



Introduction to Lab Modeling Exercise

Protégé Short Course
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Modeling Practice: Goals

- Practice conceptualizing a domain
 - Think about entities to be included in an ontology
 - Understand modeling decisions and choices
- Become familiar with OWL language
 - Use appropriate axioms for intended purposes
 - Make queries to check work
- Practice with Protégé tool

Modeling Practice: Methods

- Work on your own project
 - Short course instructors are available for consultations
- Work on a shared modeling problem
 - Designed to bring up specific issues
 - To be discussed on last day

Scenario: Hosting Dinner

- Dinner with guests Mary, Ashok, & Amara
 - Mary likes to have some meat
 - Ashok only eats vegetarian food
- For Mary
 - At least one meat main dish
- For Ashok
 - A vegetarian soup or salad
 - At least one vegetarian main dish
 - A vegetarian dessert

Possible Dishes

- Spinach Soup
- Vegetarian Potato Soup with Smothered Onion
- Garlic-Scented Tomato Salad
- Shredded Carrot Salad with Arugula
- Braised Artichokes and Peas
- Grilled T-Bone Steak, Florentine Style
- Strawberry Gelato
- Fresh Fruit Whips

Ingredients of dishes are available on handout and in dinner-start.owl ontology

Ingredients of Dishes

Garlic-Scented Tomato Salad

For 4 or 6 servings

4 to 5 garlic cloves

Salt

Pine nuts

Choice quality red wine vinegar

2 pounds fresh, ripe, firm, round or plum tomatoes

1 dozen fresh basil leaves

Extra virgin olive oil

Adapted from *Essentials of Classic Italian Cooking* by Marcella Hazan (1992)

Competency Questions

- Which dishes have meat as an ingredient?
- Which dishes are “meat dishes” and “vegetarian dishes”?
- What are some combinations of dishes
 - that are all vegetarian?
 - that have the combination of meat and vegetarian dishes for your party?

Bonus

- Which recipe gives directions for a particular dish?
- Based on the recipes, what ingredients do you have to get for your dinner?

Get Started...

- Conceptualize your domain.
 - Draw diagrams on paper (or your on favorite diagramming tool) to illustrate the entities and relationships in the domain
- Formalize your conceptualization
 - Model “Dinner,” “Person,” “FoodDish,” and “FoodStuff ”
 - Organize the food stuff and food dishes into class hierarchies
 - What are appropriate superclasses?
 - Create some relationships between your classes

Continuing with Definitions...

- Define “Meat Dish” and “Vegetarian Dish” in Protégé
 - Add ingredients to some dishes so that you can classify them
- Demonstrate some combinations of dishes that would satisfy your dinner requirements

Bonus

- Define “Recipe” and think about how to relate a recipe and a food dish and how to query for ingredients you need to get for your dinner

Start with the
ontology:
dinner-
start.owl

The screenshot displays the Protege web interface for the 'dinner' ontology. The browser address bar shows the URL 'http://www.protege.stanford.edu/dinner'. The interface includes tabs for 'Active Ontology', 'Entities', 'Individuals by class', 'DL Query', and 'Rule'. The 'Class hierarchy' tab is active, showing a tree structure of classes. The hierarchy starts with 'owl:Thing' and includes a sub-class 'FoodStuff'. Under 'FoodStuff', there is a list of 20 food items: Apple, Artichoke, Arugula, Banana, BasilLeaf, BlackPepper, BlackPepperCorn, Butter, Carrot, CrushedIce, ExtraVirginOliveOil, Garlic, IceCream, Lemon, LemonJuice, MaraschinoLiqueur, MeatBroth, Milk, Nutmeg, Onion, and ParmigianoReggianoCheese. The bottom section of the interface shows the 'Object property hierarchy' tab, which is currently empty, displaying only the 'owl:topObjectProperty'.

dinner (http://www.protege.stanford.edu/dinner) : [/L

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Active Ontology x Entities x Individuals by class x DL Query x Rule x

Class hierarchy Class hierarchy (inferred)

Class hierarchy:

Asserted

- owl:Thing
 - FoodStuff
 - Apple
 - Artichoke
 - Arugula
 - Banana
 - BasilLeaf
 - BlackPepper
 - BlackPepperCorn
 - Butter
 - Carrot
 - CrushedIce
 - ExtraVirginOliveOil
 - Garlic
 - IceCream
 - Lemon
 - LemonJuice
 - MaraschinoLiqueur
 - MeatBroth
 - Milk
 - Nutmeg
 - Onion
 - ParmigianoReggianoCheese

Individuals by type Annotation property hierarchy Datatypes

Object property hierarchy Data property hierarchy

Object property hierarchy:

Asserted

owl:topObjectProperty

Please fill out the surveys for today!