

XML

- Markup language (like HTML)
- XML stands for eXtensible Markup Language
- XML was designed to store and transport data (nothing else)
 - cares about what the data is
- XML was designed to be self-descriptive
- Both human- and machine-readable



Find Giannis Antetokounmpo

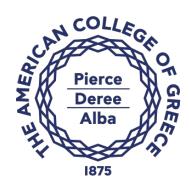
Note the differences in the URL of the page you have visited

- https://dbpedia.org/page/Giannis Antetokounmpo
- https://dbpedia.org/data/Giannis Antetokounmpo.n3
- https://dbpedia.org/data/Giannis Antetokounmpo will download

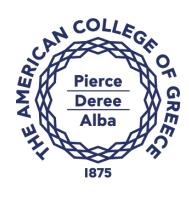


• Find all players on GA's draft team that started playing in 2012 (see how this looks on GA's turtle data page)

"2012"^^xsd:gYear



```
SELECT ?players
FROM <a href="http://dbpedia.org/data/Giannis">http://dbpedia.org/data/Giannis</a> Antetokounmpo>
WHERE {
  dbr:Giannis Antetokounmpo dbo:draftTeam?team.
  ?players dbo:team ?team .
  ?players dbo:activeYearsStartYear "2012"^^xsd:gYear .
```



• For the previous statement, retrieve all player numbers

 Translation: players & numbers for those on GA's draft team that started in 2012



```
SELECT ?players ?number
FROM <a href="http://dbpedia.org/data/Giannis">http://dbpedia.org/data/Giannis</a> Antetokounmpo>
WHERE {
  dbr:Giannis Antetokounmpo dbo:draftTeam?team.
  ?players dbo:team ?team .
  ?players dbo:activeYearsStartYear "2012"^^xsd:gYear .
  ?players dbo:number ?number .
```



Exercise 8 - FILTER

 Add FILTER to your WHERE statement for number 34 SELECT ?players ?number FROM http://dbpedia.org/data/Giannis_Antetokounmpo WHERE { dbr:Giannis Antetokounmpo dbo:draftTeam?team. ?players dbo:team ?team . ?players dbo:activeYearsStartYear "2011"^^xsd:gYear . ?players dbo:number ?number . FILTER (?number = "34")



Exercise 9 - COUNT

Instead of

?variable

Use

COUNT (? variable) OR (COUNT (?variable) as ?count)

Starting from G.A.'s draft team (1 triple) add another triple and count one variable (don't forget to add to the select clause)



Ontology

- Either:
 - the branch of metaphysics dealing with the nature of being
- Or:
 - a set of concepts and categories in a subject area or domain that shows their properties and the relations between them



More formally – what is an ontology

Ontology is a formal explicit description of:

- concepts in a domain of discourse (a.k.a. classes),
- properties of each concept describing various features and attributes of the concept (slots; sometimes called roles),
- and restrictions on slots (facets; sometimes called role restrictions).



take-home message

• An ontology together with a set of individual instances of classes constitutes a knowledge base.

Ontology + class instances = knowledge base

 In reality, there is an overlap between where the ontology ends and the knowledge base begins



Classes, subclasses, ...

- Classes describe concepts in the domain. Example,
 - a class of wines represents all wines.
 - Specific wines are instances of this class.
- A class can have subclasses that represent concepts that are more specific than the superclass.
- For example, we can divide the class of all wines into red, white, and rosé wines. Alternatively, we can divide a class of all wines into sparkling and non-sparkling wines. Let's draw this together



Slots (properties)



- Slots describe properties of classes (and instances)
- Château Lafite Rothschild Pauillac wine:
 - has a full body
 - is produced by the Château Lafite Rothschild winery.
- Specifically: slot "body" has a value of "full" and slot "maker" with the value "Château Lafite Rothschild winery"
- At the class level, we can say that instances of the class Wine will have slots describing their flavor, body, maker of the wine and so on...