



# Basic OWL

**Semantic Web for the Working Ontologist**

Chapter 11

# Concepts in Ch.11

- owl:Restriction
- owl:hasValue
- owl:someValuesFrom
- owl:allValuesFrom
- owl:onProperty

# owl:Restriction

AAA (anyone can say anything about any topic)

The class of all things in owl (owl:Thing) is unrestricted.



- A Restriction is defined by providing some description that limits (or restricts) the kinds of things that can be said about a member of the class.



- A restriction is a special kind of class; membership in it must satisfy the restriction

owl:Restriction is an rdfs:subClassOf owl:Class



- Restriction class has no specific name, but is defined by the properties of the restriction

## Kinds of restrictions:

- **owl:allValuesFrom**
  - all values of the property P come from class C
- **owl:someValuesFrom**
  - at least one value of property P comes from class C
- **owl:hasValue**
  - Restriction has single value for a property

A restriction class in OWL is defined by the keyword **owl:onProperty** (a link from a restriction to the property it restricts)

```
q:AnsweredQuestion owl:equivalentClass
[a owl:Restriction;
    owl:onProperty q:hasSelectedOption;
    owl:someValuesFrom q:Answer ].
```



The Breakfast Club -- an A & M Films/Channel production ; produced by Ned Tanen and John Hughes ; written and directed by John Hughes.

How can we define members of a group without explicitly naming each member as belonging to the group?

[a owl:Restriction;

owl:onProperty : InDetention ;

owl:allValuesFrom :studentShermerHighSchool]

# owl:someValuesFrom

:BreakfastClub rdfs:subClassOf :studentShermerHS

:athletesShermerHS rdfs:subClassOf :studentShermerHS

:BreakfastClub

[a owl:Restriction

owl:onProperty :inDetention

owl:someValuesFrom :athletesShermerHS]



# owl:hasValue

```
[a owl:Restriction  
  owl:onProperty :InDetention  
  owl:hasValue :Princess]
```



# owl:allValuesFrom

m:BreakfastClub

rdfs:label "Breakfast Club";

[a owl:Restriction

owl:onProperty :inDetention

owl:allValuesFrom :studentShermerHS]





# There is a subtle difference between someValuesFrom and allValuesFrom.

Since someValuesFrom is defined as a restriction class such that there is at least one member of a class with a particular property, *then it implies that there must be such a member.*

On the other hand, allValuesFrom technically means “if there are any members, then they all must have this property.” This latter *does not imply that there are any members.*



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# Members of Breakfast Club are also Saturday detainees

b:BreakfastClub

a owl:Class;

rdfs:label "Breakfast Club";

owl:equivalentClass

[a owl:Restriction;

owl:hasValue b:saturdayDetainees

owl:onProperty :memberOf]