Indian Institute of Technology, Madras
Chennai

CS6852: Assignment 3 - Ontology Design

Group – 16

Domain - ECommerce

Submitted To:

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Assignment Overview

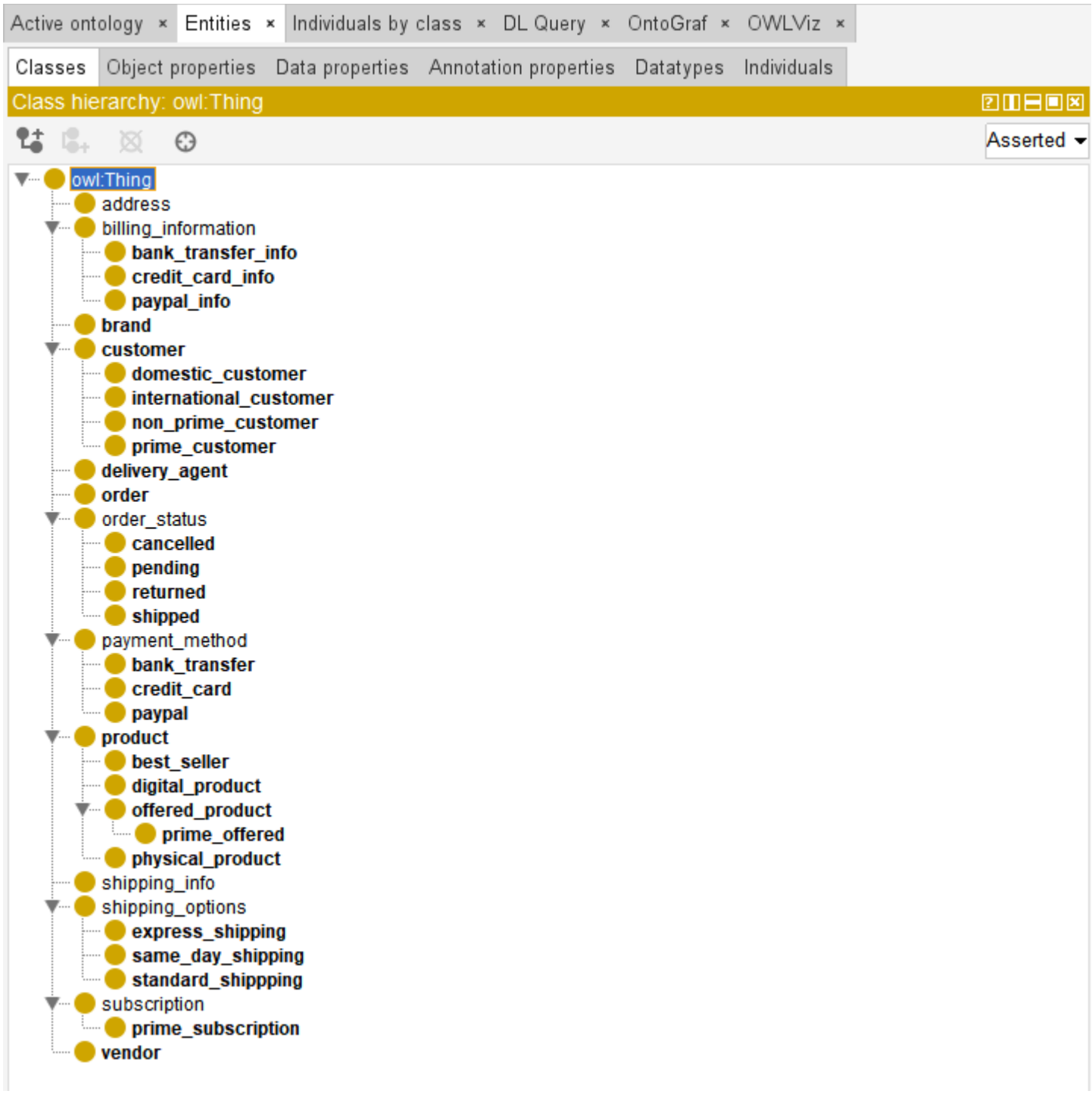
An OWL ontology was developed for the domain of ECommerce, comprising several distinct classes and numerous object properties. Various individuals were also incorporated into the ontology and were duly mapped to their respective class types and object properties. The ontology was subsequently evaluated for consistency using the in-built reasoner in Protege software, following which it was visualized through the utilization of two distinct tools.

Tools used

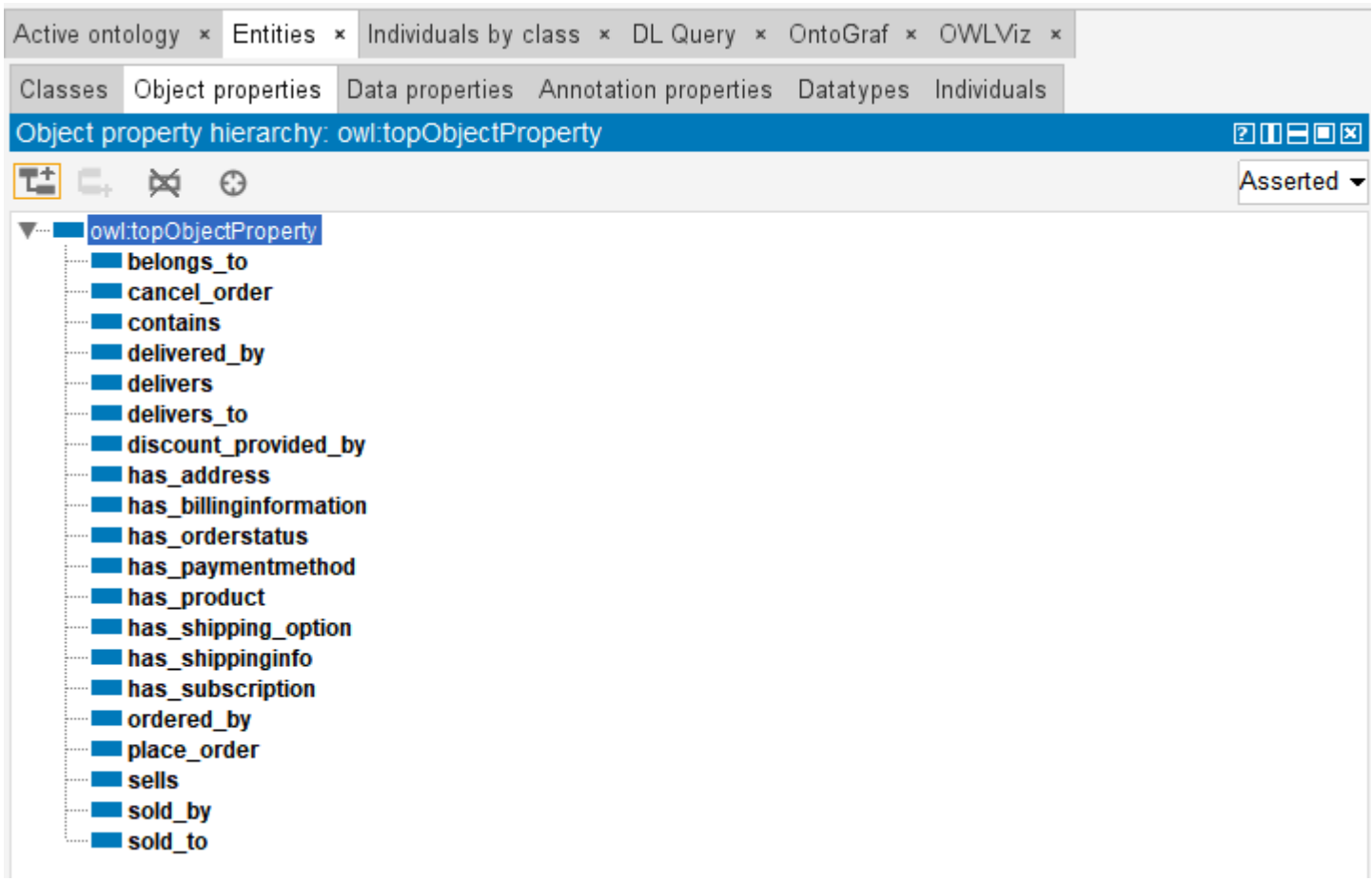
The following tools were utilized for the project:

- ***Protege (version 5.6.1)***: This software was used for ontology development and management.
- ***GraphViz***: This tool was used for the visualization of the ontologies and graphs.
- ***Webvowl*** (*https://service.tib.eu/webvowl/*): This web-based tool was utilized for the analysis and visualization of the ontology. It provides various features such as interactive visualizations, the ability to export the ontology in different formats, and the ability to analyze the ontology's quality.

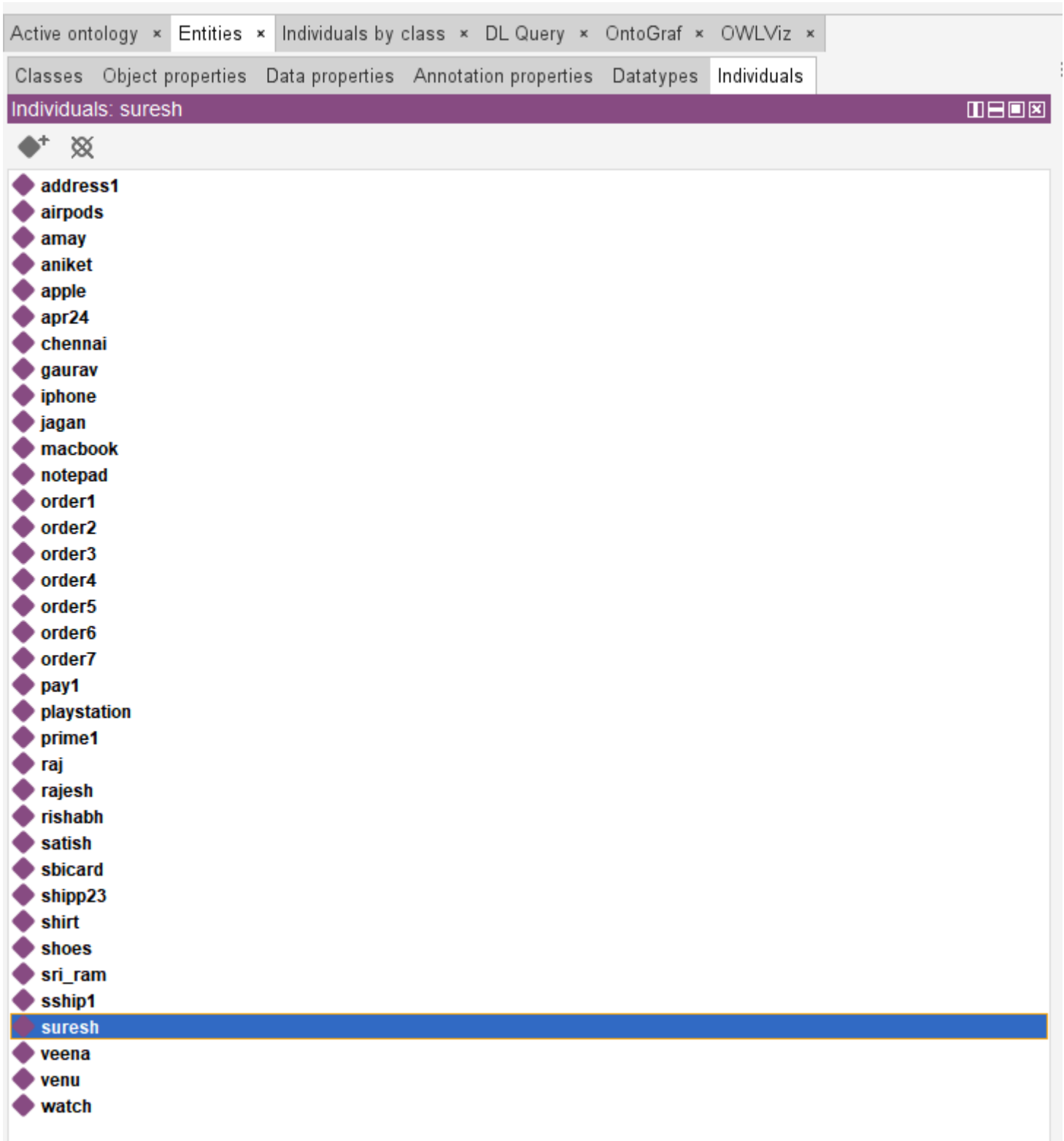
Classes


Active ontology
Entities
Individuals by class
DL Query
OntoGraf
OWLViz
Classes
Object properties
Data properties
Annotation properties
Datatypes
Individuals
Class hierarchy: owl:Thing
Asserted
owl:Thing
address
billing_information
bank_transfer_info
credit_card_info
paypal_info
brand
customer
domestic_customer
international_customer
non_prime_customer
prime_customer
delivery_agent
order
order_status
cancelled
pending
returned
shipped
payment_method
bank_transfer
credit_card
paypal
product
best_seller
digital_product
offered_product
prime_offered
physical_product
shipping_info
shipping_options
express_shipping
same_day_shipping
standard_shippping
subscription
prime_subscription
vendor

Objects

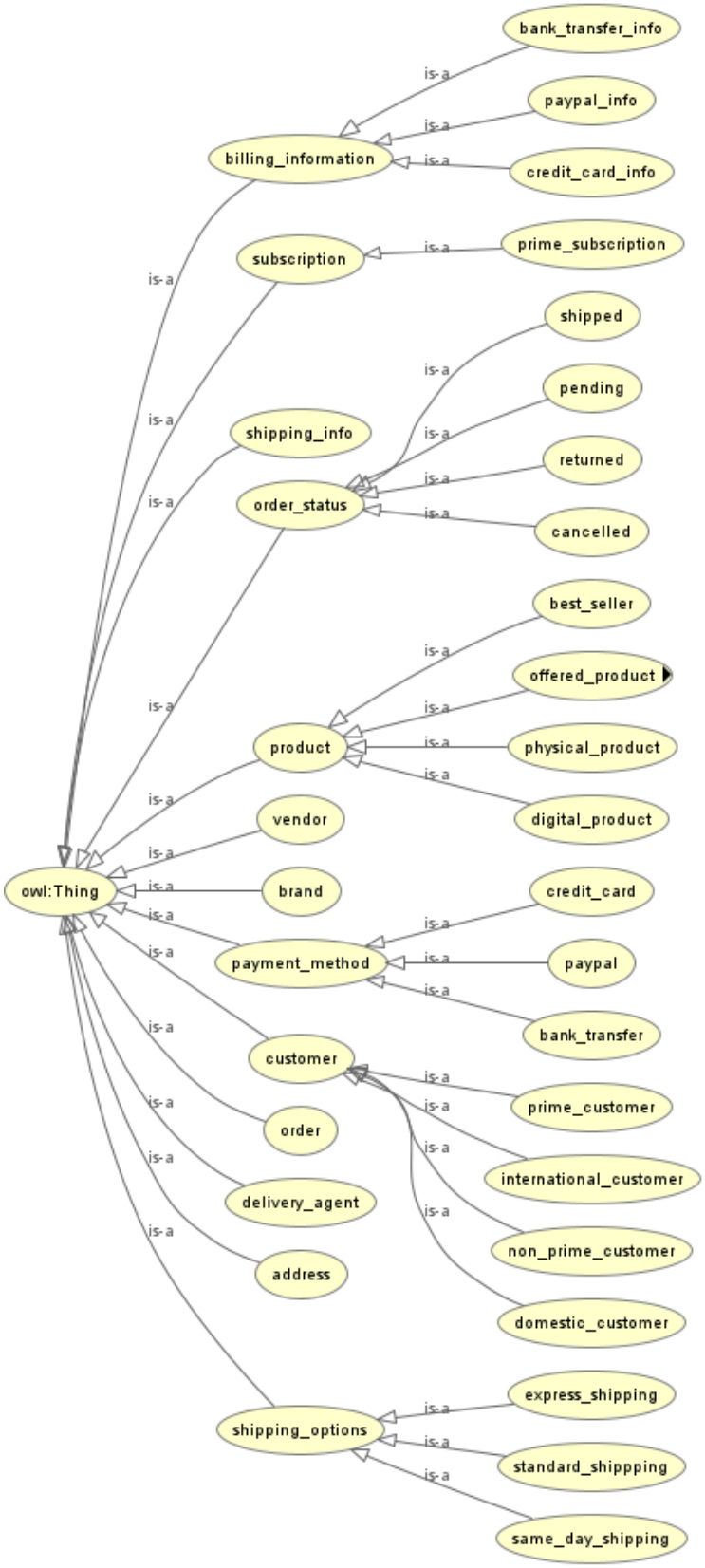

Active ontology
Entities
Individuals by class
DL Query
OntoGraf
OWLViz
Classes
Object properties
Data properties
Annotation properties
Datatypes
Individuals
Object property hierarchy: owl:topObjectProperty
Asserted
owl:topObjectProperty
belongs_to
cancel_order
contains
delivered_by
delivers
delivers_to
discount_provided_by
has_address
has_billinginformation
has_orderstatus
has_paymentmethod
has_product
has_shipping_option
has_shippinginfo
has_subscription
ordered_by
place_order
sells
sold_by
sold_to

Individuals



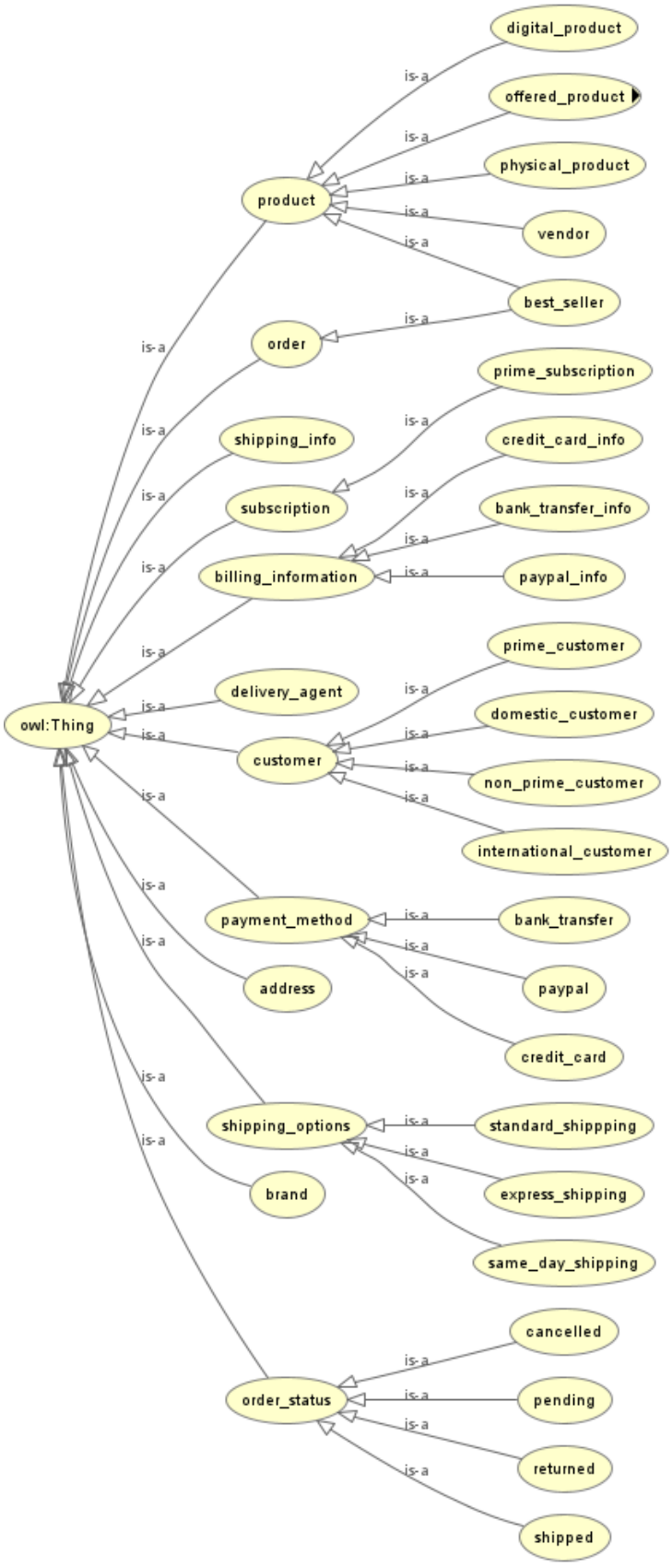
Asserted hierarchy

The below graph is obtained from ***OWL Wiz*** tool



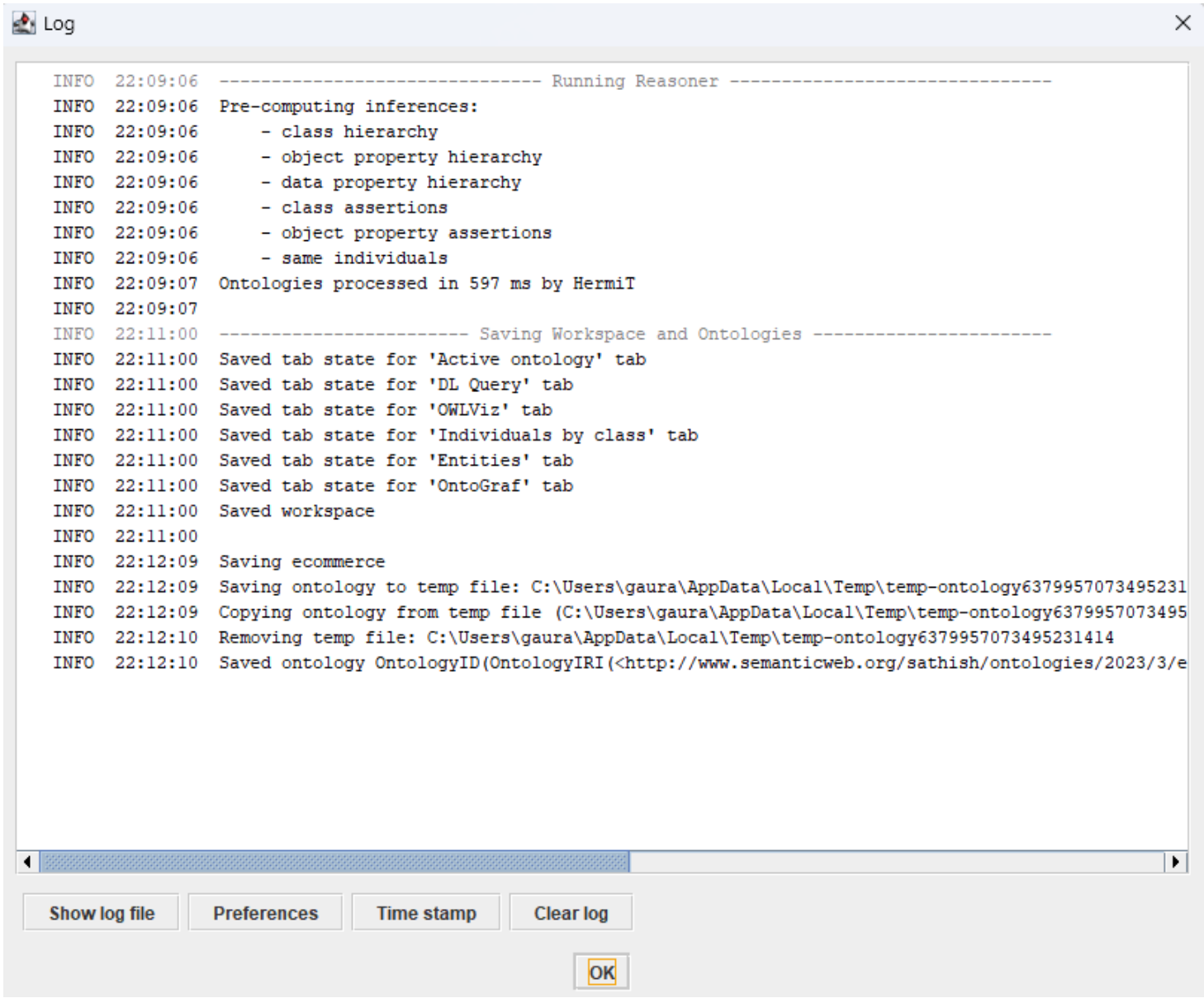
Inferred hierarchy

The below graph is obtained from ***OWL Wiz*** tool



Consistency

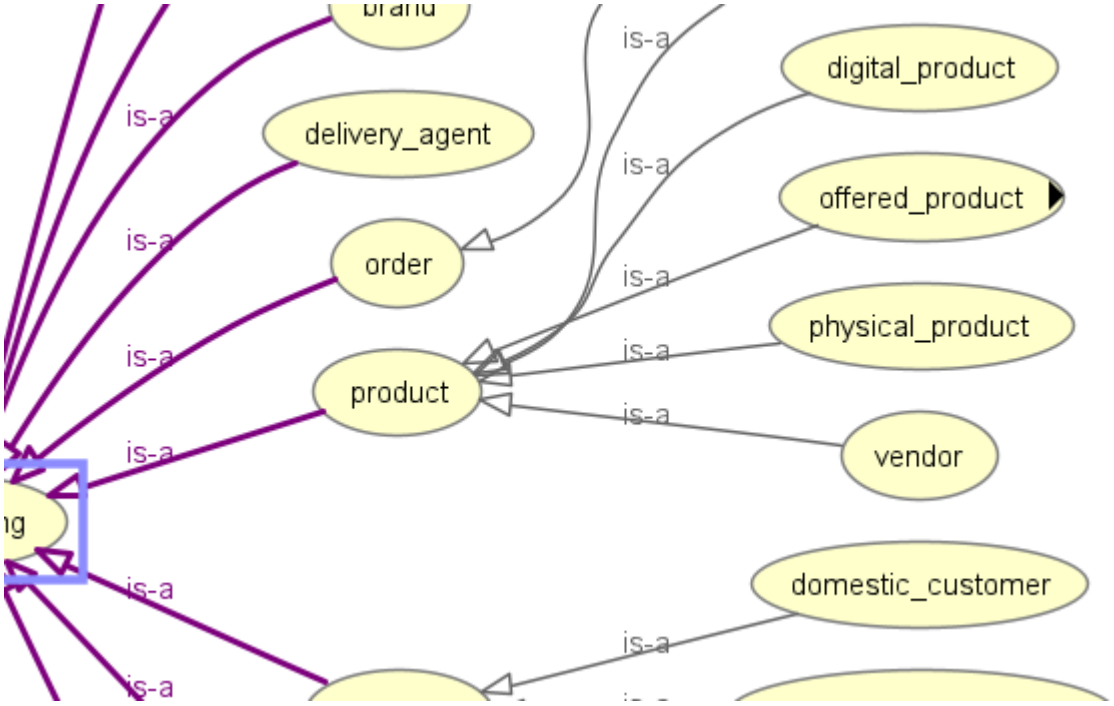
The ontology's consistency was verified by executing the 'HermiT 1.4.3.456' reasoner, which confirmed that the ontology is consistent.



Problems faced:

Difficulty in visualizing:

We encountered an issue in visualizing the hierarchy using OWL Wiz, as mentioned below.



Solution :

However, we were able to resolve it by installing GraphViz software from 'https://graphviz.org/download/' and making necessary changes in the configuration of OWL Wiz.

Visualizations:

- The obtained graph of the Ontology from ***WebVOWL(***[*https://service.tib.eu/webvowl/*](https://service.tib.eu/webvowl/)***)*** tool: