

## Unit 10 exercise – Ontology development using Protégé

I read section 4.1.2 of Debellis (Debellis, no date), and worked through exercises 22-26 (as shown below).

### Exercise 22: Create a Defined Class called VegetarianPizza

The screenshot shows the Protégé interface with the 'pizza\_tutorial' ontology loaded. The 'Class hierarchy' pane on the left shows the 'pizza' class expanded, with 'vegetarian\_pizza' highlighted. The 'Description' pane on the right shows the definition of 'vegetarian\_pizza' as a subclass of 'pizza' with the following description: 'pizza and (has\_topping only (cheese\_topping or vegetable\_topping))'. The 'SubClass Of' pane shows 'vegetarian\_pizza' is a subclass of 'pizza'. The 'General class axioms' pane shows 'has\_caloric\_content' with a range of 'xsd:integer' and 'has\_base' with a range of 'some pizza\_base'.

### Exercise 23: Add a Closure Axiom on the hasTopping Property for MargheritaPizza

The screenshot shows the Protégé interface with the 'pizza\_tutorial' ontology loaded. The 'Class hierarchy' pane on the left shows the 'pizza' class expanded, with 'margherita\_pizza' highlighted. The 'Description' pane on the right shows the definition of 'margherita\_pizza' as a subclass of 'named\_pizza' with the following description: 'named\_pizza and (has\_topping some mozzarella\_topping) and (has\_topping some tomato\_topping) and (has\_topping only (mozzarella\_topping or tomato\_topping))'. The 'SubClass Of' pane shows 'margherita\_pizza' is a subclass of 'named\_pizza'. The 'General class axioms' pane shows 'has\_caloric\_content' with a range of 'some xsd:integer'. The 'Annotations' pane on the right shows an 'rdfs:comment' for 'margherita\_pizza': 'A pizza that only has Mozzarella and Tomato toppings'.

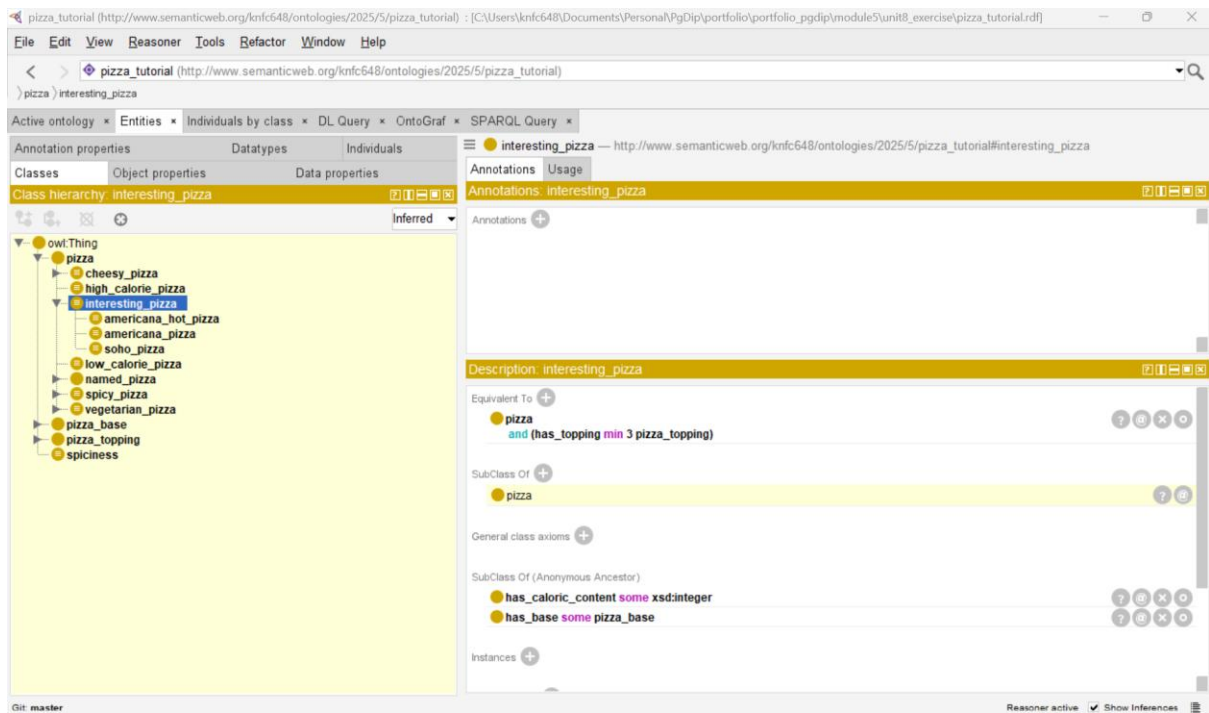
## Exercise 24: Create an Enumerated Class to Represent the Spiciness of a Pizza

The screenshot shows the Protege ontology editor interface. The left pane displays the 'Class hierarchy' for 'pizza', with 'spiciness' highlighted under 'pizza\_topping'. The right pane shows the 'Description: spiciness' tab, where the class is defined as 'Equivalent To' a set of literals: `{hot, medium, mild}`. The 'Instances' section lists 'hot', 'medium', and 'mild' as members of the class. The bottom status bar indicates 'Reasoner active' and 'Show Inferences'.

## Exercise 25: Create and Use the hasSpiciness Property

The screenshot shows the Protege ontology editor interface. The left pane displays the 'Class hierarchy' for 'jalapeno\_pepper\_topping', which is highlighted. The right pane shows the 'Description: jalapeno\_pepper\_topping' tab, where the class is defined as 'SubClass Of' `has_spiciness value hot` and `pepper_topping`. The 'Instances' section is empty. The bottom status bar indicates 'Reasoner active' and 'Show Inferences'.

## Exercise 26: Create an InterestingPizza that has at least three toppings



## References:

Debellis, M. (no date) *A Practical Guide to Building OWL Ontologies Using Protégé 5.5 and Plugins*.