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SUBJECT- SEMANTIC WEB (WEB OF DATA) PROJECT - **REPORT**

Universite Cote d'Azur

Report on RDF Modeling for a Recipe Box Company

Introduction:

In this report, I present the RDF (Resource Description Framework) ontology modeling of an information system for a recipe box company which is covering various aspects such as recipes, ingredients, menus, customers, orders, reviews, and delivery personnel. I've made use of OWL to define classes, object properties, data properties, and more, providing a comprehensive structure for representing the domain.

1. Classes:

The RDF model defines several classes to represent different entities within the system:

Recipe: Represents a recipe for a dish, including details such as cooking time, nutritional information, cuisine type, ingredients, calories, price, and health concerns.

Ingredient: Represents an ingredient used in recipes, with properties like name, category, and health benefits.

Menu: Represents a collection of recipes offered by the company, consisting of one or more recipes.

Person: Represents a person, with subclasses for male and female individuals. It includes properties for gender and contact information.

Customer: Represents a customer who orders food, with properties for name, address, subscription, and gender.

Order: Represents an order placed by a customer, including details such as the items ordered, delivery date, frequency, and delivery person.

Review: Represents a review given by a customer for a recipe, including the rating, comment, and reviewer.

DeliveryPersonnel: Represents personnel responsible for delivering orders, including properties for name and contact information.

Subscription: Represents a subscription for regular food delivery service, including the duration.

Cuisine: Represents a type of cuisine, such as Italian, Indian, or Chinese.

2. Object Properties:

The RDF model includes several object properties to describe relationships between entities:

includesRecipe: Specifies that a menu includes a recipe.

hasIngredient: Specifies the ingredients used in a recipe.

belongsToMenu: Specifies the menu to which a recipe belongs.

orderContains: Specifies the items contained in an order, including menus, ingredients, or recipes.

orderedByCustomer: Specifies the customer who placed an order.

hasSubscription: Specifies the subscription of a customer.

deliveryPersonDelivers: Specifies the delivery person responsible for delivering an order.

3. Data Properties:

The RDF model defines data properties to represent attributes of entities:

name: Specifies the name of an entity, such as a person, recipe, ingredient, menu, or cuisine.

cookingTime: Specifies the cooking time of a recipe.

hasNutritionalInfo: Specifies the nutritional information of a recipe.

hasCategory: Specifies the category of an ingredient.

hasHealthBenefits: Specifies the health benefits of an ingredient.

hasAddress: Specifies the address of a customer.

hasContactInfo: Specifies the contact information of a delivery personnel.

subscriptionDuration: Specifies the duration of a subscription.

calories: Specifies the calories of a recipe.

price: Specifies the price of a recipe.

healthConcern: Specifies the health concerns associated with a recipe.

customerRating: Specifies the rating given by a customer in a review.

customerReview: Specifies the review provided by a customer.

4. Validation: SHACL shapes are defined to validate the structure of instances. Shapes for Recipe, Ingredient, Customer, Order, DeliveryPersonnel, Subscription, and Menu are created to ensure that instances adhere to the defined structure and constraints.

5. Instance Data: Instances of recipes, ingredients, menus, customers, orders, reviews, and delivery personnel are provided to populate the ontology and demonstrate its usage.

6. SPARQL: Also I wrote several SPARQL queries to extract the related information form the RDF data.

Overall, My ontology provides a robust foundation for modeling the recipe box company's information system, covering various aspects of the domain and enabling effective data representation and validation.

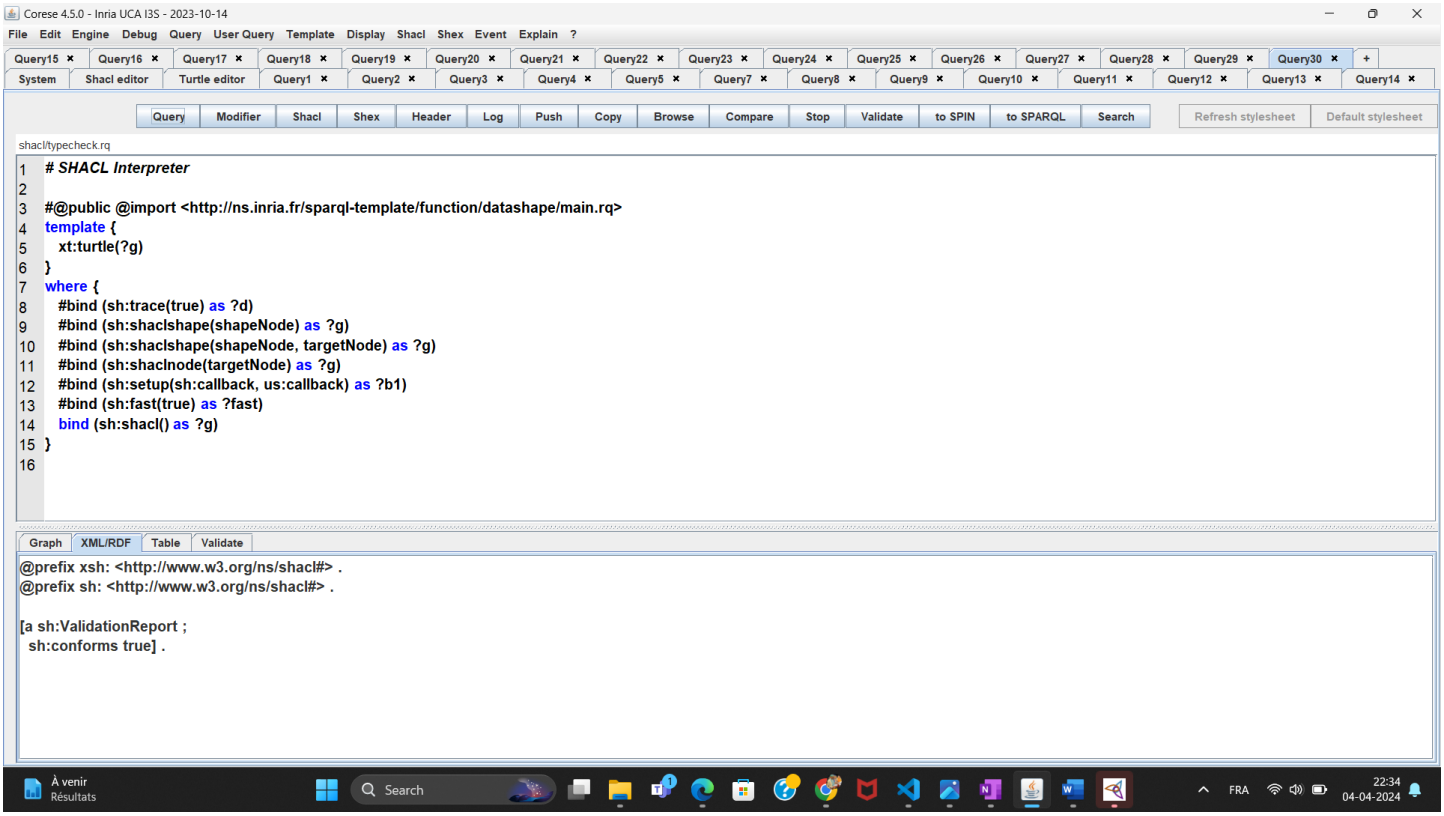
For RDF Graph visualization I have used several online websites and also PROTÉGÉ Software.

http://owlgred.lumii.lv/online_visualization/rlue

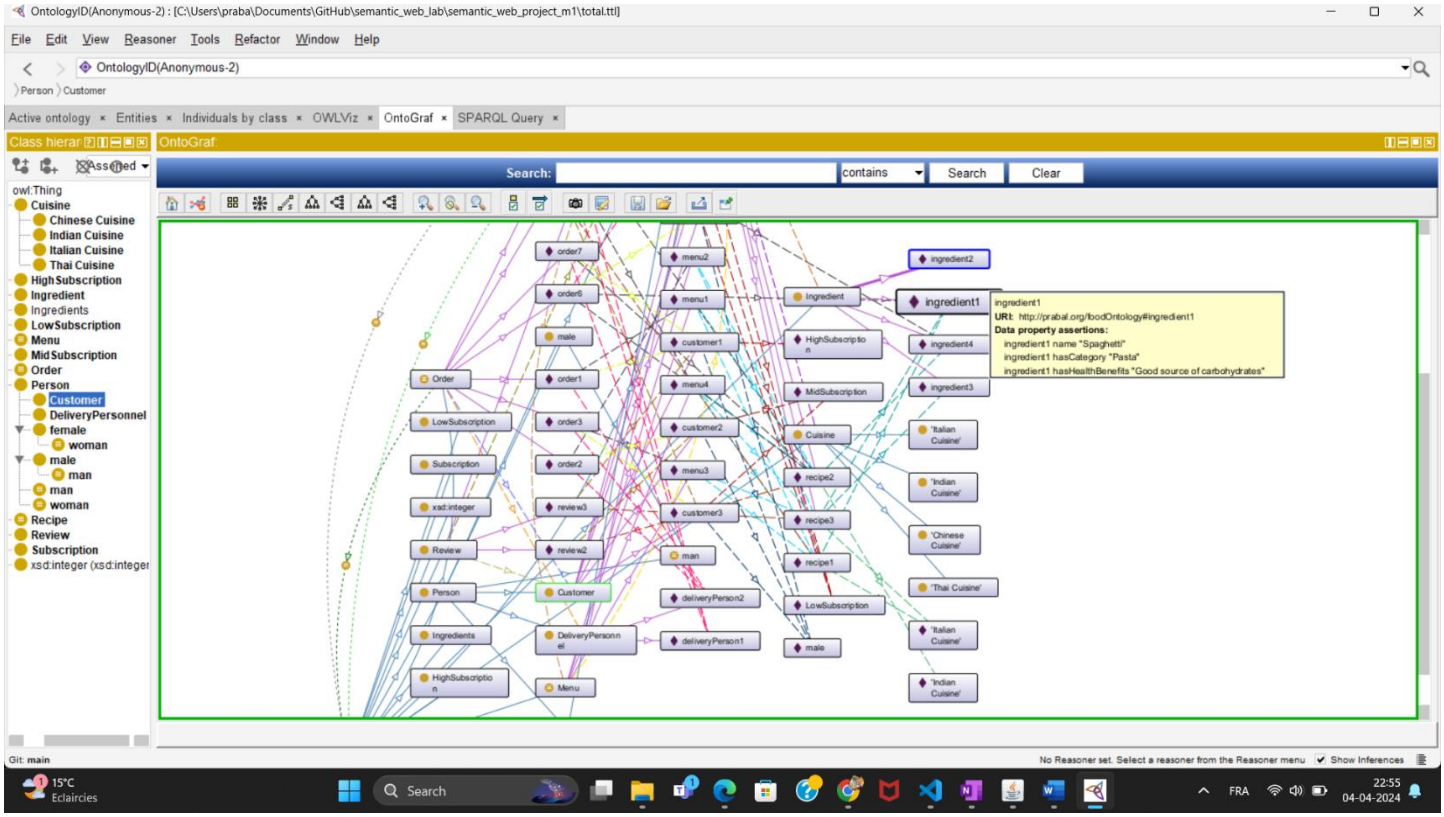
https://www.ldf.fi/service/rdf-grapher

https://service.tib.eu/webvowl/#file=total.ttl

SHACL Validation: There is no validation error on my RDF data.



The Protégé OntoGraf is like this.



The Protégé OwlViz is like this: