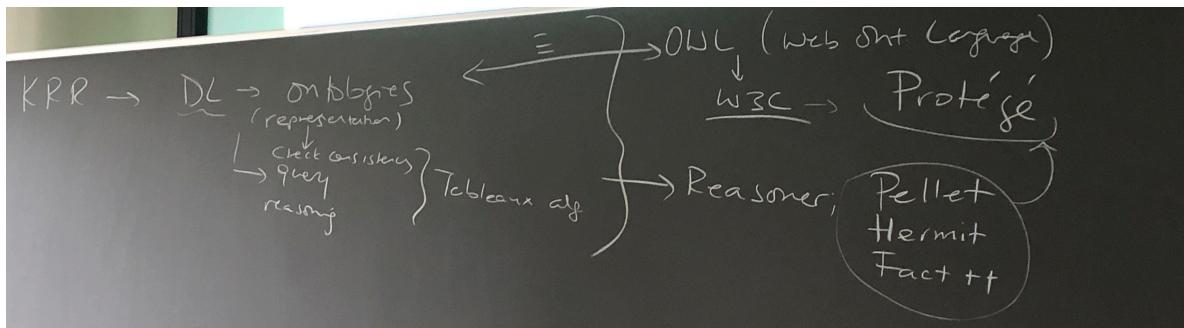


## L4 Web Ontology Language (OWL)



## RDF

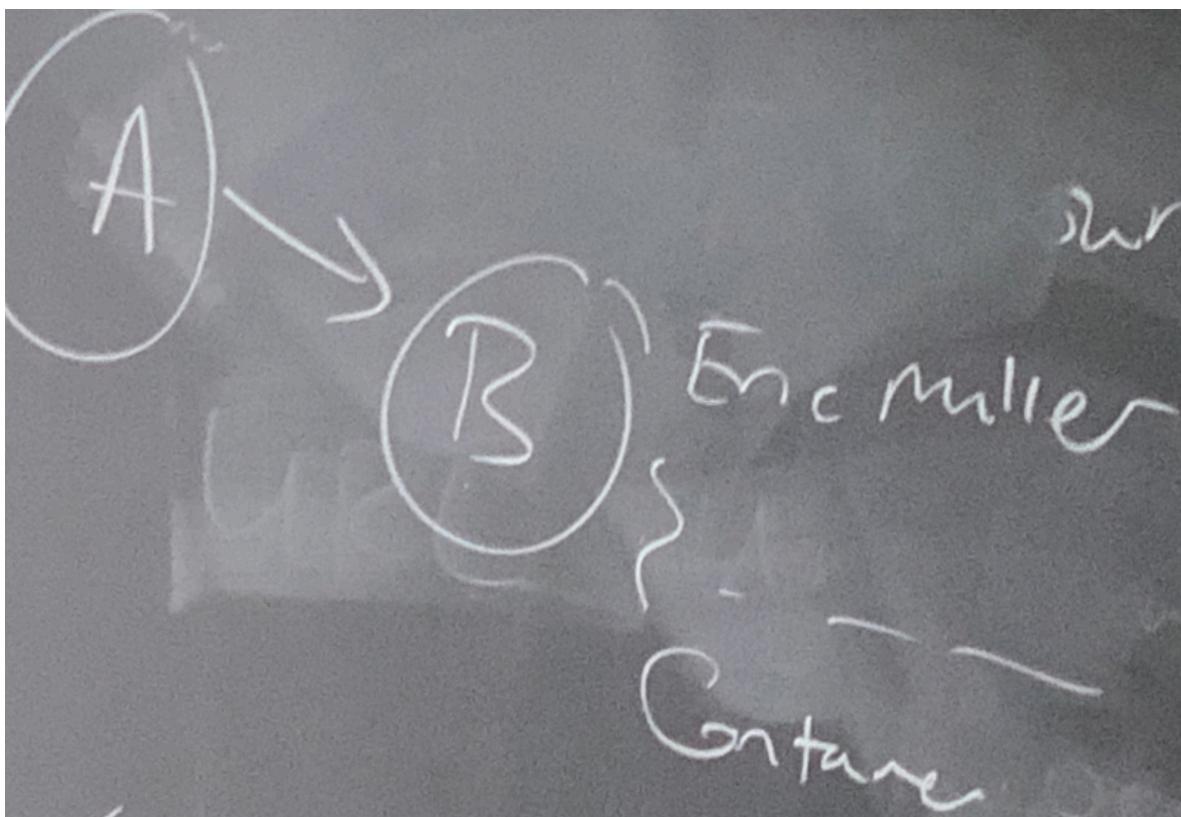
URI : Un. Resource Identifier ; Unique identifier for resource

URL : Un. form Resource Locator : Unique address of web resource

Triple (can also contain other triples)

<Eric Milke says Dr. Pina is Prof>

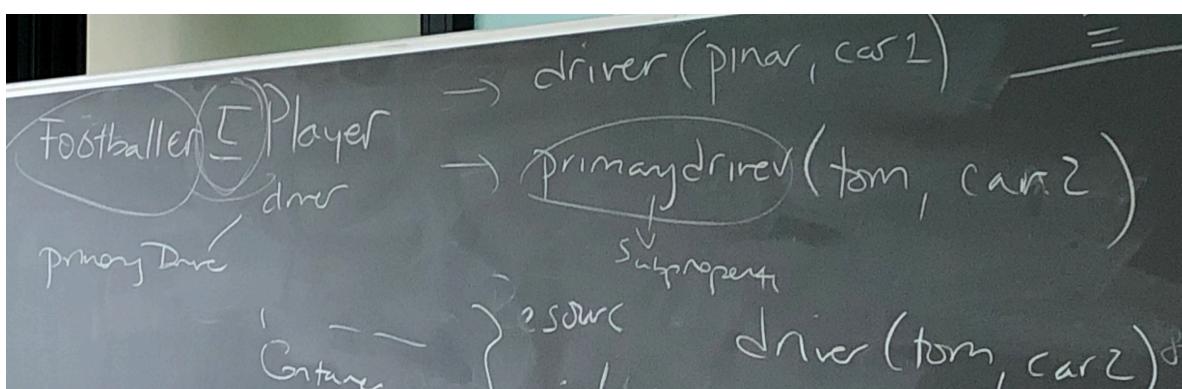
Multiple nodes in containers/collections



## RDF Stores and querying

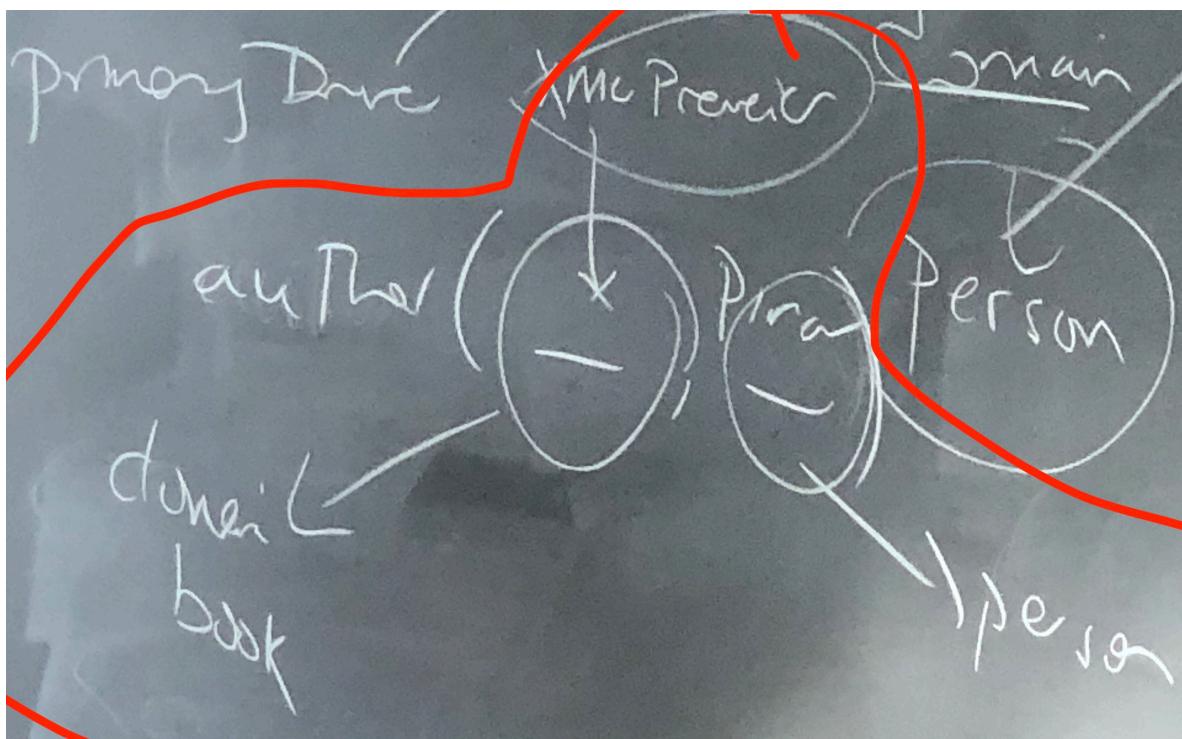
RDF Store - SPARQL : Query RDF Store  
 Golden age (Ints) since 1.1.1.1.

## RDF Schema

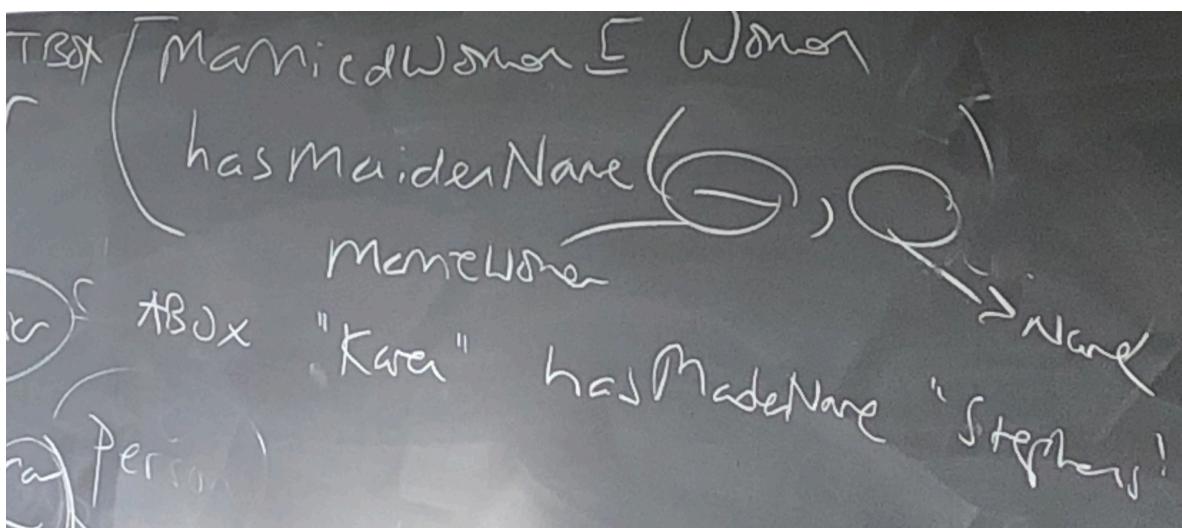


Domain and range do not have to be defined; they are 0 then  
 You can have multiple domains and ranges for the same object/subject

- Domain is meant for objects
- Range is meant for subjects
- You can not make a specific domain refer to a specific range as the definition must have a global scope (vs Java where it's local scope)



RDFS example

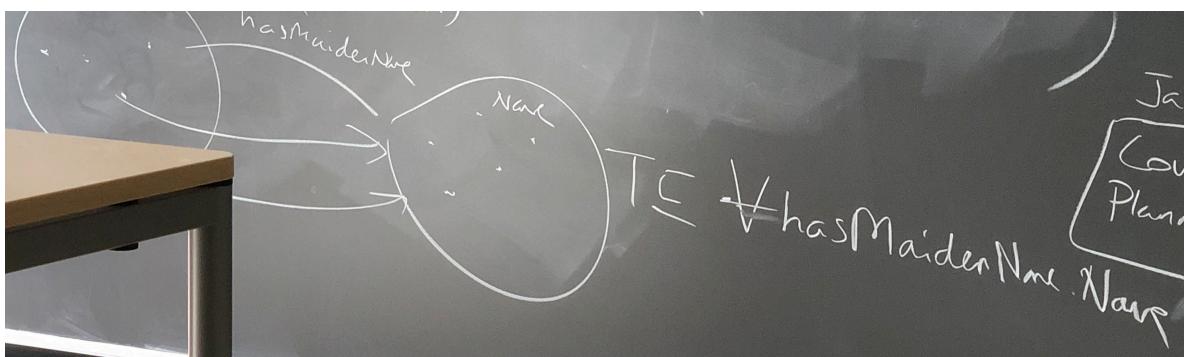


Now the same thing in Description Logic (DL):

- We want to say "All the things that hasMaidenName are MarriedWoman"
  - Domain

$\exists \text{hasMaidenName. } T \sqsubseteq \text{MarriedWoman}$

- Range (Everybody only has hasMaidenName.Name)



## RDFS Expressivity

These things can be said:

- class
- subclassof
- property
- subpropertyof
- domain
- range

Rdfs : { class  
Subclassof  
Property  
Subproperty of  
↓ domain  
range }

## OWL Union, Intersection, Complement



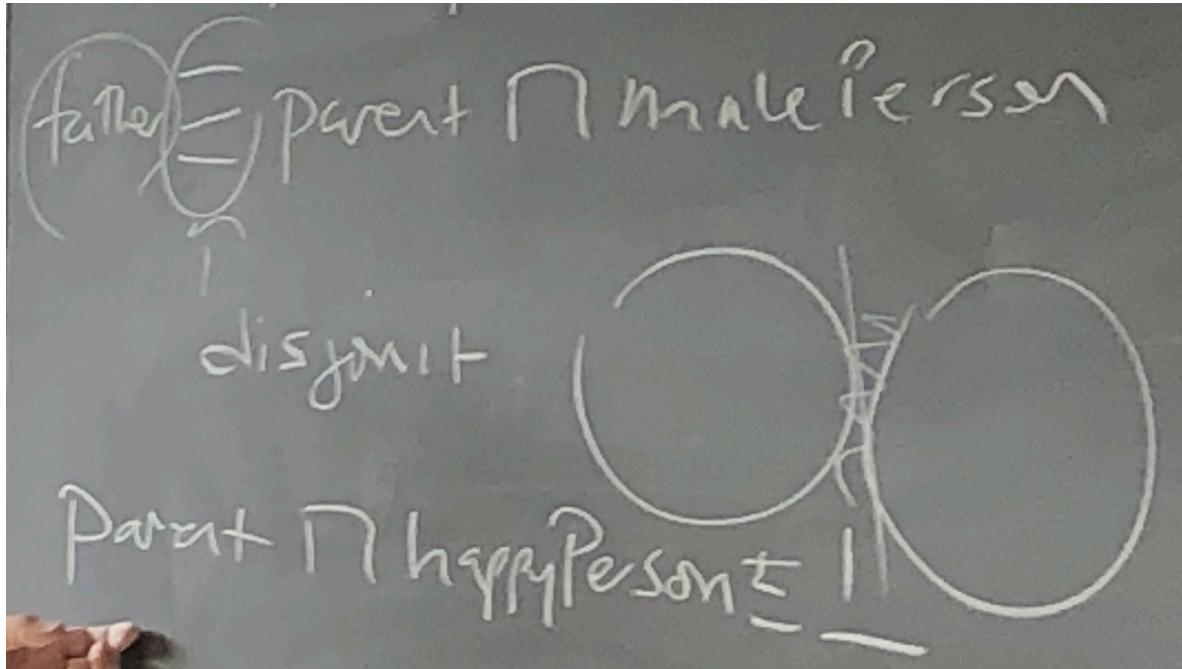
food#Fruit unionOf example from the slides:

fruit ⊑ Sweet  $\sqcup$  NonSweet

## OWL Equivalence and disjointness

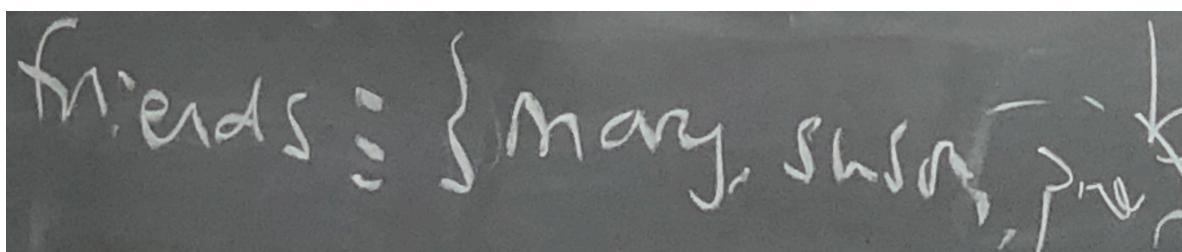
- disjointness - there is no possibility that that instance in set A and set B at

the same time



## Enumeration

Example class with three individuals:ad



## OWL properties

### Transitive property

(If City is located in Region which is located in Country, then City is located in Country)

- You have to explicitly define the type as transitive property
- You can give it domain and range

|| \* transitive  
| LocatedIn(Utrecht, TheNetherlands)  
| LocatedIn(TheNetherlands, Europe)  
|↓  
| LocatedIn(Utrecht, Europe)

### Symmetric property

(If you are my neighbour, I am your neighbour)