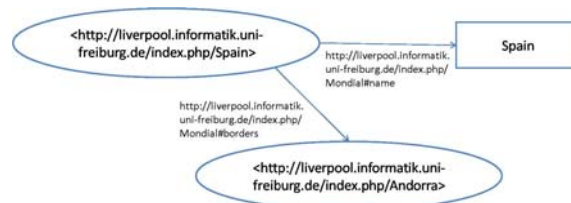


See the graph



The graph means that the resource `<.../Spain>` is related by the property `<...#borders>` with another resource `<.../Andorra>` and that it has a value of 'Spain' on the property `<...#name>`. In the Turtle-syntax this is equal to:

```
<http://liverpool.informatik.uni-freiburg.de/index.php/Spain>
  <http://liverpool.informatik.uni-freiburg.de/index.php/Mondial#borders>
  <http://liverpool.informatik.uni-freiburg.de/index.php/Andorra> .
<http://liverpool.informatik.uni-freiburg.de/index.php/Spain>
  <http://liverpool.informatik.uni-freiburg.de/index.php/Mondial#name> "Spain" .
```

Literals may have additionally a language and a datatype:

```
"Spain"@en
"Spain"^^<http://www.w3.org/2001/XMLSchema#string>
"Spain"@en^^<http://www.w3.org/2001/XMLSchema#string>
```

To make URIs more readable, namespaces and prefixes are used:

```
@prefix mond: <http://liverpool.informatik.uni-freiburg.de/index.php/Mondial#> .
@prefix wiki: <http://liverpool.informatik.uni-freiburg.de/index.php/> .
wiki:Spain
mond:name "Spain" .
```

1-

Implement a database to store RDF triples. Assume that only resources with abbreviated namespaces and literals are to be stored. The complete URIs should also be available in the database. For a more efficient access the prefix and the element name are stored separately (`wiki:Spain` is divided into `wiki` und `Spain`). This has to be transparent for the user, so that he can use INSERT-statement similar to `insert into ...values('wiki:Spain', 'mond:name', 'Spain')`, or queries with e.g. `...where subject='wiki:Spain'`. It should be possible to display the results in the abbreviated and in complete form.

Pay attention to:

- No prefix should be used when a corresponding URI isn't stored in the database.
- A full URI can't be deleted when some resources still use the corresponding prefix.
- Subject and predicate mustn't be literals.
- Appropriate indices
- The namespace of datatypes is always `http://www.w3.org/2001/XMLSchema#`. Datatypes abbreviated with a prefix referring this URI are also allowed.

How can I implement using the following tools or without using ?

- useful: Object-relational extensions
- Views
- Trigger (instead of)
- MAP/ORDER-methods
- Functions
- Object-orientation in Oracle (constructor function, overriding, not final)
- Blanknodes (variables) are also resources and have the prefix ' _ '.

2-

Insert the following data into you database (prefixes as above):

```
wiki:Spain mond:borders mond:Andorra . wiki:Spain
mond:borders wiki:France . wiki:Spain mond:borders
wiki:Portugal . wiki:Spain mond:name "Spain"@en .
wiki:Spain mond:capital wiki:Madrid . wiki:France
mond:capital wiki:Paris . wiki:Portugal mond:capital
wiki:Lisbon . wiki:France mond:borders
wiki:Germany . wiki:Germany mond:capital
wiki:Berlin .
```