Coursework Project (Part 1): Ontology Modelling

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Introduction

We have been given the task to develop a small ontology using Protégé. For this task, some questions are defined to us and a dataset is given, which we would use to do modeling.

Dataset

The provided dataset is from Kaggle about pizza dataset and the pizza they sell. The dataset is concise and contains 501 entries and 11 columns. For this [particular task, not all columns are considered, we also use our domain knowledge to carry out this task and choose only relevant data.

Ontology modeling (Task OWL)

Subtask OWL.1:

To change the namespace, from the application, Ontology IRI is changed to *http://www.city.ac.uk/inm713-in3067/2023/ibtida_syed/* Here our combined names are initialized as 'ibtida_syed'

Subtask OWL.2:

For our renamed namespace, we create a new prefix and define it as *ibs*

Subtask OWL.3:

We used the annotation property *dc:creator* and annotate the ontology as 'Ibtida & Syed' which represents that we created it.

Subtask OWL.4:

Combinedly, 29 classes and subclasses have been created and ordered in a hierarchical way by us. Among them, City, Country, Pizza, Restaurant, State, and Topping are the classes, and various subclasses like Pizza and Topping types, Restaurant cuisine names, etc are created by us. Here, Country, State, and City are made as 3 separate classes rather than using Country as a class and the rest of the two as a subclass to it.

Subtask OWL.5:

For our ontology, we created several object and data properties and have given them global and local restrictions as per requirement. For example, our created object property *is_Served_At* has a domain and a range of Pizza and Restaurant. This means a particular pizza (domain) is served at a particular restaurant (range). Likewise, we created other properties with domain and range values.

Existential and universal restrictions for certain characteristics are created. For example in the case of Topping, for vegetable pizza, **only** vegetable toppings are used and for special pizza **some** special toppings are used, which are examples of universal and existential restrictions.

Subtask OWL.6:

We gave various characteristics to our created properties as per their characteristics. For example, *is_Located_At* is a transitive characteristic, because it can be used to define the location of a restaurant in a City, State, or even Country.

Subtask OWL.7:

For this task, we do basic and meaningful text labeling and commenting on various entities using language tag *en*. For example, we label MeatPizza as Meat_Pizza and comment that its main ingredient is meat.

Subtask OWL.8:

For the last task, we had to create a new restaurant of ours. We first create the type of restaurant, which in our case was given the name 'Bangla_Food' and individuals of the name of the restaurant, 'Ibtida_Syed_Restaurant' is defined which is in a new City called 'Dhaka' inside a newly created country individual 'Bangladesh' having its own postcode and location. The restaurant serves its own pizza called 'Bangla_Pizza' with a price tag of $10.5 USD, which is also a type of 'Special_Pizza' having 'Special_Topping'