INFS3101/7100
Ontology and the Semantic Web

Week 12
Advanced Issues
Semester 1, 2006

Key Terms

Widely-used structural features include:
- countable/bulk classes
- concept/representation classes
- Dimension systems
- Mereological structures
- Extent-descriptive metaclasses

All can be modelled using extensions to OWL.

Question 1

Consider the rental accommodation exchange from the week 2 tutorial and the representation in the solution to the week 4 tutorial and following, as represented in RDFS/OWL in the last tutorials.

- Q1a: Describe examples of bulk classes in the ontology
  - Blank copies of leases
  - Amount of Rent
  - Identical chairs in a house

Q1b

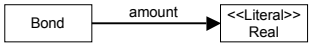
Find situation where the concept/representation class distinction is useful (Make plausible extension if necessary)

- Occasionally, an object can be interpreted in different representations.
  - An estate agent has a variety of representations.
    - Its name, e.g. Ray White
    - Its ABN recognised by the tax office
    - Its membership number of the Real Estate Institute of Queensland.

Q1b Continues

Find situation where the concept/representation class distinction is useful (Make plausible extension if necessary)

- A literal in RDFS/OWL is not sufficient to represent a value with its unit.
  - For example, “The amount of bond is $600.”
  - The following figure does not show the currency unit.



Q1C

Find deep part/whole structures (with more than one level of part), and describe them using the formal taxonomy of the lecture (The property holdings of a particular owner might be a good candidate.)

- Part of is transitive
  - Clause *Rent* consists of Clause *Rent in Advance.*
  - Clause *Rent in Advance* consists of Clause *for a period agreement-2 week rent*
  - Thus, Clause Rent consists of Clause *for a period agreement-2 week rent* as well.
- Part of is intransitive
  - Ray White is a member of the Real Estate Institute of Queensland (REIQ)
  - Kylie, a receptionist, is one of Ray White staff
  - However, Kylie is not a member of REIQ

Q1C Continues

Find deep part/whole structures (with more than one level of part), and describe them using the formal taxonomy of the lecture (The property holdings of a particular owner might be a good candidate.)

- Each unlimited-liability firm has only one sole proprietor. Thus, This firm cannot exist without its owner. The owner can do his/her business alone, or employ more people to help him/her.
- There could be two sole proprietors working in an unlimited-liability firm at different times because the ex-sole proprietor sold the business to the incumbent one.
- A particular house can be part of its owner's property portfolio, of its suburb and of a group of the most favourable houses in Brisbane.

Q1C Continues

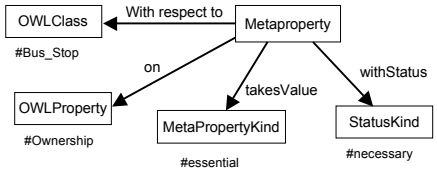
Find deep part/whole structures (with more than one level of part), and describe them using the formal taxonomy of the lecture (The property holdings of a particular owner might be a good candidate.)

- A well in a building is its part, but not is an object.
- John Smith has property portfolio including 10 houses, eight of which are in Australia, but the rest of which are in the United States of America.

Q1d

Find examples of the metaproperties +unity, +identity, +rigid and +essential. Model them using the n-ary association method from the lecture.

- +essential
  - Ownership as a +essential property for class Bus Stop.



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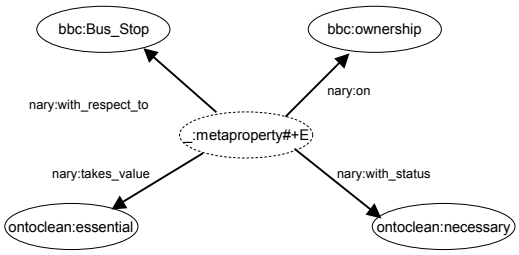

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- +rigid
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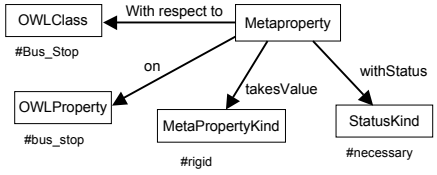

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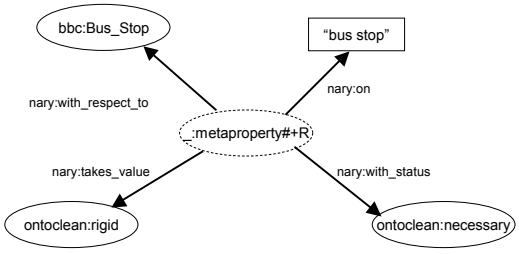

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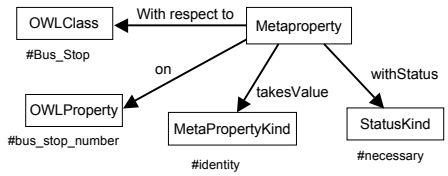

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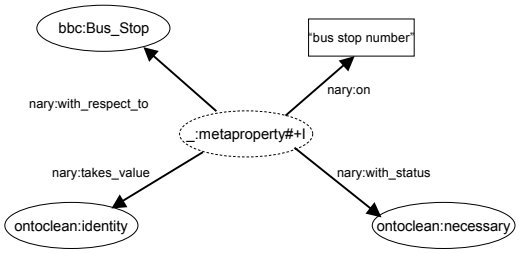

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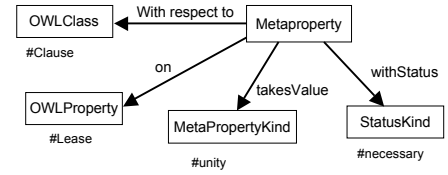

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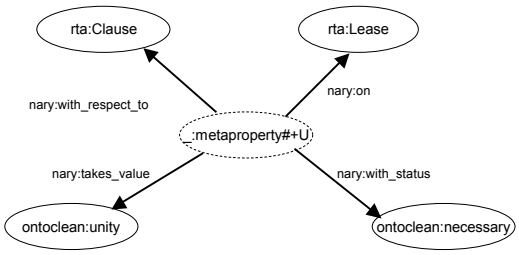

Q1e Continues

Find situation in this ontology where various kinds of extent-descriptive metaclasses might be useful, and describe how in each case. Model them.

- Extent descriptive meta-classes are helpful for estate agents to determine the quality of a system.
  - Residential Tenancies Authority official website: http://www.rta.qld.gov.au/ is a reliable source for the agents.
- Extent descriptive meta-classes can be sources for revealing which property is total or partial.
  - In real estate advertisements, the suburbs of properties must be shown (total), but the amenities are optional (partial).

Q1e Continues

Find situation in this ontology where various kinds of extent-descriptive metaclasses might be useful, and describe how in each case. Model them.

- Extent-descriptive meta-classes help describe the ontology
  - The size of population of classes and how frequent the population changes
    - The population of class Bus Stop is relatively static
    - The information can be cached for a long period.

Consultation sessions

- Today 2-3pm at 78-631