Unit 8: Modelling with Protégé

Formative Activities.

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1. Work through a practical example by following Chapters 3 - 4 of A Practical Guide to Building OWL Ontologies Using Protégé 4 and CO-ODE Tools.
2. Create an ontology of pizza following the steps outlined in Exercises 2-6

Answer:

**Exercise2: Create a new OWL Ontology**

1. Start Protégé.

2. When the "Welcome to Protégé" dialog box appears, press the "Create New OWL Ontology".

3. A "Create Ontology URI Wizard" will appear. Every ontology is named using a Unique Resource Identifier (URI). Replace the default URI with http://www.pizza.com/ontologies/pizza.owl and press "Next".

4. You will also want to save your ontology to a file on your PC. You can browse your hard disk and save your ontology to a new file; you might want to name your file "pizza.owl". Once you choose a file, press "Finish".
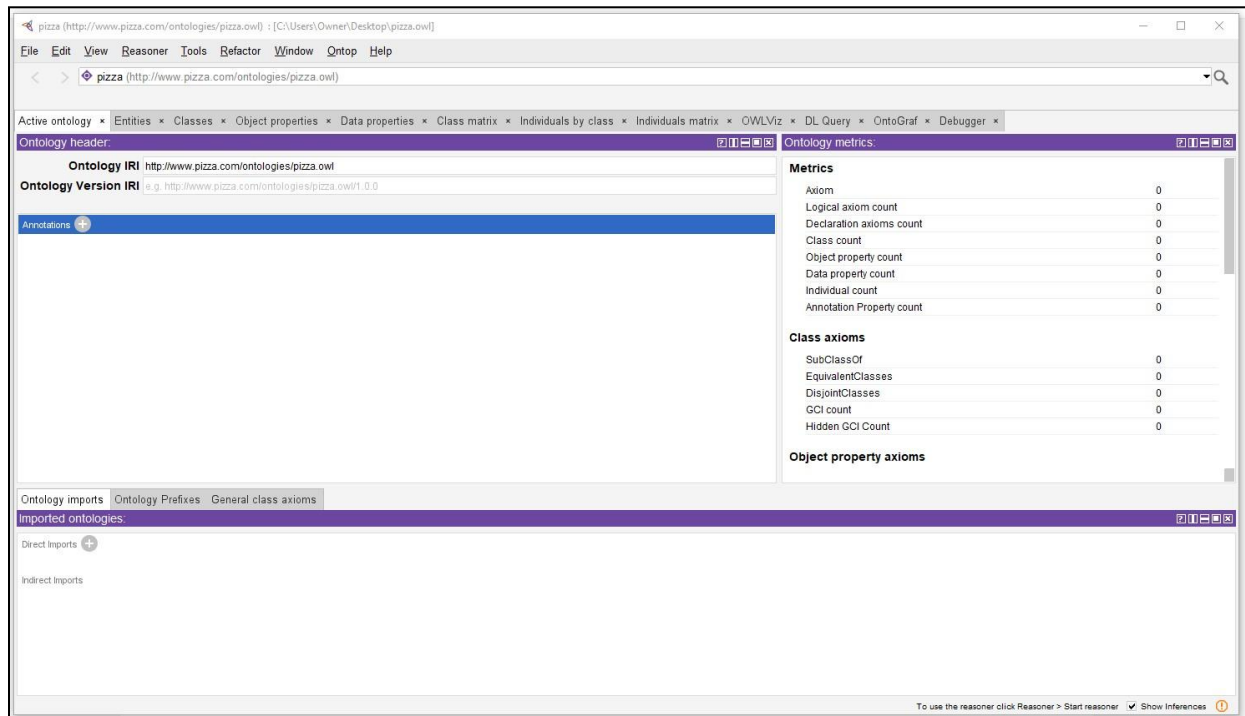
Picture 1. New OWL Ontology

Exercise 3: Add a Comment to the Ontology

1. Ensure that the 'Active Ontology Tab' is selected.

2. In the 'Ontology Annotations' view, click the 'Add' icon (+) next to Annotations. An editing window will appear in the table. Select 'comment' from the list of built-in annotation URIs and type your comment in the text box in the right-hand pane.

3. Enter a comment such as "A pizza ontology that describes various pizzas based on their toppings" and press OK to assign the comment. The annotations view on the 'Active Ontology Tab' should look like the pictures shown in Figure 4.2.
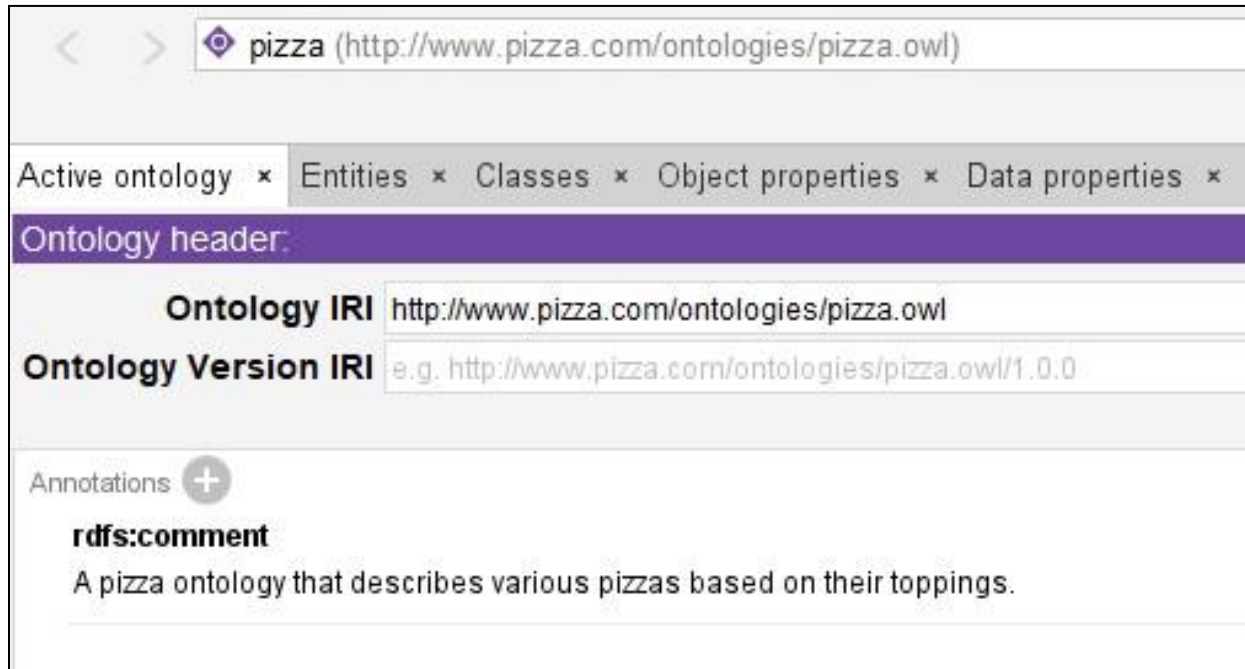
Picture 2. Ontology Comment

**Exercise 4: Create Classes Pizza, Pizza Topping, and Pizza Base**

1. Ensure that the 'Classes Tab' is selected.

2. Press the 'Add' icon (+) shown in Figure 4.4. This button creates a new class as a subclass of the selected class (in this case, we want to create a subclass of 'Thing').

3. A dialog will appear for you to name your class. Enter 'Pizza' (as shown in Figure 4.5) and hit return.

4. Repeat the previous step to add the classes 'Pizza Topping' and also 'Pizza Base', ensuring that 'Thing' is selected before the 'Add' icon (+) is pressed so that the classes are created as subclasses of 'Thing'.
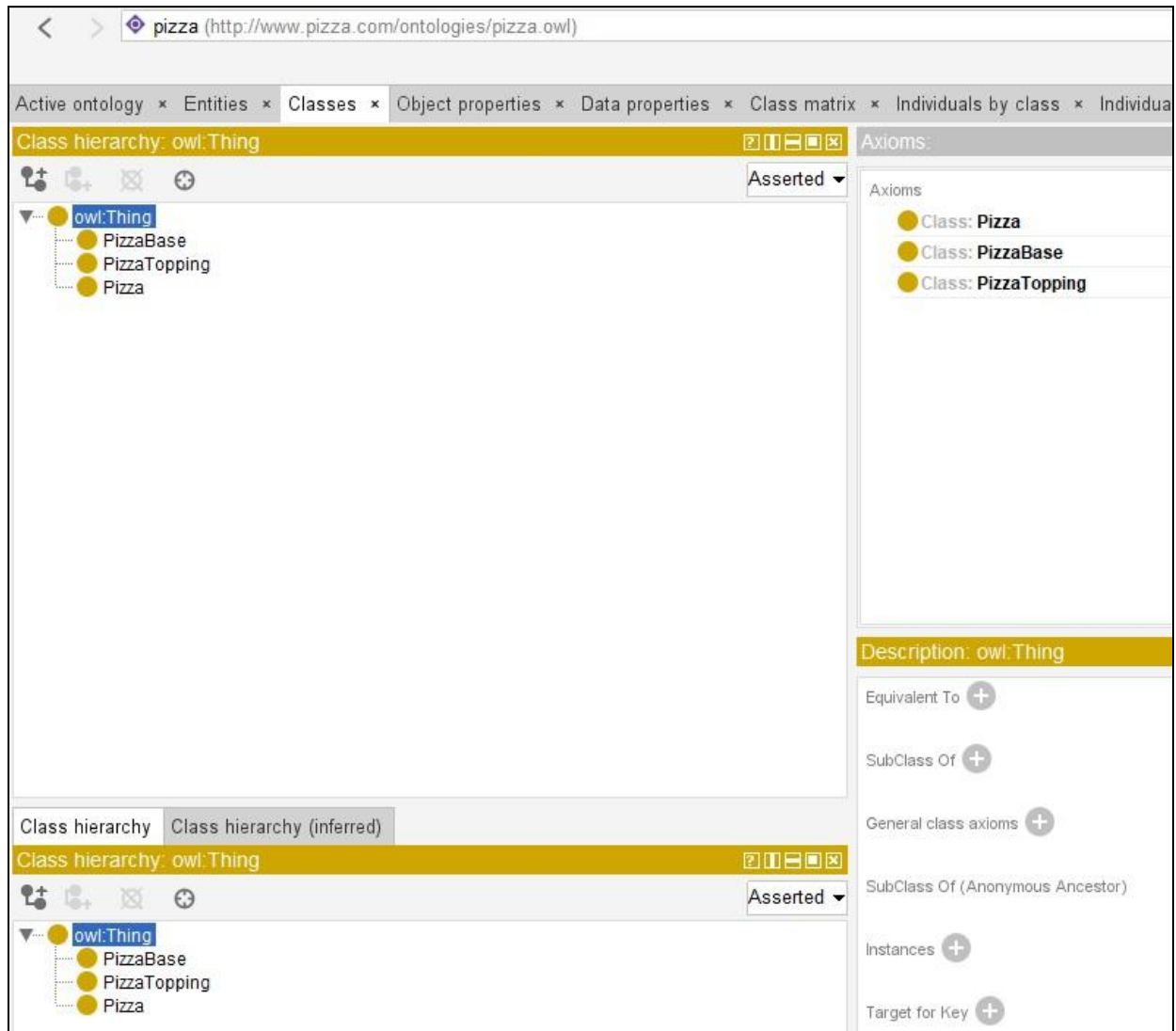
Picture 3. Classes

Exercise 5: Make Pizza, Pizza Topping, and Pizza Base Disjoint from Each Other

1. Select the class 'Pizza' in the class hierarchy.

2. Press the 'Disjoint classes' button in the 'class description' view. This will bring up a dialog where you can select multiple classes to be disjoint. This action will make 'Pizza Base' and 'Pizza Topping' (the sibling classes of 'Pizza') disjoint from 'Pizza'.
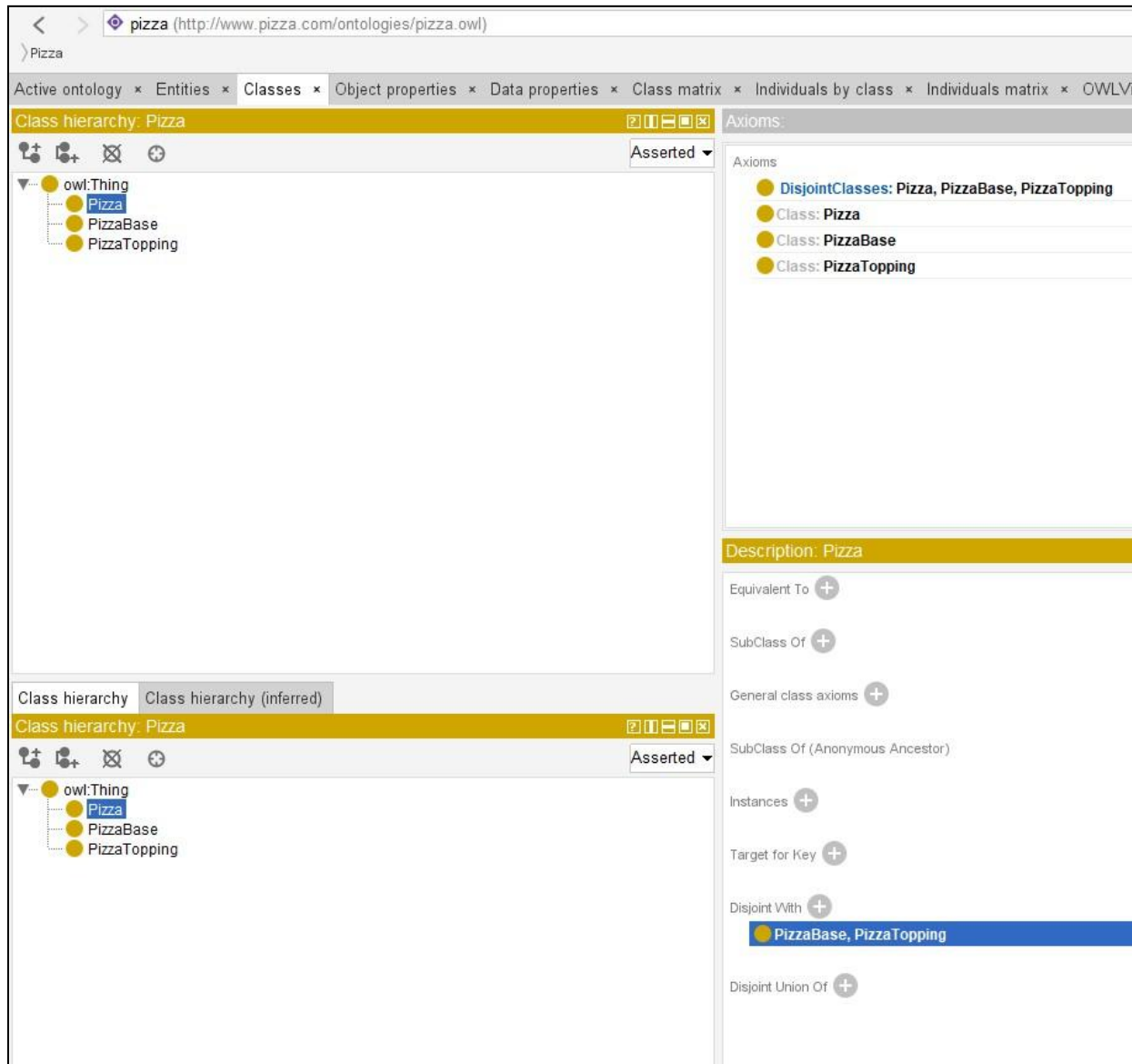
Picture 4. Classes Disjoint

Exercise 6: Use the 'Create Class Hierarchy' Tool to Create Thin And Crispy and Deep Pan as Subclasses of Pizza Base

1. Select the class 'Pizza Base' in the class hierarchy.

2. From the 'Tools' menu on the Protégé menu bar, select 'Create Class Hierarchy...'.

3. The tools shown in Figure 4.7 will appear. Since we preselected the 'Pizza Base' class, the first radio button at the top of the tool should be prompting us to create the classes under the class 'Pizza Base'. If we had not preselected 'Pizza Base' before starting the tool, then the tree could be used to select the class.

4. Press the 'Next' button on the tool. The page shown in Figure 4.8 will be displayed. We now need to tell the tool the subclasses of 'Pizza Base' that we want to create. In the large text area, type in the class name 'Thin And Crispy Base' (for a thin-based pizza) and hit return. Also, enter the class name 'Deep Pan Base' so that the page resembles that shown in Figure 4.8.

5. Hit the 'Next' button on the tool. The tool checks that the names entered adhere to the naming styles that have previously been mentioned (No spaces, etc.). It also checks for uniqueness – not two class names may be the same. If there are any errors in the class names, they will be presented on this page, along with suggestions for corrections.

6. Hit the 'Next' button on the tool. Ensure the tickbox 'Make all new classes disjoint' is ticked – instead of having to use the disjoint classes view, the tool will automatically make the new classes disjoint for us.
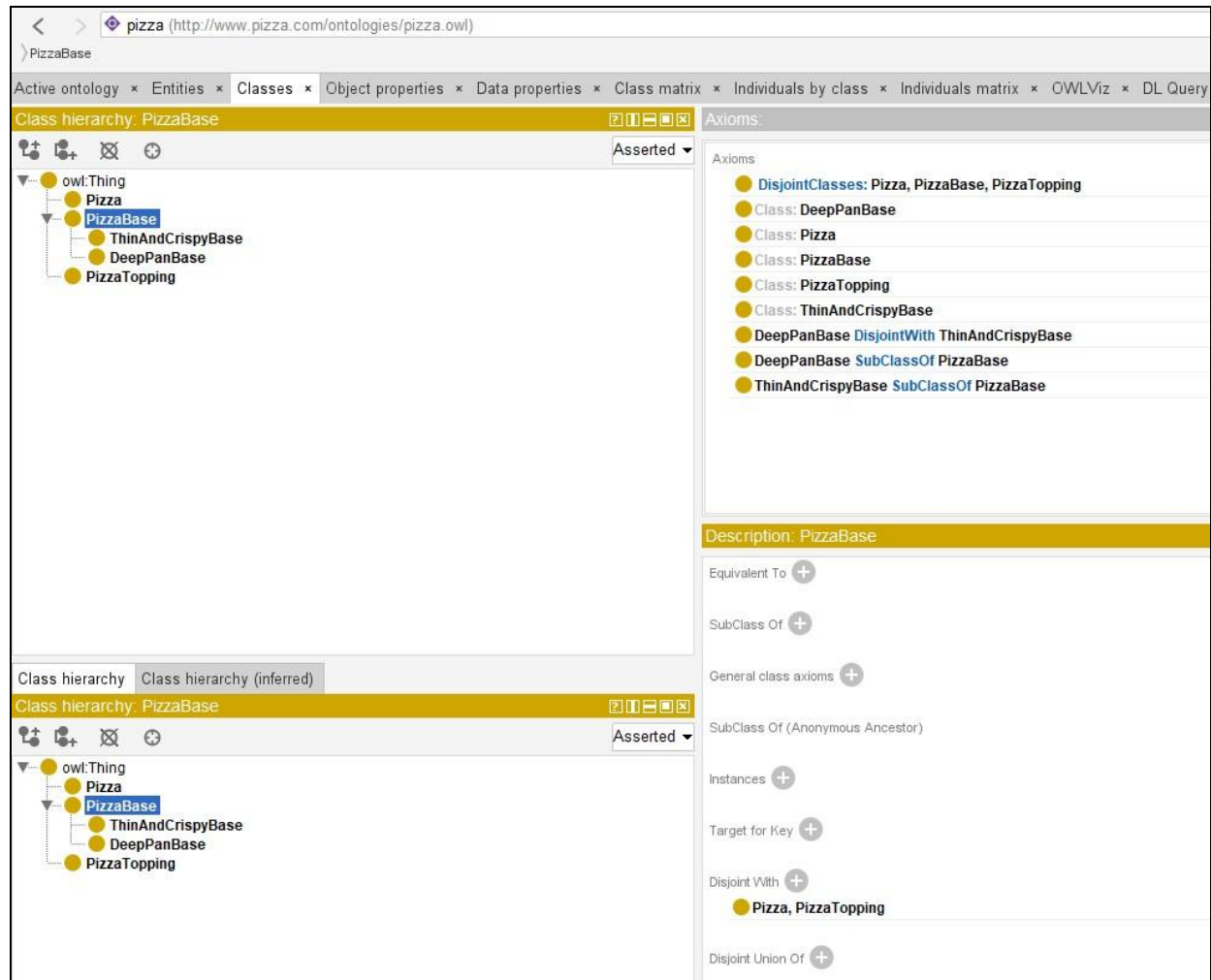
Picture 5. Class Hierarchy

References:

Debellis, M. (2021) *A Practical Guide to Building OWL Ontologies Using Protégé 5.5 and Plugins.*