



Recap: query on **bb**

```
SELECT ?players ?team ?number
WHERE {
  dbr:Giannis_Antetokounmpo dbo:draftTeam ?team .
  ?players dbo:team ?team .
  ?players dbo:activeYearsStartYear "2015"^^xsd:gYear .
  ?players dbo:number ?number .

  FILTER NOT EXISTS {?players dbo:draftTeam dbr:Chicago_Bulls .}

}
```



Recap: MINUS (=except)

...

WHERE { ?s ?p ?o .

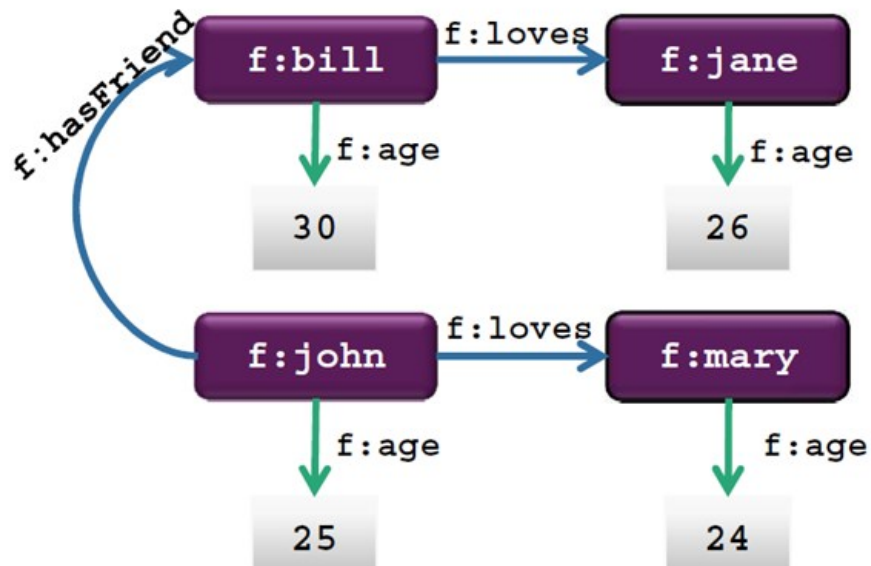
MINUS { ?s foaf:name "George" .}
}



Recap: UNION (= or)

Given the data, what is this going to return?

Data



Query

```
PREFIX f: <http://example.org#>
SELECT ?person
WHERE {
    { ?person f:age ?age . FILTER (?age < 25) }
    UNION
    { ?person f:hasFriend ?friend }
}
```



Introducing 'optional'

WHERE {

?s ?p ?o.

OPTIONAL { ?s2 ?p2 ?o2 . }

}



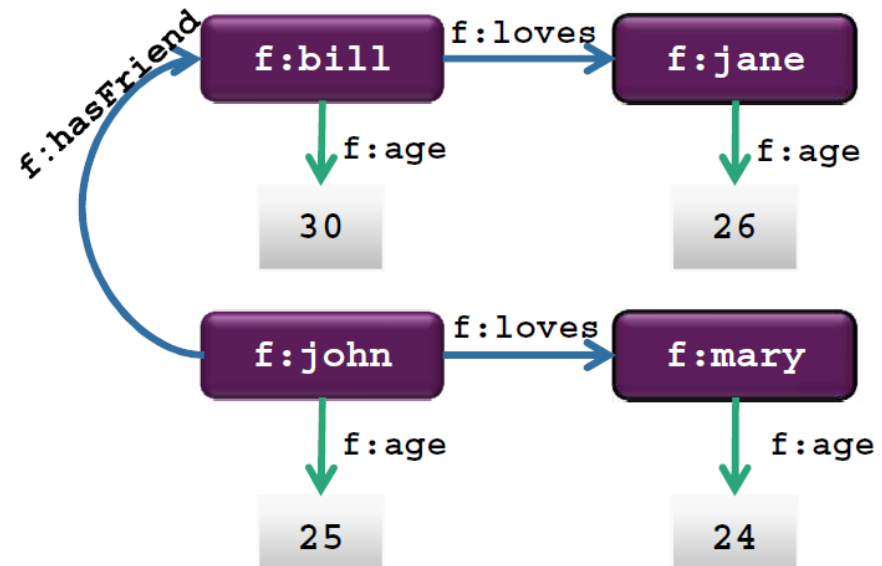
Optional

If you have it, show it!

Query

```
PREFIX f: <http://example.org#>
SELECT ?person ?age ?lover
WHERE {
  ?person f:age ?age .
  OPTIONAL { ?person f:loves ?lover }
}
```

Data





Optional

If you have it, show it!

Query

```
PREFIX f: <http://example.org#>
SELECT ?person ?age ?lover
WHERE {
  ?person f:age ?age .
  OPTIONAL { ?person f:loves ?lover }
}
```

Result

person	age	lover
f:bill	30	f:jane
f:john	25	f:mary
f:mary	24	
f:jane	26	



Why develop an ontology?

- To **share** common understanding of the structure of information among people or software agents
- To enable **reuse** of domain knowledge
- To **make** domain assumptions **explicit**
- To **separate** domain **knowledge** from the operational knowledge
- To **analyze** domain **knowledge**