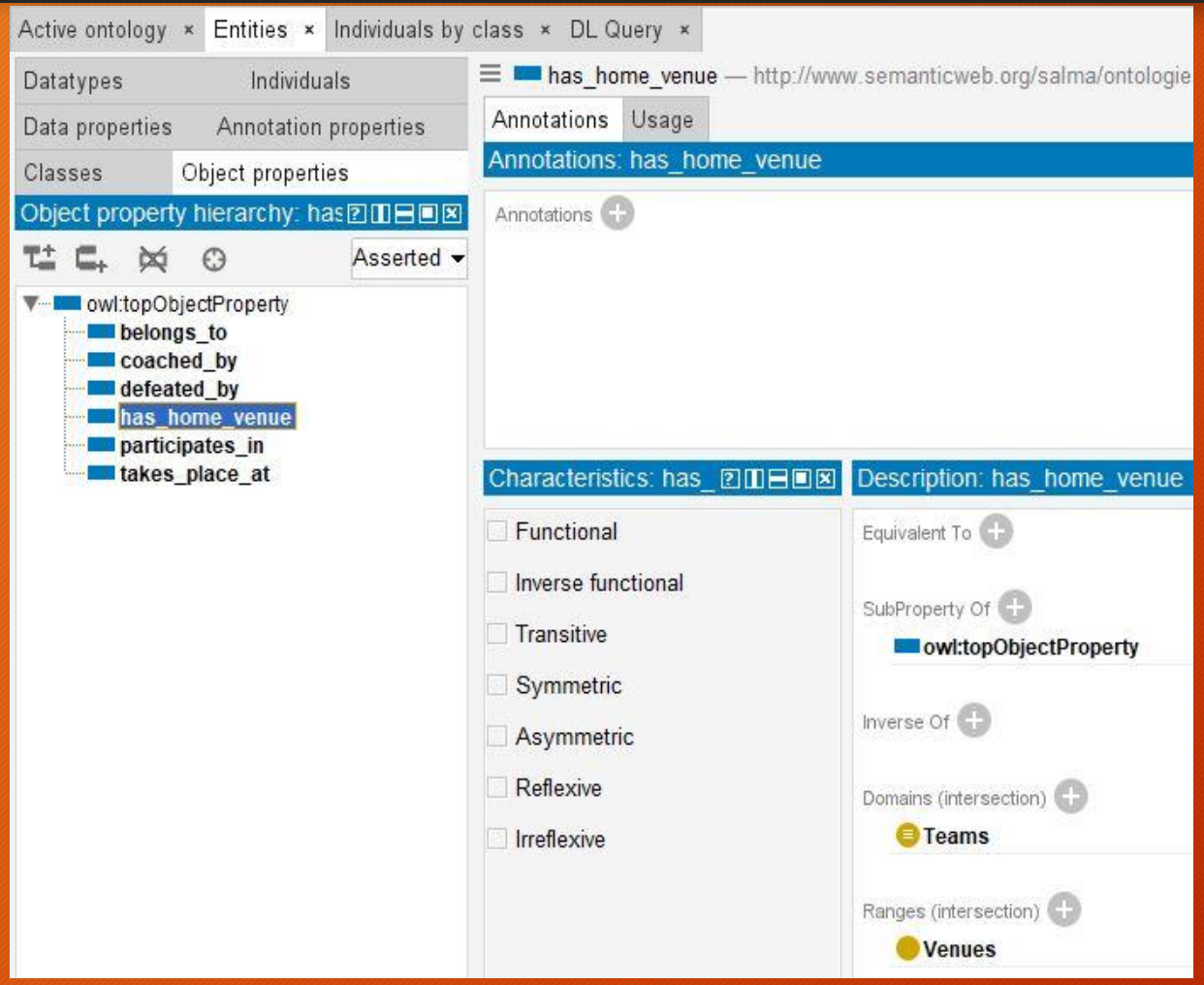


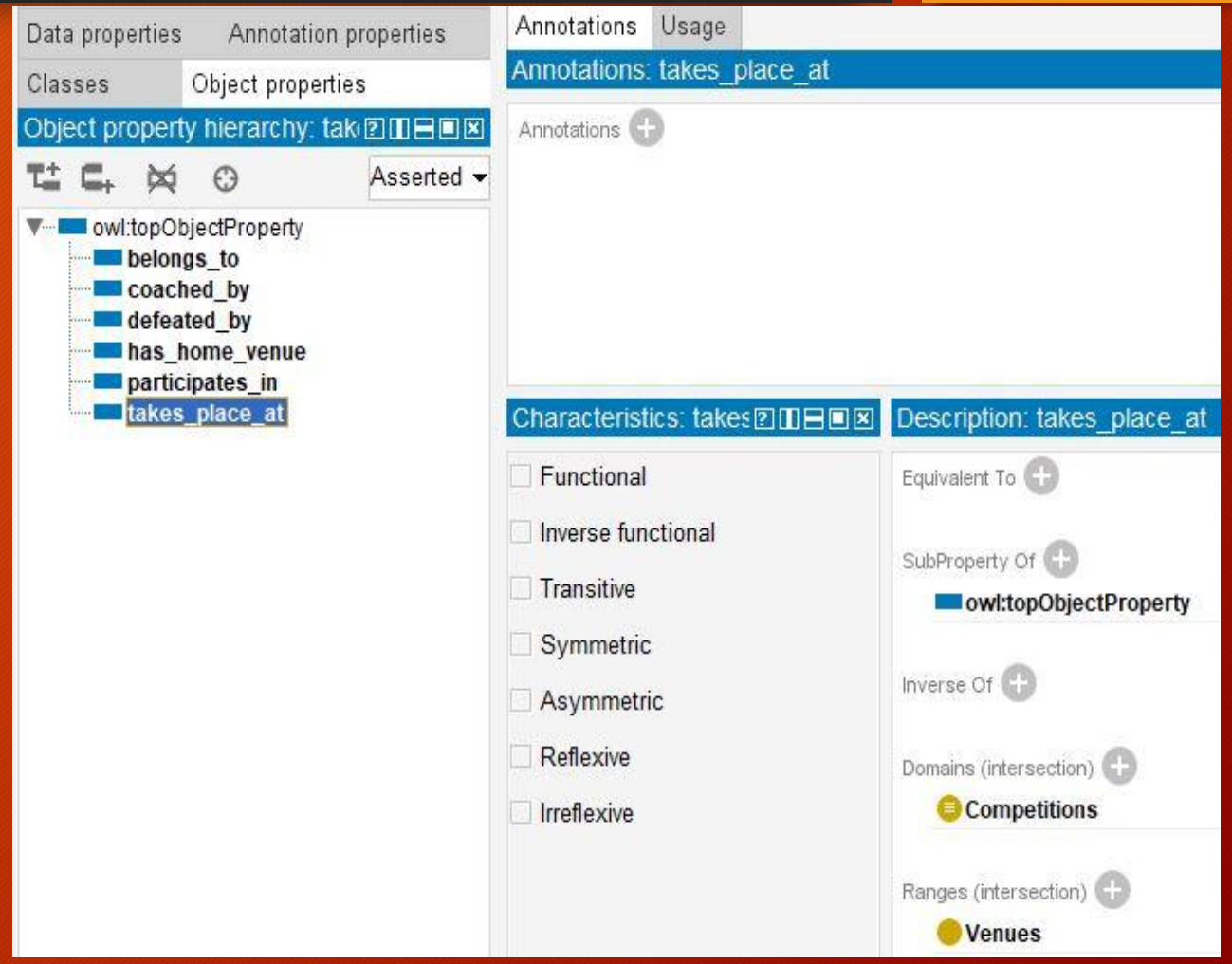
Object Properties

- participates_in
- belongs_to
- takes_place_at
- coached_by
- defeated_by
- has_home_venue



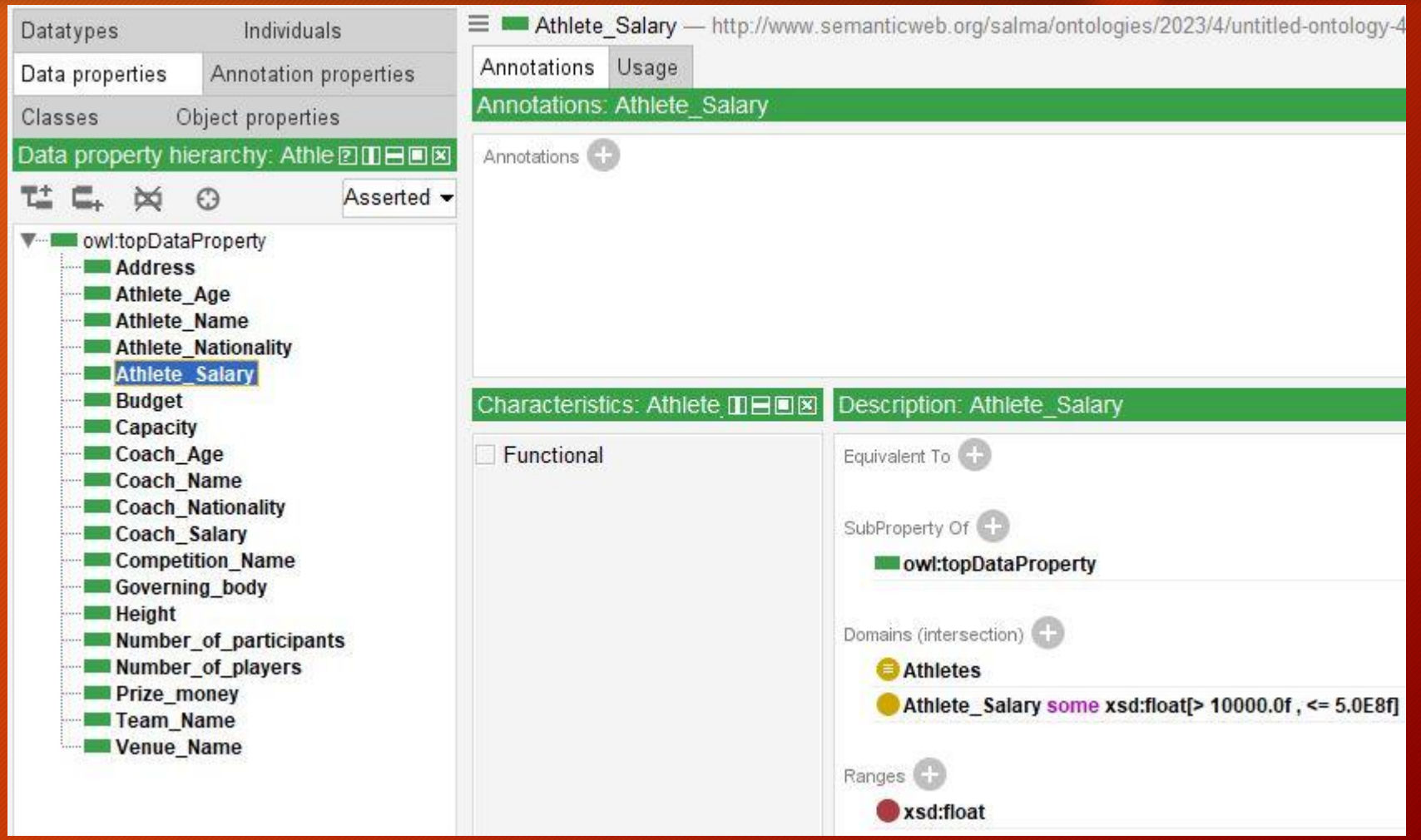
Object Properties (Cont.)



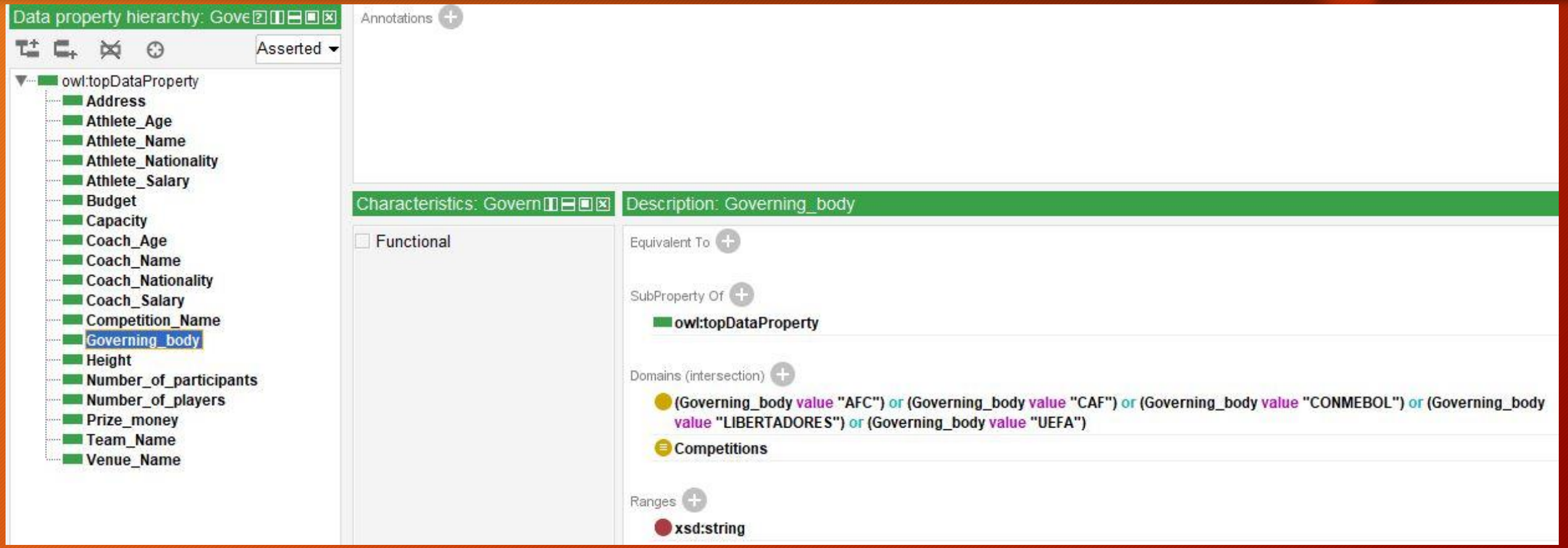


Data Properties

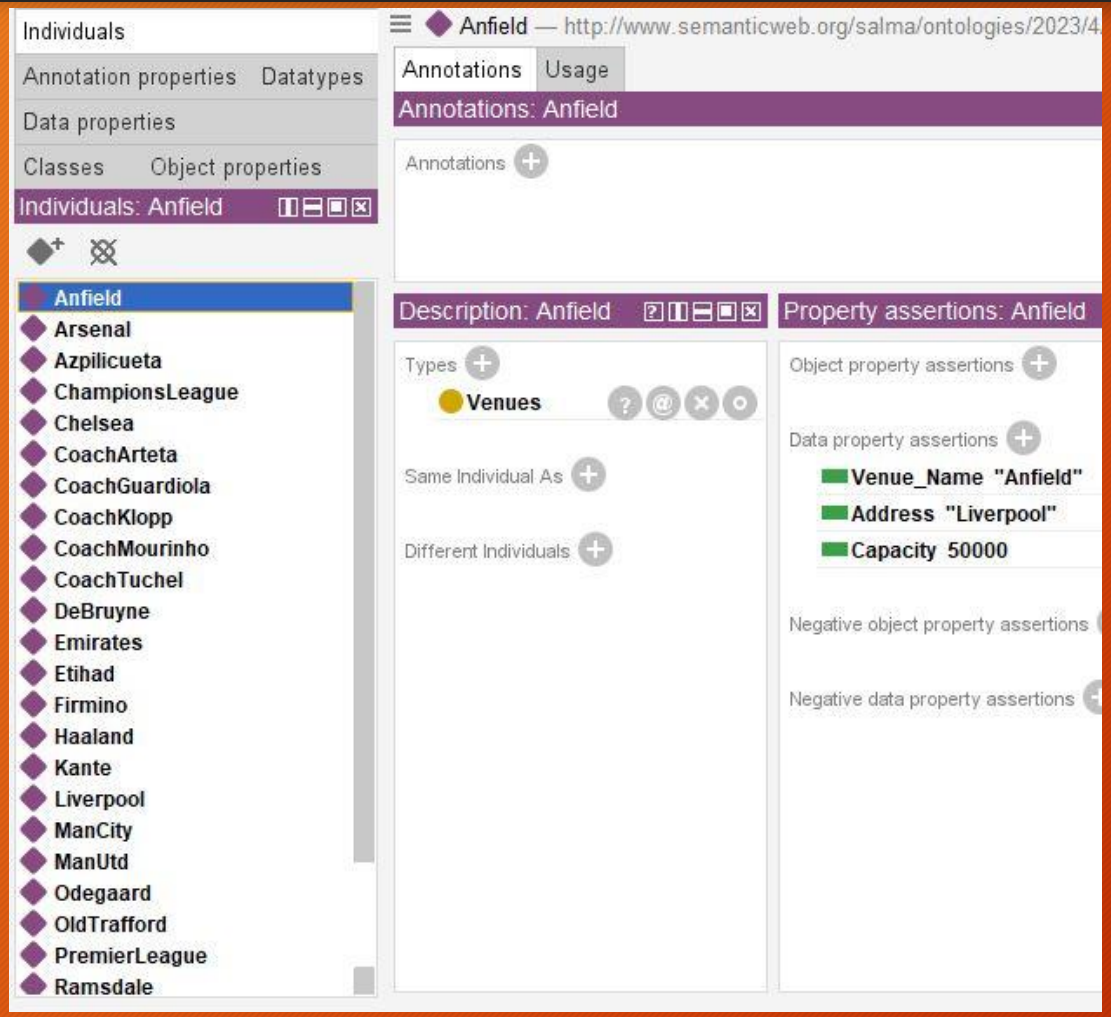
- Address
- Athlete_Age
- Athlete_Name
- Athlete_Nationality
- Athlete_Salary
- Budget
- Capacity
- Coach_Age
- Coach_Name
- Coach_Nationality
- Coach_Salary
- Competition_Name
- Governing_body
- Height
- Number_of_participants
- Number_of_players
- Prize_money
- Team_Name
- Venue_Name

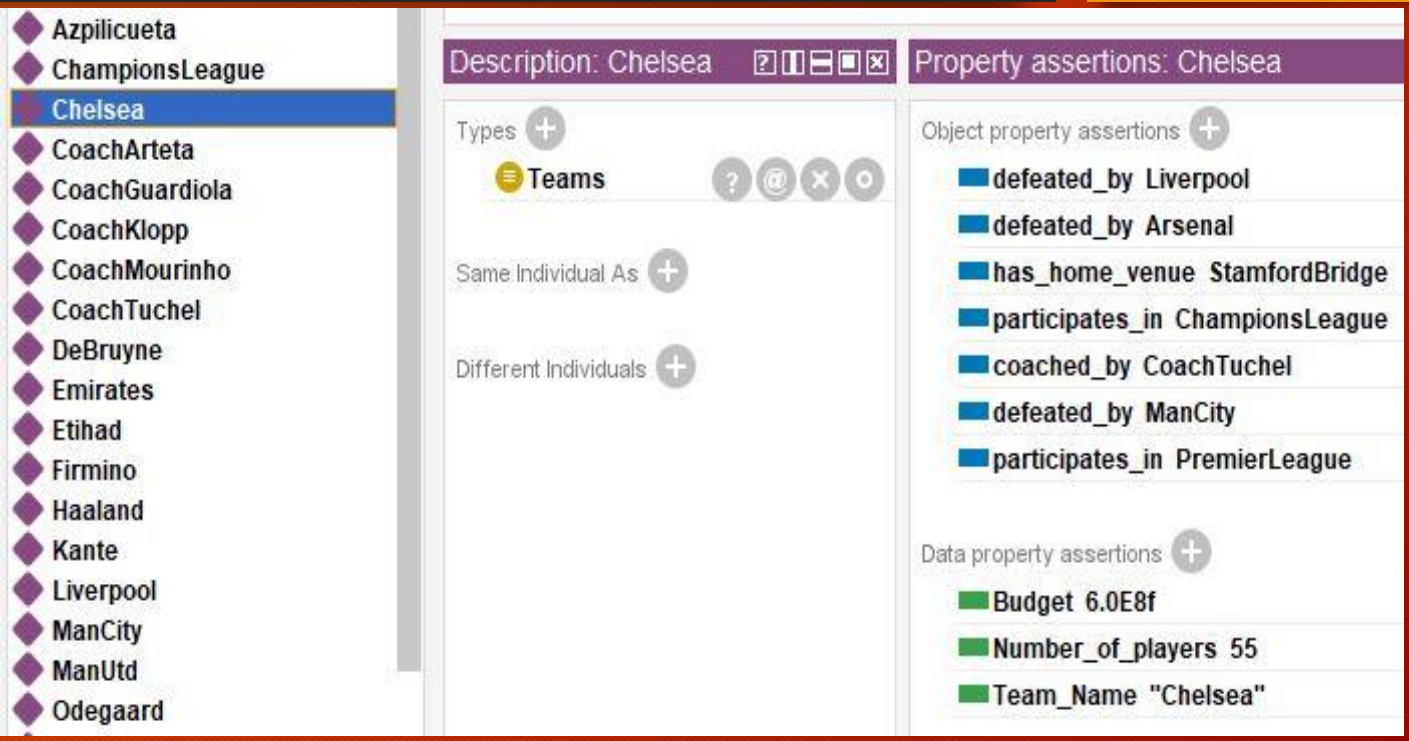


Data Properties (Cont.)

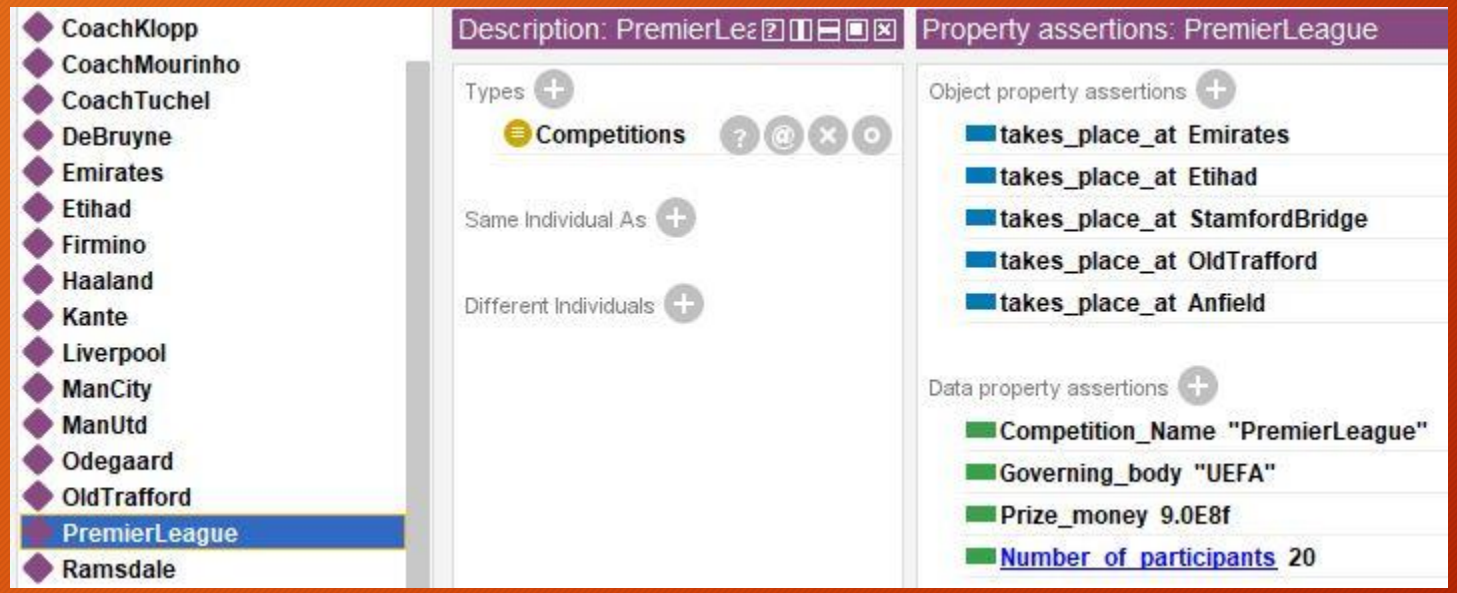


Individuals

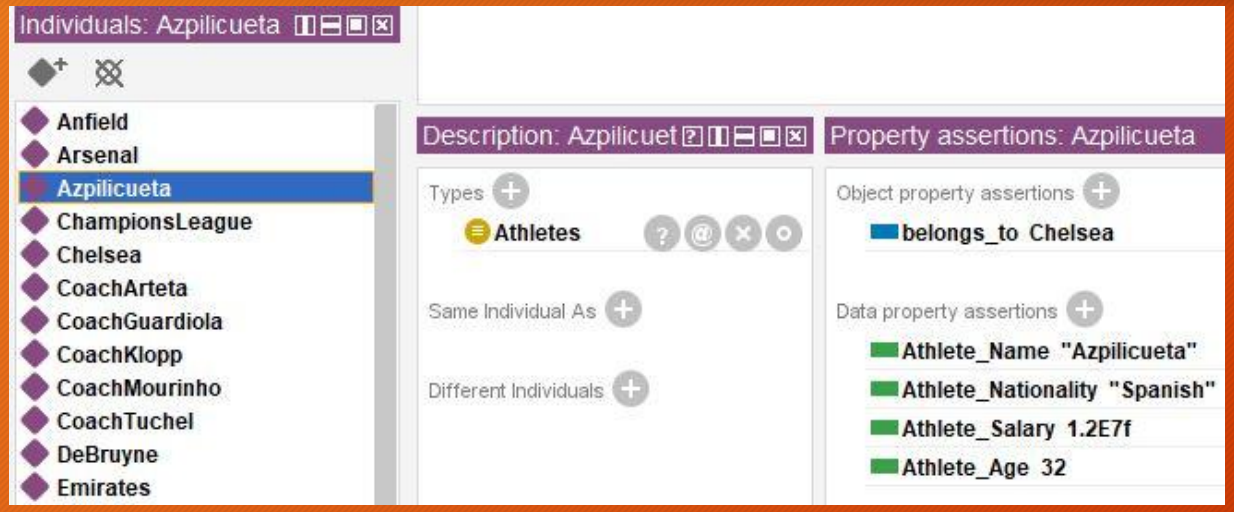


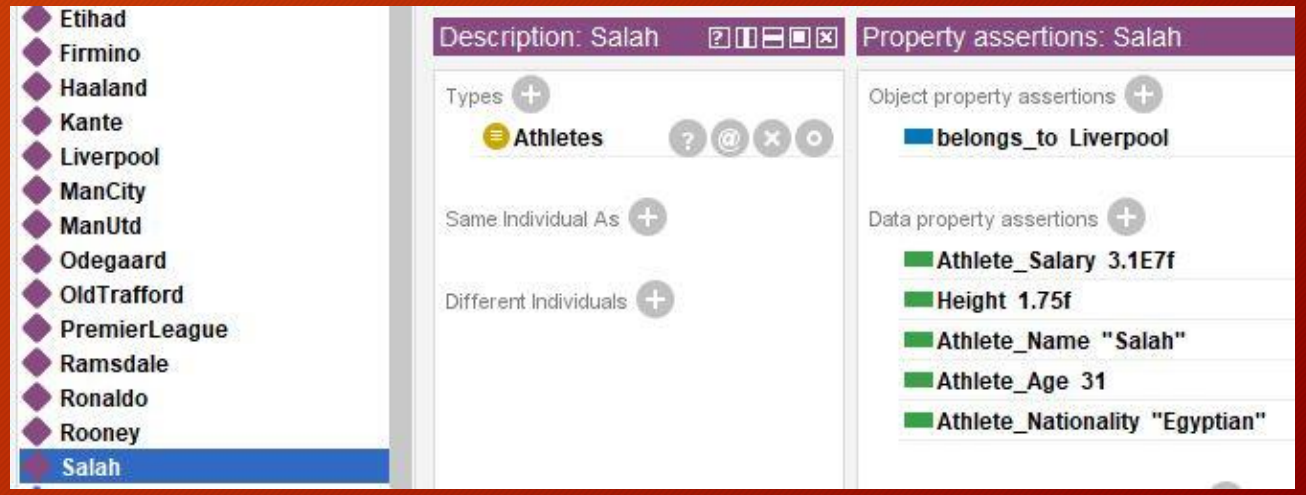


Individuals (Cont.)



Individuals (Cont.)



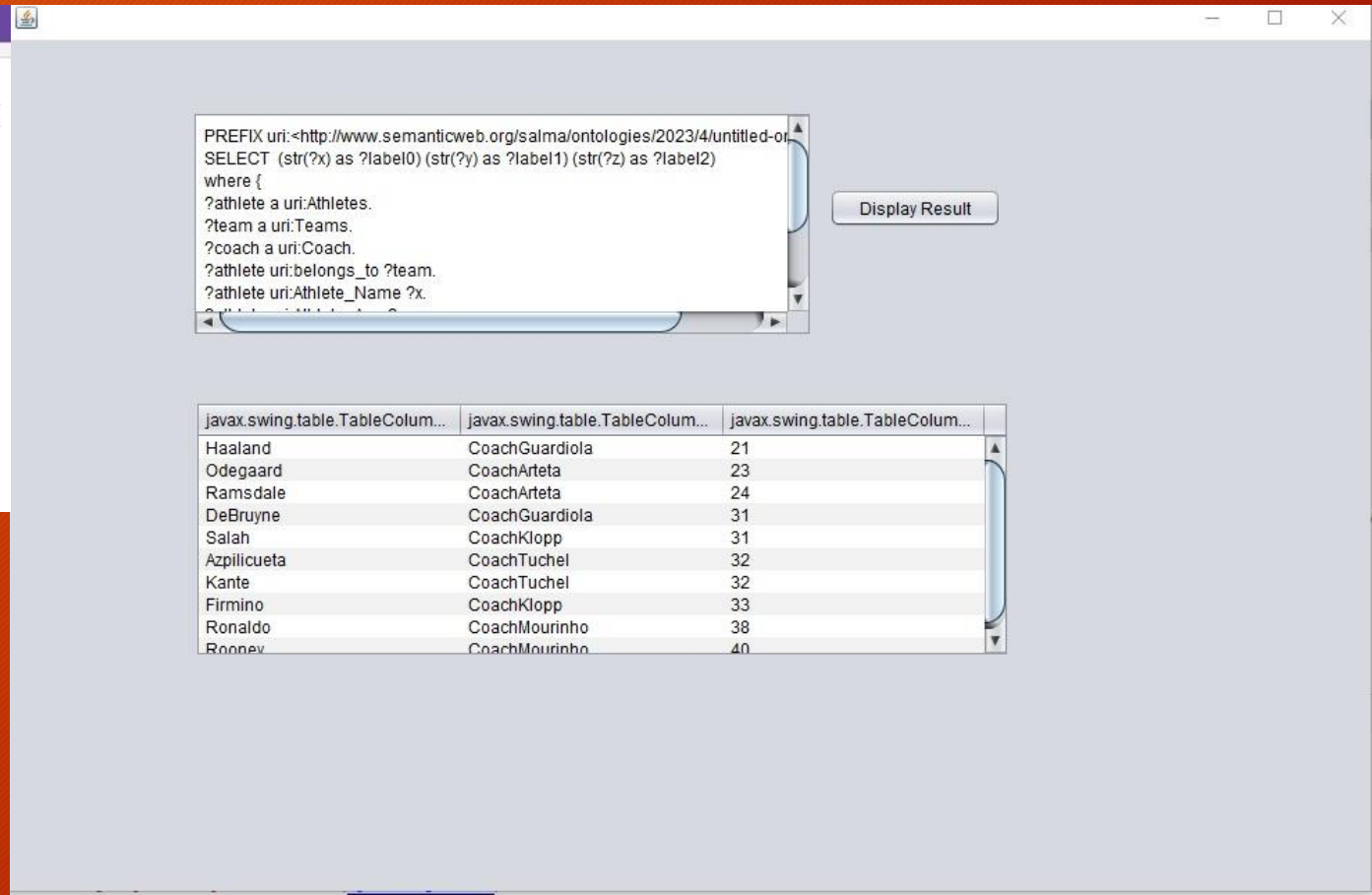


SPARQL Query 1

- Returns athletes & their coaches & their ages, then orders results by age.

Snap SPARQL Query:

```
PREFIX uri:<http://www.semanticweb.org/salma/ontologies/2023/4/untitled-ontology-46#>
SELECT  (str(?x) as ?label0) (str(?y) as ?label1) (str(?z) as ?label2)
where {
?athlete a uri:Athletes.
?team a uri:Teams.
?coach a uri:Coach.
?athlete uri:belongs_to ?team.
?athlete uri:Athlete_Name ?x.
?athlete uri:Athlete_Age ?z.
?team uri:coached_by ?coach.
?coach uri:Coach_Name ?y.
}
Order BY ?z
```

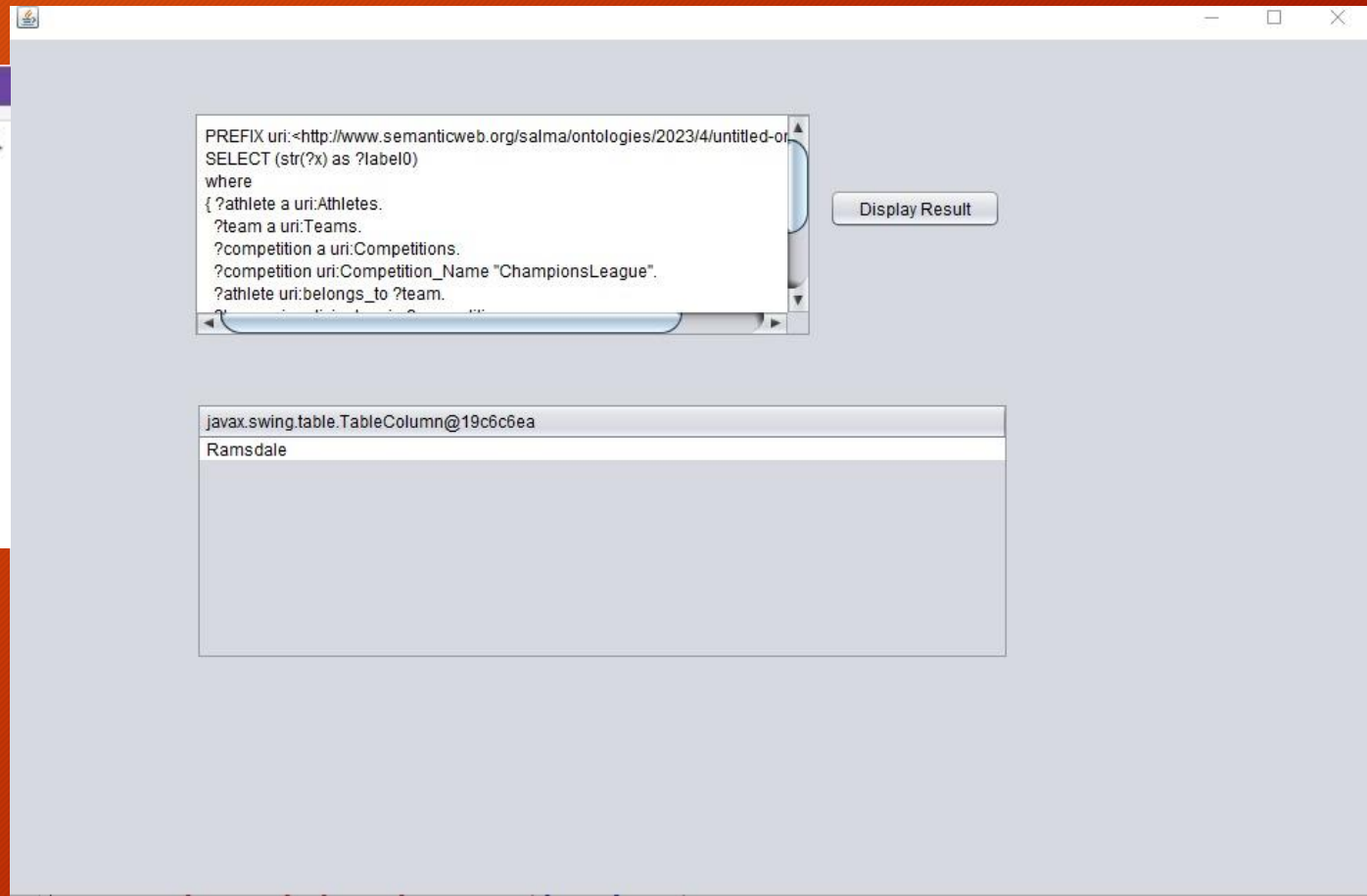


SPARQL Query 2

- Returns athletes that play for a team participating in Champions League and has a name starting with the letter ‘R’.

Snap SPARQL Query:

```
PREFIX uri:<http://www.semanticweb.org/salma/ontologies/2023/4/untitled-ontology-46#>
SELECT (str(?x) as ?label0)
where
{ ?athlete a uri:Athletes.
  ?team a uri:Teams.
  ?competition a uri:Competitions.
  ?competition uri:Competition_Name "ChampionsLeague".
  ?athlete uri:belongs_to ?team.
  ?team uri:participates_in ?competition.
  ?athlete uri:Athlete_Name ?x.
  FILTER REGEX(?x,"^R","i").
}
Order BY ?x
```

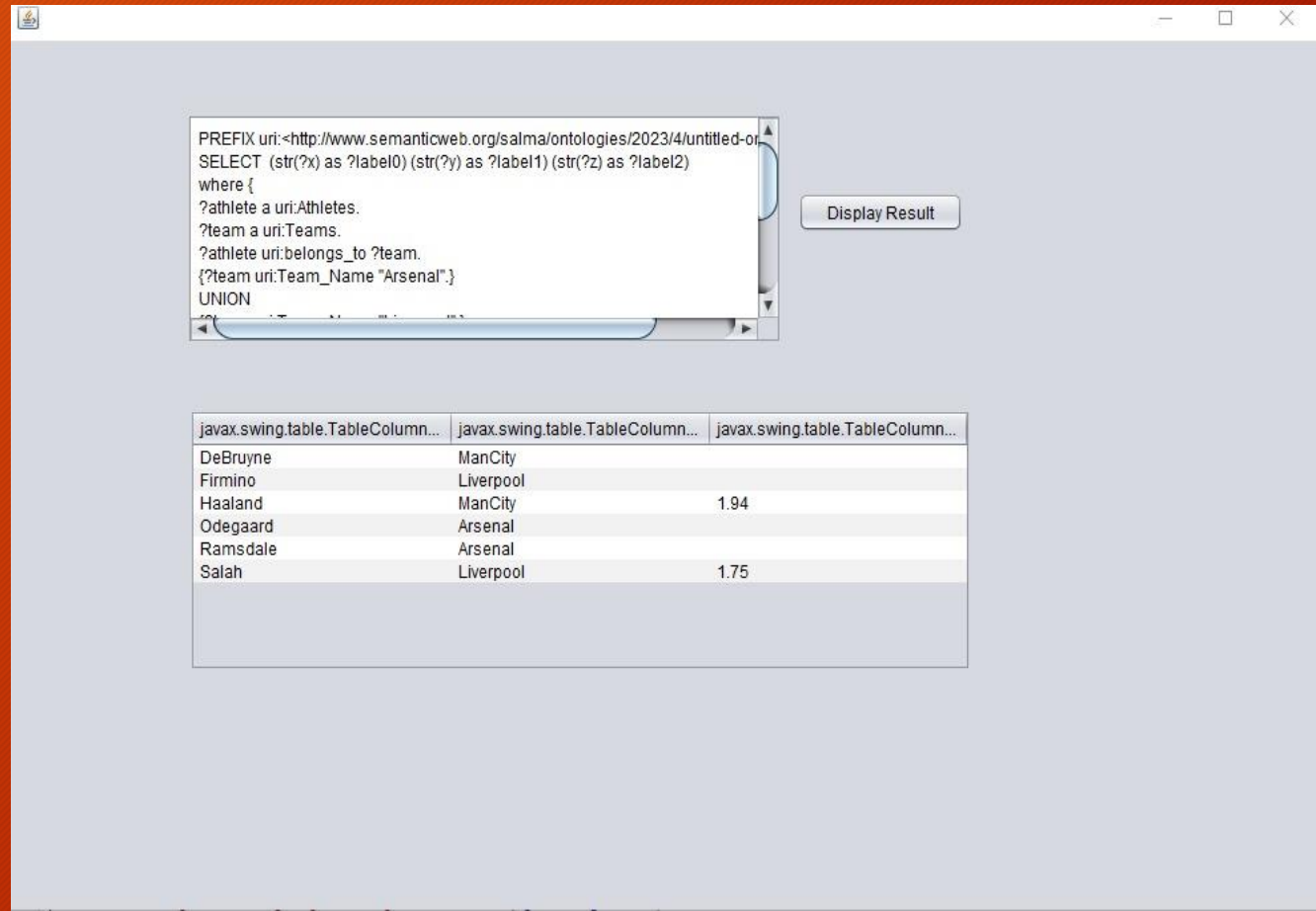


SPARQL Query 3

- Returns athletes that play for Arsenal or Liverpool or Manchester City, and optionally returns each player's height.

Snap SPARQL Query:

```
PREFIX uri:<http://www.semanticweb.org/salma/ontologies/2023/4/untitled-ontology-46#>
SELECT  (str(?x) as ?label0) (str(?y) as ?label1) (str(?z) as ?label2)
where {
?athlete a uri:Athletes.
?team a uri:Teams.
?athlete uri:belongs_to ?team.
{?team uri:Team_Name "Arsenal".}
UNION
{?team uri:Team_Name "Liverpool".}
UNION
{?team uri:Team_Name "ManCity".}
?athlete uri:Athlete_Name ?x.
?team uri:Team_Name ?y.
OPTIONAL {?athlete uri:Height ?z.}
}
Order BY ?x
```

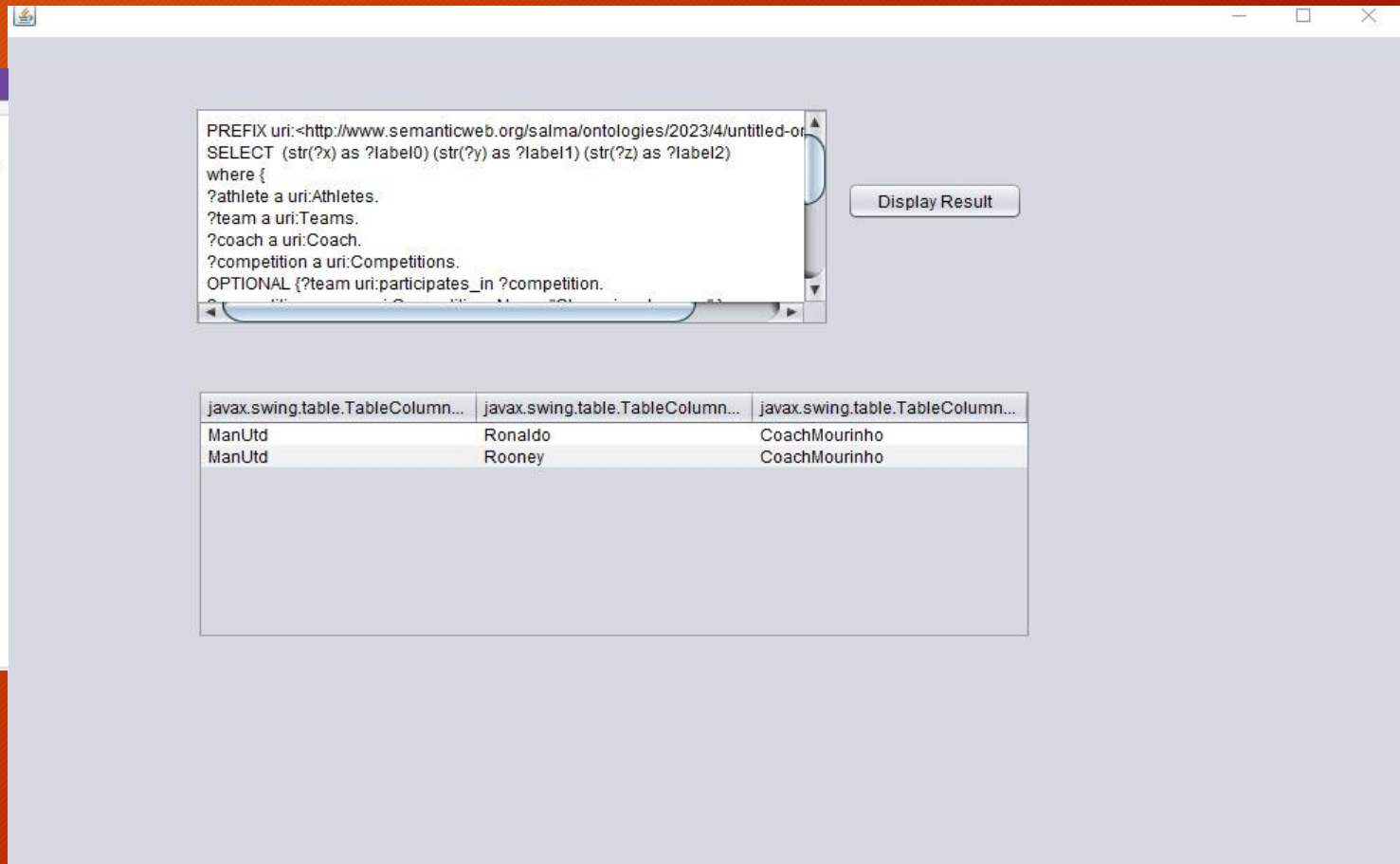


SPARQL Query 4

- Returns teams & their athletes & their coach that does not participate in Champions League.

Snap SPARQL Query:

```
PREFIX uri:<http://www.semanticweb.org/salma/ontologies/2023/4/untitled-ontology-46#>
SELECT  (str(?x) as ?label0) (str(?y) as ?label1) (str(?z) as ?label2)
where {
?athlete a uri:Athletes.
?team a uri:Teams.
?coach a uri:Coach.
?competition a uri:Competitions.
OPTIONAL {?team uri:participates_in ?competition.
?competition_name uri:Competition_Name "ChampionsLeague".}
FILTER (!BOUND(?competition_name))
?athlete uri:belongs_to ?team.
?team uri:coached_by ?coach.
?team uri:Team_Name ?x.
?athlete uri:Athlete_Name ?y.
?coach uri:Coach_Name ?z.
}
Order BY ?x
```

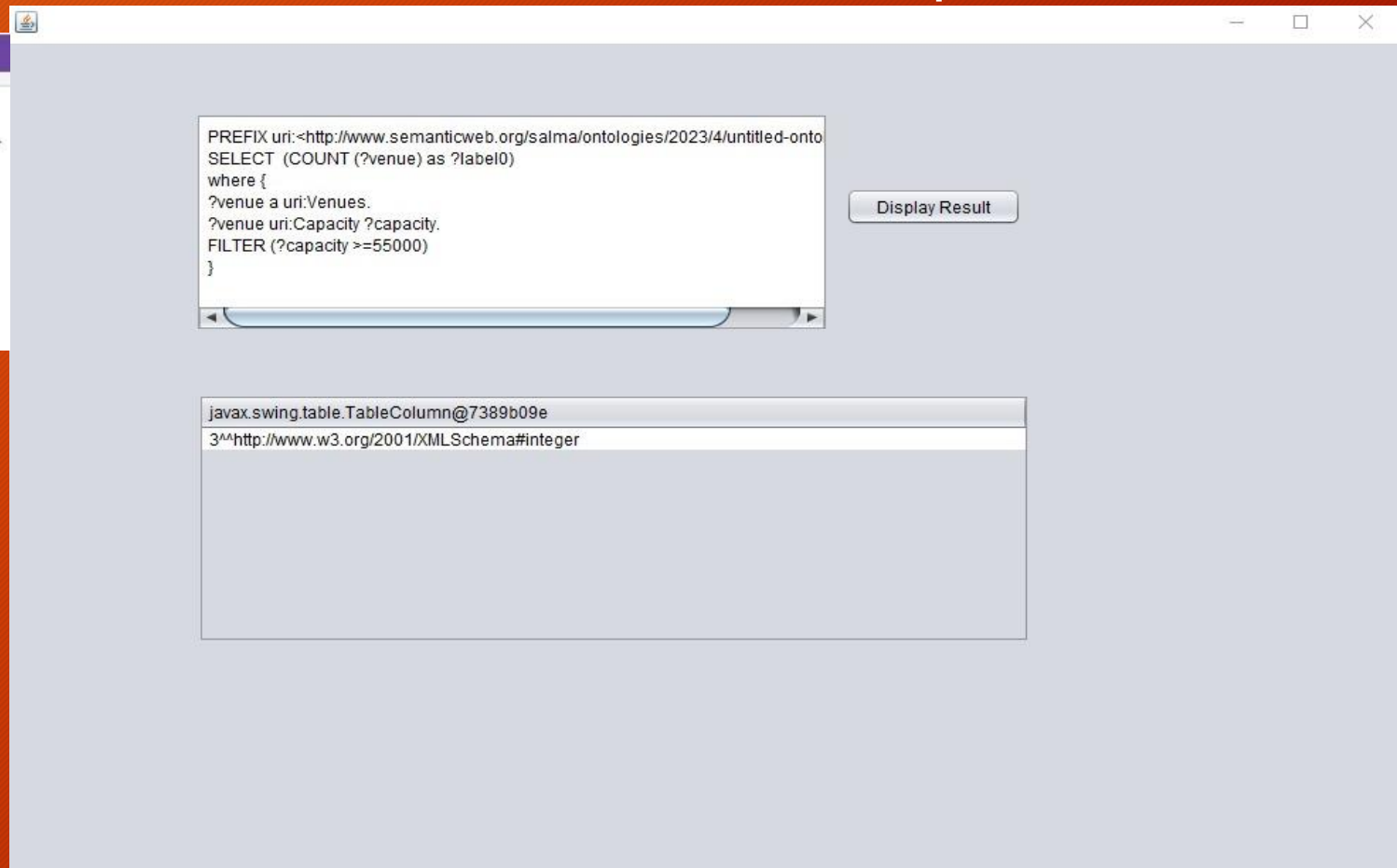


SPARQL Query 5

- Returns the number of venues that has more than 55,000 seats or equal.

Snap SPARQL Query:

```
PREFIX uri:<http://www.semanticweb.org/salma/ontologies/2023/4/untitled-ontology-46#>
SELECT  ( COUNT (?venue) as ?label0)
where {
?venue a uri:Venues.
?venue uri:Capacity?capacity.
FILTER (?capacity >=55000)
}
```

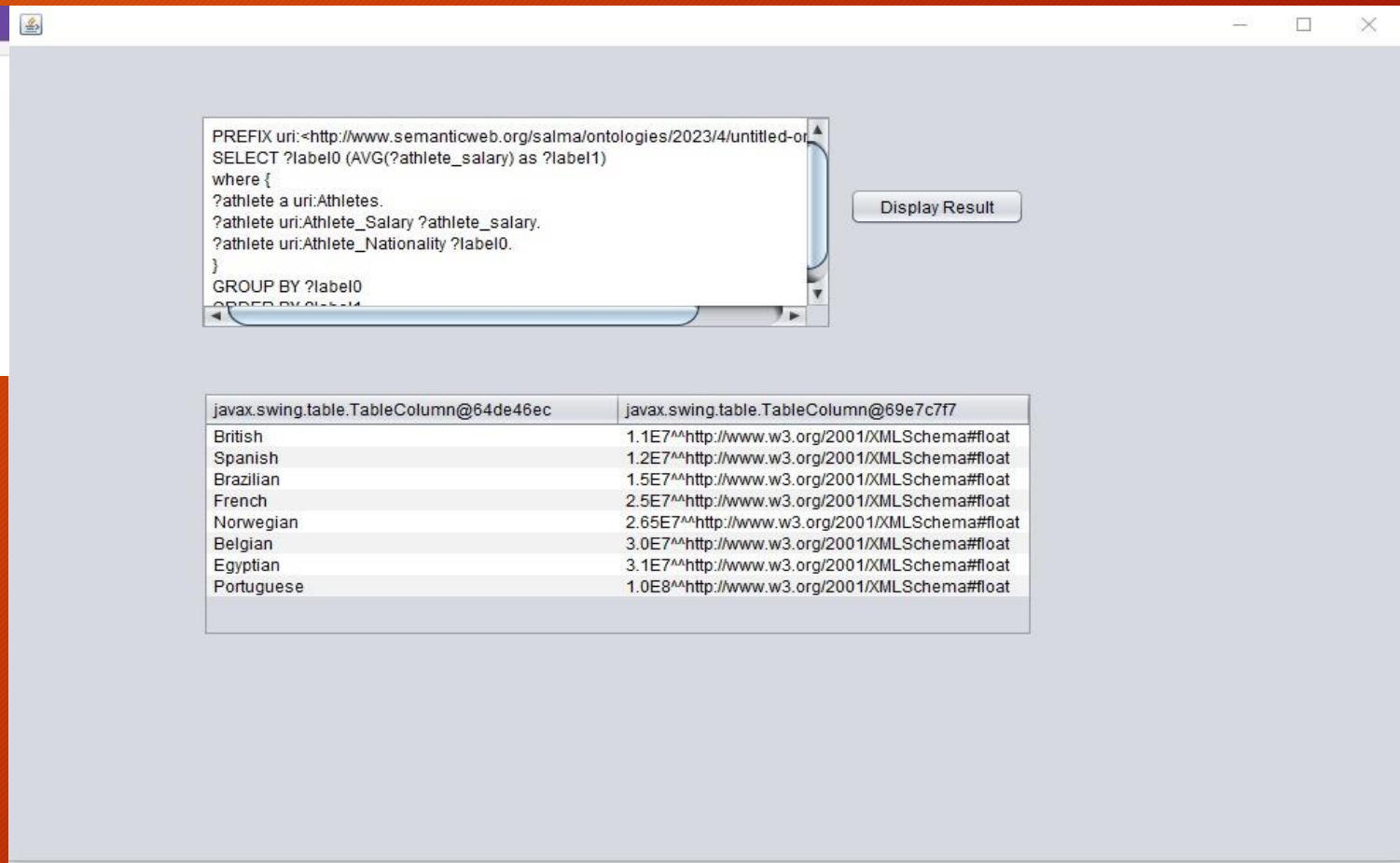


SPARQL Query 6

- Returns the average salary per nationality, ordered in an ascending order.

Snap SPARQL Query:

```
PREFIX uri:<http://www.semanticweb.org/salma/ontologies/2023/4/untitled-ontology-46#>
SELECT ?nationality (AVG(?athlete_salary) as ?label1)
where {
?athlete a uri:Athletes.
?athlete uri:Athlete_Salary ?athlete_salary.
?athlete uri:Athlete_Nationality ?nationality.
}
GROUP BY ?nationality
ORDER BY ?label1
```

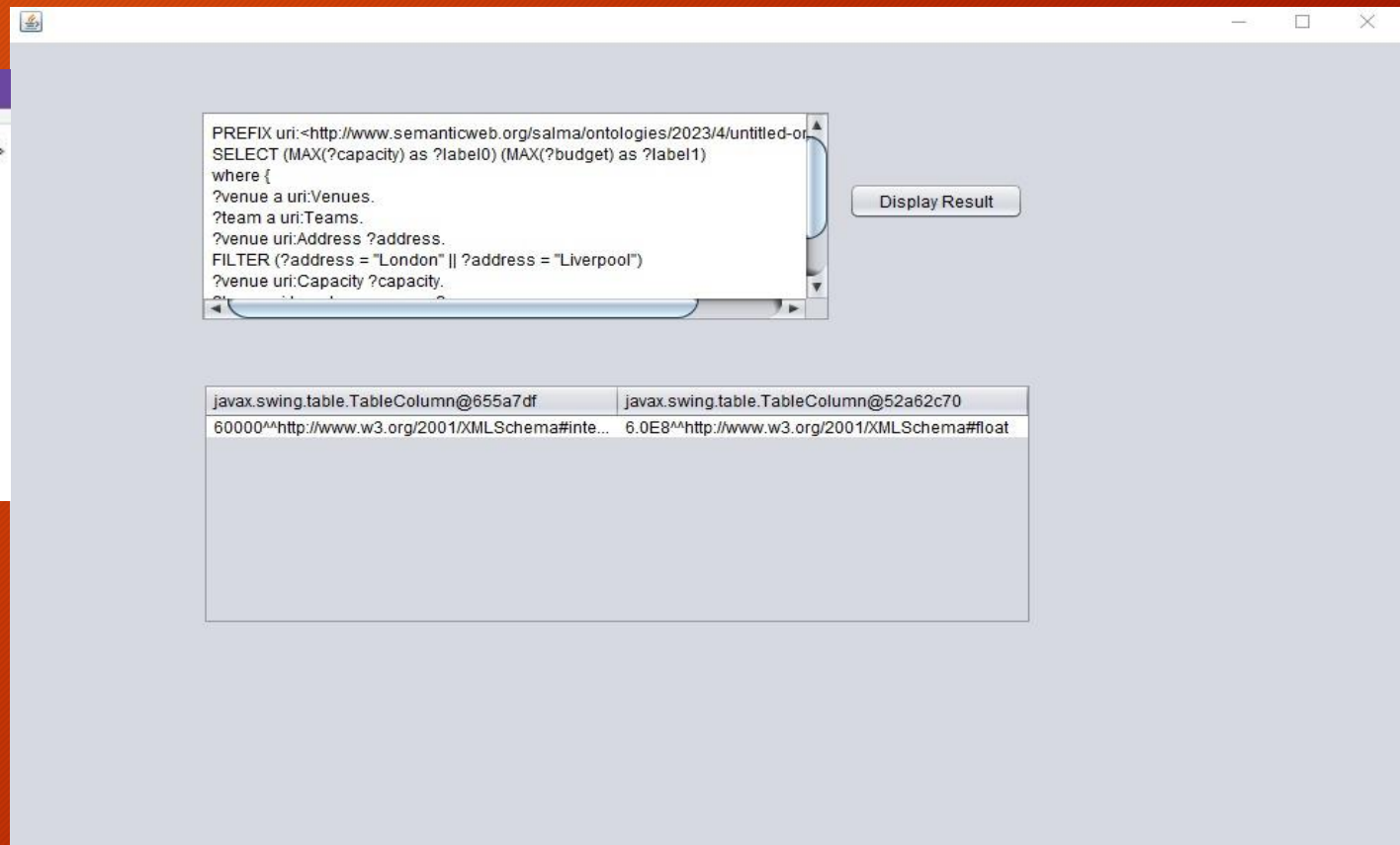


SPARQL Query 7

- Returns the biggest stadium in the city of London or the city of Liverpool, and returns the highest budget found in the teams of the city of London or the city of Liverpool.

Snap SPARQL Query:

```
PREFIX uri:<http://www.semanticweb.org/salma/ontologies/2023/4/untitled-ontology-46#>
SELECT (MAX(?capacity) as ?label0) (MAX(?budget) as ?label1)
where {
?venue a uri:Venues.
?team a uri:Teams.
?venue uri:Address ?address.
FILTER (?address = "London" || ?address = "Liverpool")
?venue uri:Capacity ?capacity.
?team uri:has_home_venue ?venue.
?team uri:Budget ?budget.
}
```



SPARQL Query 8

- Returns teams that play in Champions League, that has not been defeated by Liverpool, other than Liverpool itself.

Snap SPARQL Query:

```
PREFIX uri:<http://www.semanticweb.org/salma/ontologies/2023/4/untitled-ontology-46#>
SELECT  (str(?team_name) as ?label0)
where {
?team a uri:Teams.
?competition a uri:Competitions.
?competition uri:Competition_Name "ChampionsLeague".
?team uri:participates_in ?competition.
MINUS{?team uri:defeated_by ?winner_team.
?winner_team uri:Team_Name "Liverpool".}
MINUS{?team uri:Team_Name "Liverpool".}
?team uri:Team_Name ?team_name.
}
Order BY ?team_name
```