

TOTAL CORRECT OUTPUTS = 22/37 = 59.46%

TRANSLATABLE: Cqs which should be transformed to a correct query
Correct outputs: 9/18 = 50%

CQ text	Output generated	Is it correct?	Can query be generated?	Comments
What are the types of vegetarian pizza?	<pre>SELECT DISTINCT * WHERE { ?x rdfs:subClassOf <http://www.co-ode.org/ontologies/pizza/pizza.owl#VegetarianPizza> . filter(?x != <http://www.co-ode.org/ontologies/pizza/pizza.owl#VegetarianPizza> && ?x != owl:Nothing) }</pre>	YES	YES	Correct query, asking for subclasses of vegetarian pizzas as expected.
What are the types of base options?	<pre>SELECT DISTINCT * WHERE { ?x rdfs:subClassOf <http://www.co-ode.org/ontologies/pizza/pizza.owl#PizzaBase> . filter(?x != <http://www.co-ode.org/ontologies/pizza/pizza.owl#PizzaBase> && ?x != owl:Nothing) }</pre>	YES	YES	Correct query, although “pizza options” was extracted as a phrase with ReqTagger, it was correctly matched to “Pizza Base” label
Which are real italian pizzas?	<pre>SELECT DISTINCT * WHERE { ?x rdfs:subClassOf <http://www.co-ode.org/ontologies/pizza/pizza.owl#RealItalianPizza> . filter(?x != <http://www.co-ode.org/ontologies/pizza/pizza.owl#RealItalianPizza> && ?x != owl:Nothing) }</pre>	YES	YES	Correct query, asking for subclasses of “Real Italian Pizza” as expected.
Are different bases available?	Cannot generate a query from given CQ/ontology.	NO	YES	Failed to map “bases” to “Pizza Base” label
How many pizzas are available?		YES	YES	Although there is no template utilizing COUNT(*) aggregator, we think the method used the correct fallback choosing a template which simply lists all the pizza subclasses.
How many pizzas contain meat?	<pre>SELECT ?x WHERE { ?x rdfs:subClassOf <http://www.co-ode.org/ontologies/pizza/pizza.owl#Pizza> ; rdfs:subClassOf [a owl:Restriction ; owl:onProperty <http://www.co-ode.org/ontologies/pizza/pizza.owl#hasTopping> ; owl:someValuesFrom <http://www.co-ode.org/ontologies/pizza/pizza.owl#MeatTopping>] . }</pre>	YES	YES	Correct query, chosen correct Pizza and Meat labels and mapped “contains” into “has Topping” based on examples in the ontology.
Which sort of cheese do we have?	<pre>SELECT DISTINCT * WHERE { ?x rdfs:subClassOf <http://www.co-ode.org/ontologies/pizza/pizza.owl#CheeseTopping> . Filter(?x != <http://www.co-ode.org/ontologies/pizza/pizza.owl#CheeseTopping> && ?x != owl:Nothing) }</pre>	YES	YES	Correct query
What sauces are available?	<pre>SELECT DISTINCT * WHERE { ?x rdfs:subClassOf <http://www.co-ode.org/ontologies/pizza/pizza.owl#SauceTopping> . Filter(?x != <http://www.co-ode.org/ontologies/pizza/pizza.owl#SauceTopping> && ?x != owl:Nothing) }</pre>	YES	YES	Correct query
What kind of pizza contains a single meat ingredient?	<pre>SELECT DISTINCT * WHERE { ?x rdfs:subClassOf <http://www.co-ode.org/ontologies/pizza/pizza.owl#Pizza>, [a owl:Restriction ; owl:onProperty <http://www.co-ode.org/ontologies/pizza/pizza.owl#hasTopping> ; Owl:someValuesFrom <http://www.co-ode.org/ontologies/pizza/pizza.owl#MeatTopping>] }</pre>	NO	YES	Although correct vocab is linked, there is no SPARQL-OWL template utilizing cardinality restrictions. We cannot classify it as a correct, since the question requires exactly “single” meat topping
Which are the nut free pizzas?	<pre>SELECT DISTINCT * WHERE { ?x rdfs:subClassOf <http://www.co-ode.org/ontologies/pizza/pizza.owl#Pizza> . filter(?x != <http://www.co-ode.org/ontologies/pizza/pizza.owl#Pizza> && ?x != owl:Nothing) }</pre>	NO	YES	Wrong query, a complement to the class with Nut toppings should be generated but we have not SPARQL-OWL template able to do so.
Which pizzas do not have nuts?	<pre>SELECT DISTINCT * WHERE { ?x rdfs:subClassOf <http://www.co-ode.org/ontologies/pizza/pizza.owl#Pizza> . ?x rdfs:subClassOf <http://www.co-ode.org/ontologies/pizza/pizza.owl#NutTopping>}</pre>	NO	YES	Wrong query, a complement to the class with Nut toppings should be generated but we have not SPARQL-OWL template able to do so.

How many pizzas have either ham or chicken topping?	Cannot generate a query from given CQ/ontology. SELECT DISTINCT * WHERE { ?x rdfs:subClassOf [rdf:type owl:Restriction ; owl:onProperty <http://www.co-ode.org/ontologies/pizza/pizza.owl#hasTopping> ; owl:someValuesFrom <http://www.co-ode.org/ontologies/pizza/pizza.owl#AnchoviesTopping>] . ?x rdfs:subClassOf* <http://www.co-ode.org/ontologies/pizza/pizza.owl#Pizza> }	NO	YES	There is no SPARQL-OWL template utilizing alternatives
Which pizzas contain prawns but not anchovy		NO	YES	Cannot express of a complement to a class of anchovy, no required SPARQL-OWL template available
Which pizzas are spicy?	SELECT DISTINCT * WHERE { ?x rdfs:subClassOf <http://www.co-ode.org/ontologies/pizza/pizza.owl#Pizza> . ?x rdfs:subClassOf <http://www.co-ode.org/ontologies/pizza/pizza.owl#SpicyTopping>}	CONDITIONAL YES	YES	Considering the knowledge modelled, there are classes with labels “Pizza” and “Spicy” which are correctly linked. Also, the query template seems to be reasonable: “Which are the objects being Pizza and being spicy at the same time”. But domain expertise lead to a conclusion that objectProperty hasTopping should be used here since pizza is not a topping. But, because the fact cannot be easily inferred, we conditionally classify this case as correct.
Are anchovies and capers used together?	ASK WHERE { <http://www.co-ode.org/ontologies/pizza/pizza.owl#AnchoviesTopping> rdfs:subClassOf [a owl:Restriction ; owl:onProperty <http://www.co-ode.org/ontologies/pizza/pizza.owl#isIngredientOf> ; Owl:someValuesFrom <http://www.co-ode.org/ontologies/pizza/pizza.owl#CaperTopping>] } SELECT DISTINCT * WHERE { ?x rdfs:subClassOf [rdf:type owl:Restriction ; owl:onProperty <http://www.co-ode.org/ontologies/pizza/pizza.owl#hasTopping> ; owl:someValuesFrom <http://www.co-ode.org/ontologies/pizza/pizza.owl#OliveTopping>] . ?x rdfs:subClassOf <http://www.co-ode.org/ontologies/pizza/pizza.owl#Pizza> }	NO	YES	We don't have a required SPARQL-OWL template which can be used here.
Which pizzas contain peppers and olives?	SELECT DISTINCT * WHERE { ?x rdfs:subClassOf <http://www.co-ode.org/ontologies/pizza/pizza.owl#Pizza> , [a owl:Restriction ; owl:onProperty <http://www.co-ode.org/ontologies/pizza/pizza.owl#hasCountryOfOrigin> ; Owl:someValuesFrom <http://www.co-ode.org/ontologies/pizza/pizza.owl#PizzaTopping>] }	NO	YES	We don't have a required SPARQL-OWL template which can be used here.
What pizzas contain less than 3 toppings?		NO	YES	We don't have a required SPARQL-OWL template utilizing cardinality restrictions.
What kind of pizza bases are possible?	SELECT DISTINCT * WHERE { ?x rdfs:subClassOf <http://www.co-ode.org/ontologies/pizza/pizza.owl#PizzaBase> . Filter(?x != <http://www.co-ode.org/ontologies/pizza/pizza.owl#PizzaBase> && ?x != owl:Nothing) }	YES	YES	Correct query

UNTRANSLATABLE: Cqs which should generate empty result because they cannot be expressed using a query (mainly due to missing ontology vocab)

Correct outputs: 13/19 = 68.42%

Do pizzas come in different sizes?	Cannot generate a query from given CQ/ontology.	YES	NO	No notion of size in the ontology.
Can I remove toppings from a pizza?	ASK WHERE { <http://www.co-ode.org/ontologies/pizza/pizza.owl#PizzaTopping> rdfs:subClassOf [a owl:Restriction ; owl:onProperty <http://www.co-ode.org/ontologies/pizza/pizza.owl#isToppingOf> ; Owl:someValuesFrom <http://www.co-ode.org/ontologies/pizza/pizza.owl#Pizza>] }	NO	NO	Nothing on topping removal, thus, query should not be generated.
Does this pizza contain halal meat?	ASK WHERE { <http://www.co-ode.org/ontologies/pizza/pizza.owl#Pizza> rdfs:subClassOf [a owl:Restriction ; owl:onProperty <http://www.co-ode.org/ontologies/pizza/pizza.owl#hasTopping> ; Owl:someValuesFrom <http://www.co-ode.org/ontologies/pizza/pizza.owl#MeatTopping>] }	NO	NO	No notion of halal meat, fallback to a general meat is nice, but we cannot accept that query.
Are we including the folded pizzas in our domain?	ASK WHERE { <http://www.co-ode.org/ontologies/pizza/pizza.owl#Pizza> rdfs:subClassOf [a owl:Restriction ; owl:onProperty <http://www.co-ode.org/ontologies/pizza/pizza.owl#hasCountryOfOrigin> ; owl:someValuesFrom <http://www.co-ode.org/ontologies/pizza/pizza.owl#DomainConcept>] }	NO	NO	Nothing on folded pizzas, for sure 'hasCountryOfOrigin' should not be used here :)
Is vegetarian pizza deep pan or Chicago style?	Cannot generate a query from given CQ/ontology.	YES	NO	No notion of chicago style
What are the origins of pizza toppings?	Cannot generate a query from given CQ/ontology.	YES	NO	Nothing on origins of toppings modelled

Is spicy pizza stuffed crust and what is it stuffed with?	Cannot generate a query from given CQ/ontology.	YES	NO	Nothing on stuffing process in the ontology.
How much it will cost me to order all pizzas in the menu?	Cannot generate a query from given CQ/ontology.	YES	NO	Nothing on costs in the ontology.
Which toppings are allowed for customization pu	Cannot generate a query from given CQ/ontology.	YES	NO	Nothing on customization in the ontology
Are toppings organic?	SELECT DISTINCT * WHERE { ?x rdfs:subClassOf <http://www.co-ode.org/ontologies/pizza/pizza.owl#PizzaTopping> . Filter(?x != <http://www.co-ode.org/ontologies/pizza/pizza.owl#PizzaTopping> && ?x != owl:Nothing) }	NO	NO	Nothing on organic kind of toppings in the ontology
Can I have a menu without pizzas please?	Cannot generate a query from given CQ/ontology.			
Which are the offers of the day?	Cannot generate a query from given CQ/ontology.	YES	NO	Nothing on the offers of the day in the ontology The ontology does not model the temporal dimension
Which is the latest combination of toppings?	Cannot generate a query from given CQ/ontology.	YES	NO	
Are there any children pizzas?	SELECT DISTINCT * WHERE { ?x rdfs:subClassOf <http://www.co-ode.org/ontologies/pizza/pizza.owl#Pizza> . Filter(?x != <http://www.co-ode.org/ontologies/pizza/pizza.owl#Pizza> && ?x != owl:Nothing) }	YES	NO	Nothing on children pizzas in the ontology
Is spicy pizza thin or thick bread?	Cannot generate a query from given CQ/ontology.			
Which pizzas are sharing 3 or more ingredients?	Cannot generate a query from given CQ/ontology.	YES	NO	We think a SPARQL-OWL query cannot be stated here
Processing Can you have a pizza with any combination of toppings?	Cannot generate a query from given CQ/ontology.	YES	NO	We think a SPARQL-OWL query cannot be stated here
How much does Margherita Pizza weight?	SELECT DISTINCT * WHERE { ?x rdfs:subClassOf <http://www.co-ode.org/ontologies/pizza/pizza.owl#Margherita> . Filter(?x != <http://www.co-ode.org/ontologies/pizza/pizza.owl#Margherita> && ?x != owl:Nothing) }	NO	NO	Nothing on weight in the ontology. Nothing on health in the ontology. But I see what SeeQuery did there, it is not that important if pizzas are healthy, pizzas are tasty – thus, let's ignore the health questions and just list the options!
Processing Is pizza healthy?	SELECT DISTINCT * WHERE { ?x rdfs:subClassOf <http://www.co-ode.org/ontologies/pizza/pizza.owl#Pizza> . Filter(?x != <http://www.co-ode.org/ontologies/pizza/pizza.owl#Pizza> && ?x != owl:Nothing) }	NO	NO	