1 Model Semantics

1.1 Interpretation

1. $Animal^I$ = {Tweety, JollyJumper, Bruce}.

2. $Animal^I$ = {Tweety, JollyJumper}.

1.2 Entailment

1. :Tweety rdf:type :Animal

:Tweety rdf:type :Penguin -P

:Penguin rdfs:subClassOf :Bird -P

:Bird rdfs:subClassOf :Animal -P

:Tweety rdf:type :Animal – rdfs11

2. We can derive both :favouriteFood or :Penguin from :Tweety. However, :JollyJumper likes :Tweety but :Tweety does not necessarily like :JollyJumper.

3. :favouriteFood rdfs:subPropertyOf :eats – P

:eats rdfs:range :Food – P

:Food rdfs:range :favouriteFood – rdfs5

4. :Bruce's domain does not include :favouriteFood, so we cannot say that the statement is true.

5. :Bruce rdf:type :Fish

:Fish rdfs:sunClassOf :Food

:Vegetable rdfs:subClassOf :Food

:Bruce is a :Fish but not a :Vegetable. Both are subclasses of :Food, but that does not mean that :Bruce is a :Vegetable.

6. :Bruce :hasNickname ''Alonso'' – P

:hasNickname rdfs:domain :Horse – P

:Bruce is a horse – rdfs2

7. :Bruce rdf:type :Fish – rdf1

:Bruce is a fish

2 Semantic web and reasoning

1. CWA means that the knowledge base is complete, whereas OWA means it is incomplete. An OWA system would assume that the system does not have enough information when given inputs, in contrary to a CWA system which would return a specific response to given inputs (which may either yield an output, or an output that describes the fact that it cannot find one).

2. Unique name assumption means that two differently named individuals are different individuals. Non-unique name assumption, however, means that we cannot assume that the individuals are different unless stated otherwise.

3. Forward rule chaining means that we reach a conclusion of rules from a set of premises. In backwards rule chaining, we do the opposite: we add premises from an already set conclusion of rules.

4. RDFS entailment are sound with respect to the RDFS semantics means that if B can be derived from A, then A entails B. Soundness means that if something is entailed, then it is truly entailed.

5. RDFS entailment rules are not complete with respect to the RDFS semantics means that there exists a statement that we cannot derive using the current rules that we have, and thus have to add more rules to be able to find an entailment.