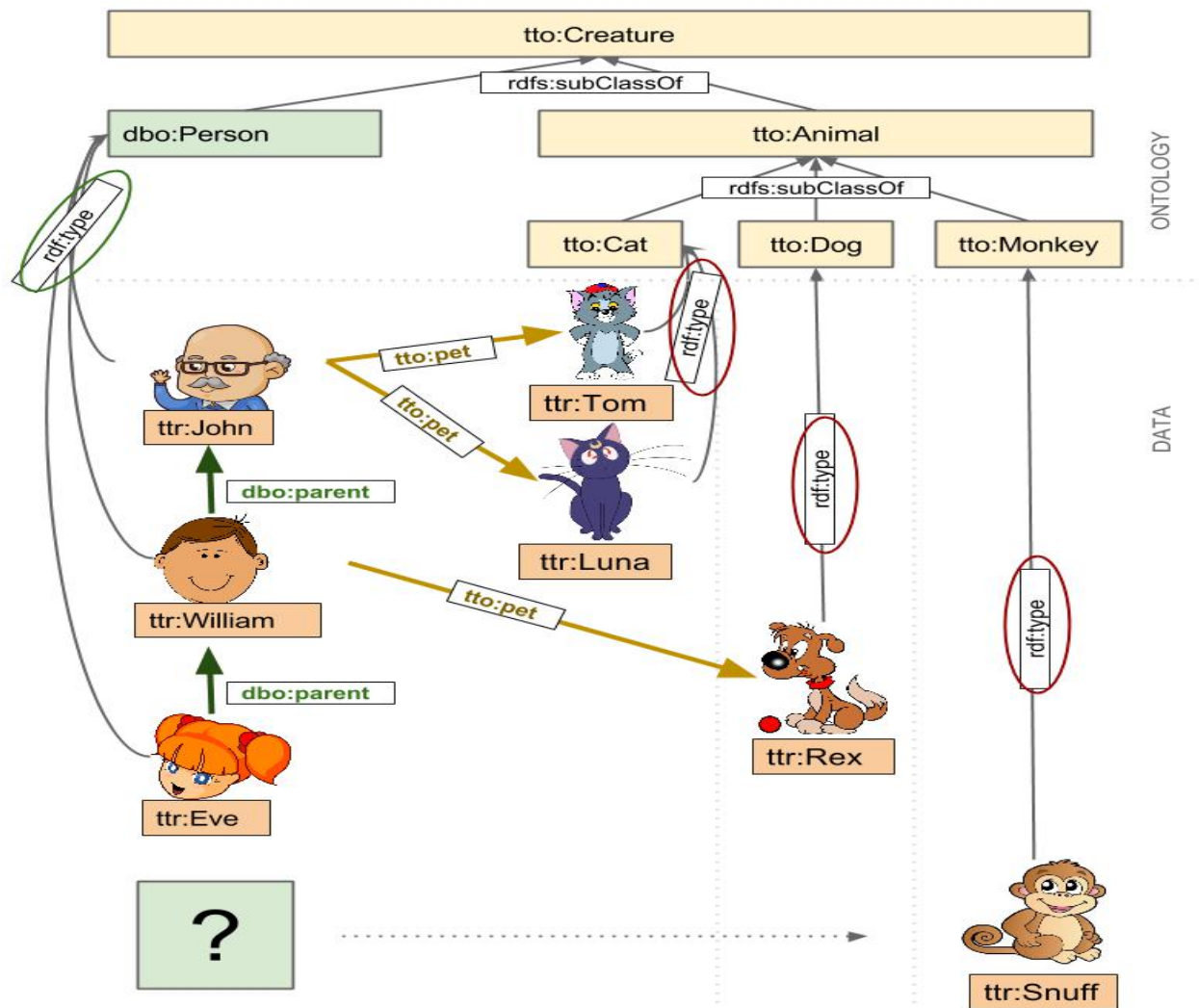


## SEMANTIC WEB –SPARQL ASSIGNMENT

Assignment SPARQL

Create owl file to describe the following using Protégé:



1.

Run the queries in protege for the questions given in the site <https://sparqlplayground.sib.swiss/> numbered - 200 till 209 using the owl file you have created. Then try to run 220 (by filling in the \*\*\* blanks). Take a screenshot of the SPARQL code box & the output and paste it in a word file for each question. (1.1 to 1.11)

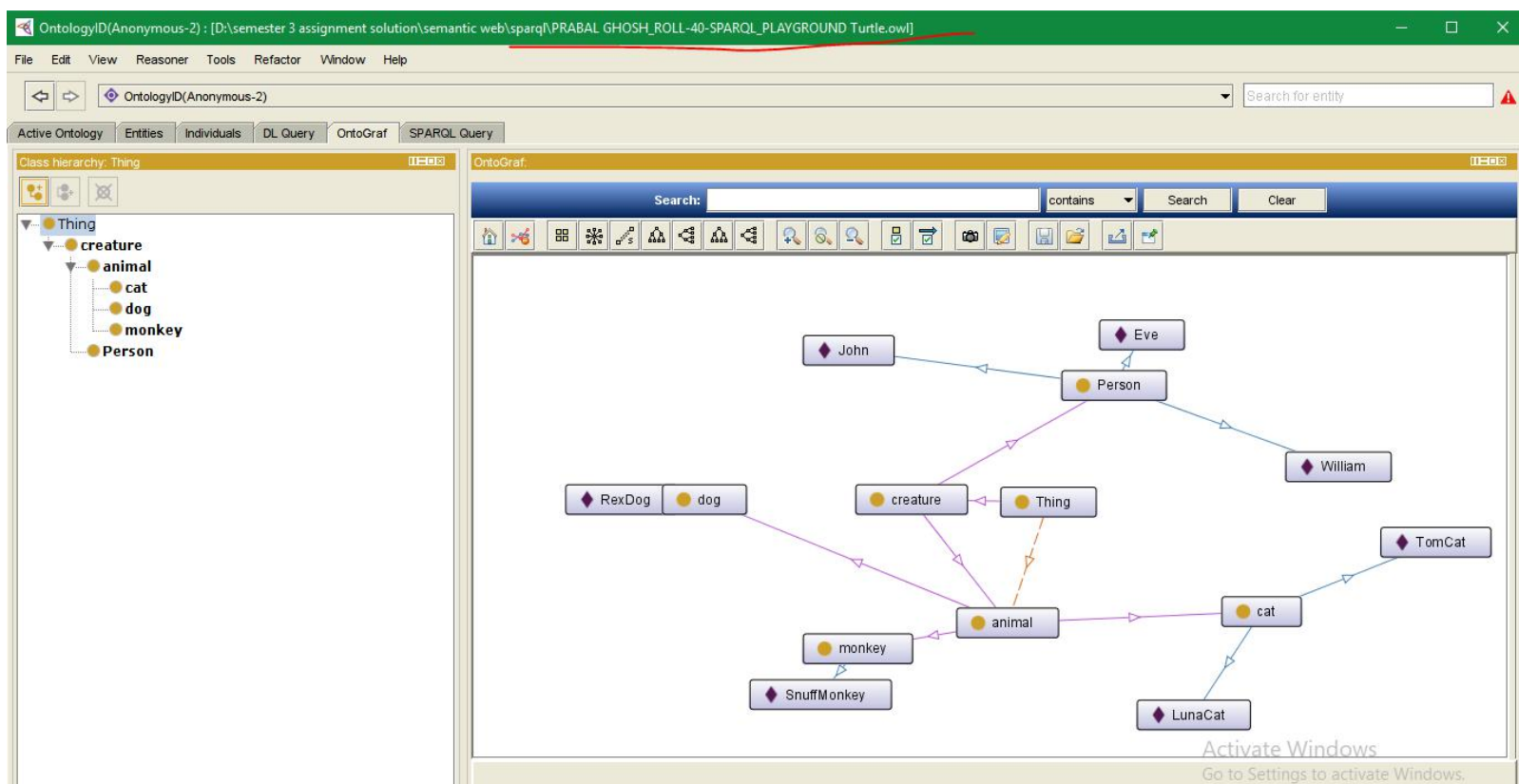
2.

Write a SPARQL statement to find out: How many triplets are contained in the dataset? Take a screenshot of the SPARQL code box and the output and paste in the word file.

3.

Write a SPARQL statement to find out: How many instances of a “Animal” class are declared? Take a screenshot of the SPARQL code box and the output and paste below.

SOLUTION:



1>

```
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
prefix dbo: <http://dbpedia.org/ontology/>
  prefix dbp: <http://dbpedia.org/property/>
prefix dbpedia: <http://dbpedia.org/resource/>
prefix  ttO: <http://example.org/tuto/ontology#>
PREFIX owl: <http://www.w3.org/2002/07/owl#>
  prefix ttr: <http://example.org/tuto/resource#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
```

```
SELECT DISTINCT * WHERE {
  ?s ?p ?o
} LIMIT 10
```

The screenshot shows a web application window titled "OntologyID(Anonymous-2) : [D:\semester 3 assignment solution\semantic web\sparg\PRABAL GHOSH\_ROLL-40-SPARQL\_PLAYGROUND.xml]". The interface includes a menu bar (File, Edit, View, Reasoner, Tools, Refactor, Window, Help) and a toolbar with navigation icons and a search bar labeled "Search for entity". Below the toolbar are tabs for "Active Ontology", "Entities", "Individuals", "DL Query", "OntoGraf", and "SPARQL Query". The "SPARQL Query" tab is active, displaying a query editor with the following content:

```
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
prefix dbo: <http://dbpedia.org/ontology/>
prefix dbp: <http://dbpedia.org/property/>
prefix dbpedia: <http://dbpedia.org/resource/>
prefix  ttO: <http://example.org/tuto/ontology#>
PREFIX owl: <http://www.w3.org/2002/07/owl#>
  prefix ttr: <http://example.org/tuto/resource#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>

SELECT DISTINCT * WHERE {
  ?s ?p ?o
}
LIMIT 10
```

Below the query editor, the results are displayed in a table with three columns: "s", "p", and "o". The results show various RDF triples, including literals and URIs.

s	p	o
John	name	"John"@
PlainLiteral	type	Datatype
name	type	AnnotationProperty
6e689d4e_8149_43a2_8678_8eafb76bcd58	hashCode	"624320332"^^<http://www.w3.org/2001/XMLSchema#int>
6e689d4e_8149_43a2_8678_8eafb76bcd58	sourceOntology	<urn:AnonId:ad44b048_83ff_4df1_8b13_d57eea67be48>
William	birthDate	"1978-07-20"^^<http://www.w3.org/2001/XMLSchema#date>
date	type	Datatype
birthDate	type	AnnotationProperty
1995a496_9e17_4881_8ab0_4b9412dfd24e	hashCode	"-1989661370"^^<http://www.w3.org/2001/XMLSchema#int>
1995a496_9e17_4881_8ab0_4b9412dfd24e	sourceOntology	<urn:AnonId:ad44b048_83ff_4df1_8b13_d57eea67be48>

200)

OntologyID(Anonymous-2) : [D:\semester 3 assignment solution\semantic web\sparql\PRABAL GHOSH\_ROLL-40-SPARQL\_PLAYGROUND Turtle.owl]

File Edit View Reasoner Tools Refactor Window Help

OntologyID(Anonymous-2)

Active Ontology Entities Individuals DL Query OntoGraf SPARQL Query

SPARQL query:

```

PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
prefix dbo: <http://dbpedia.org/ontology/>
prefix dbp: <http://dbpedia.org/property/>
prefix dbpedia: <http://dbpedia.org/resource/>
prefix tto: <http://example.org/tuto/ontology#>
PREFIX owl: <http://www.w3.org/2002/07/owl#>
prefix ttr: <http://example.org/tuto/resource#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>

select ?thing where {
  ?thing rdf:type dbo:Person .
}

```

thing
Eve
John
William

201)

```

PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
prefix dbo: <http://dbpedia.org/ontology/>
prefix dbp: <http://dbpedia.org/property/>
prefix dbpedia: <http://dbpedia.org/resource/>
prefix tto: <http://example.org/tuto/ontology#>
PREFIX owl: <http://www.w3.org/2002/07/owl#>
prefix ttr: <http://example.org/tuto/resource#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
SELECT distinct ?s ?x
WHERE{ ?s rdf:type
      owl:NamedIndividual ;
      tto:sex ?x
}

```

OntologyID(Anonymous-2) : [D:\semester 3 assignment solution\semantic web\sparg\PRABAL GHOSH\_ROLL-40-SPARQL\_PLAYGROUND Turtle.owl]

File Edit View Reasoner Tools Refactor Window Help

OntologyID(Anonymous-2) Search for entity

Active Ontology Entities Individuals DL Query OntoGraf SPARQL Query

SPARQL query

```

PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
prefix dbo: <http://dbpedia.org/ontology/>
prefix dbp: <http://dbpedia.org/property/>
prefix dbpedia: <http://dbpedia.org/resource/>
prefix tto: <http://example.org/tuto/ontology#>
PREFIX owl: <http://www.w3.org/2002/07/owl#>
prefix tr: <http://example.org/tuto/resource#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
SELECT distinct ?s ?x
WHERE{
    ?s rdf:type
        owl:NamedIndividual;
        tto:sex ?x
    }

```

s	x
William	'male'@
Eve	'female'@
RexDog	'male'@
LunaCat	'female'@
John	'male'@
SnuffMonkey	'male'@
TomCat	'male'@

Execute

Activate Windows  
Go to Settings to activate Windows.

Type here to search

6:01 PM  
11/17/2021

202)

```

select ?s ?x where {
    ?s a dbo:Person ;
    tto:sex ?x
}

```

OntologyID(Anonymous-2) : [D:\semester 3 assignment solution\semantic web\sparg\PRABAL GHOSH\_ROLL-40-SPARQL\_PLAYGROUND Turtle.owl]

File Edit View Reasoner Tools Refactor Window Help

OntologyID(Anonymous-2) Search for entity

Active Ontology Entities Individuals DL Query OntoGraf SPARQL Query

SPARQL query

```

PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
prefix dbo: <http://dbpedia.org/ontology/>
prefix dbp: <http://dbpedia.org/property/>
prefix dbpedia: <http://dbpedia.org/resource/>
prefix tto: <http://example.org/tuto/ontology#>
PREFIX owl: <http://www.w3.org/2002/07/owl#>
prefix tr: <http://example.org/tuto/resource#>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
select ?s ?x where {
    ?s a dbo:Person ;
    tto:sex ?x
}

```

s	x
Eve	'female'@
John	'male'@
William	'male'@

Execute

Activate Windows  
Go to Settings to activate Windows.

Type here to search

6:05 PM  
11/17/2021

204)

```
select ?thing ?sex where {  
  ?thing tto:sex ?sex .  
}
```

The screenshot shows the SPARQL Query interface of the Ontology (Anonymous-2) application. The query is as follows:

```
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>  
PREFIX dbo: <http://dbpedia.org/ontology/>  
PREFIX dbp: <http://dbpedia.org/property/>  
PREFIX dbpedia: <http://dbpedia.org/resource/>  
PREFIX tto: <http://example.org/tuto/ontology#>  
PREFIX owl: <http://www.w3.org/2002/07/owl#>  
PREFIX tr: <http://example.org/tuto/resource#>  
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>  
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>  
select ?thing ?sex where {  
  ?thing tto:sex ?sex .  
}
```

The results are displayed in a table with two columns: 'thing' and 'sex'.

thing	sex
William	'male'@
Eve	'female'@
RexDog	'male'@
LunaCat	'female'@
John	'male'@
SnuffMonkey	'male'@
TomCat	'male'@

An 'Execute' button is located at the bottom of the query area. An 'Activate Windows' watermark is visible in the bottom right corner of the application window.

206)

```
select ?person ?pet where {  
  ?person rdf:type dbo:Person ;  
  tto:pet ?pet .  
}
```

OntologyID(Anonymous-2) : [D:\semester 3 assignment solution\semantic web\sparql\PRABAL GHOSH\_ROLL-40-SPARQL\_PLAYGROUND Turtle.owl]

File Edit View Reasoner Tools Refactor Window Help

OntologyID(Anonymous-2) Search for entity

Active Ontology Entities Individuals DL Query OntoGraf SPARQL Query

SPARQL query

```

PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
prefix dbo: <http://dbpedia.org/ontology/>
prefix dbp: <http://dbpedia.org/property/>
prefix dbpedia: <http://dbpedia.org/resource/>
prefix tto: <http://example.org/tuto/ontology/>
PREFIX owl: <http://www.w3.org/2002/07/owl#>
prefix tr: <http://example.org/tuto/resource/>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
select ?person ?pet where {
    ?person rdf:type dbo:Person ;
        tto:pet ?pet .
}

```

person	pet
Eve	SnuffMonkey
John	LunaCat
John	TomCat
William	RexDog

Execute

Activate Windows  
Go to Settings to activate Windows.

Type here to search

6:10 PM  
11/17/2021

207)

```

select ?person ?pet where {
    ?person rdf:type dbo:Person .
    optional {?person tto:pet ?pet }.
}

```

OntologyID(Anonymous-2) : [D:\semester 3 assignment solution\semantic web\sparql\PRABAL GHOSH\_ROLL-40-SPARQL\_PLAYGROUND Turtle.owl]

File Edit View Reasoner Tools Refactor Window Help

OntologyID(Anonymous-2) Search for entity

Active Ontology Entities Individuals DL Query OntoGraf SPARQL Query

SPARQL query

```

PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
prefix dbo: <http://dbpedia.org/ontology/>
prefix dbp: <http://dbpedia.org/property/>
prefix dbpedia: <http://dbpedia.org/resource/>
prefix tto: <http://example.org/tuto/ontology/>
PREFIX owl: <http://www.w3.org/2002/07/owl#>
prefix tr: <http://example.org/tuto/resource/>
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
select ?person ?pet where {
    ?person rdf:type dbo:Person .
        optional {?person tto:pet ?pet }.
}

```

person	pet
Eve	SnuffMonkey
John	LunaCat
John	TomCat
William	RexDog

Execute

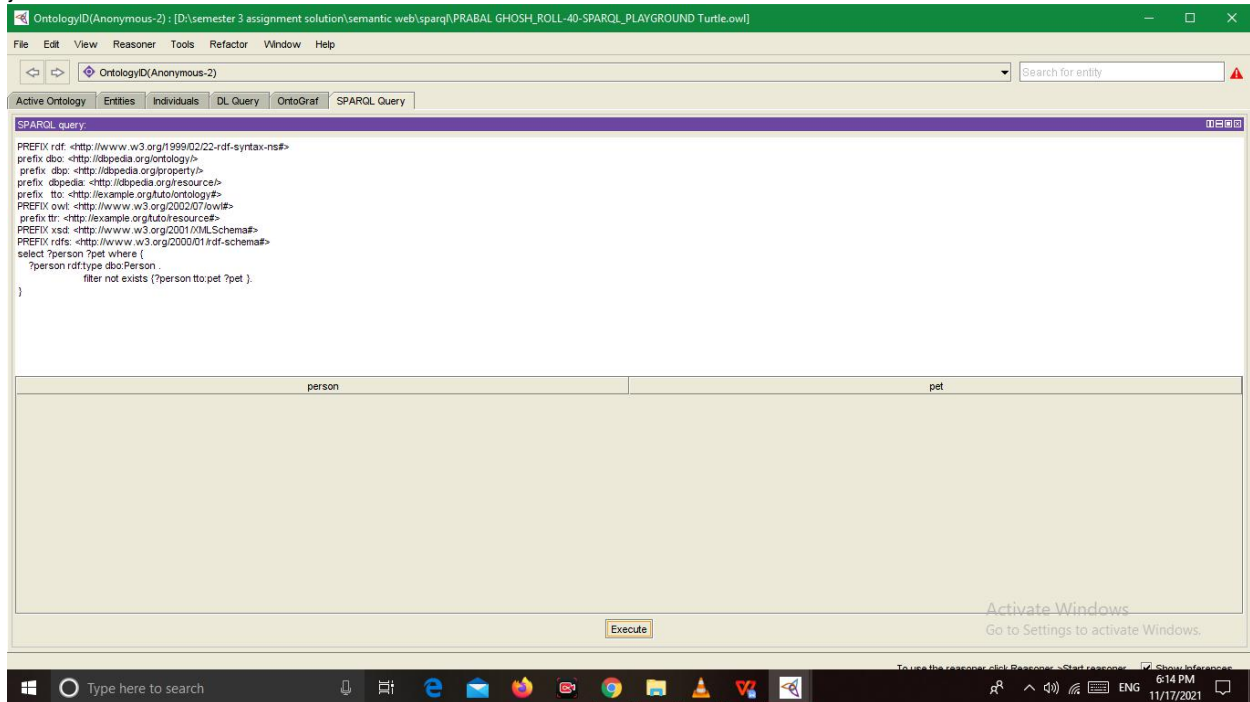
Activate Windows  
Go to Settings to activate Windows.

Type here to search

6:13 PM  
11/17/2021

208)

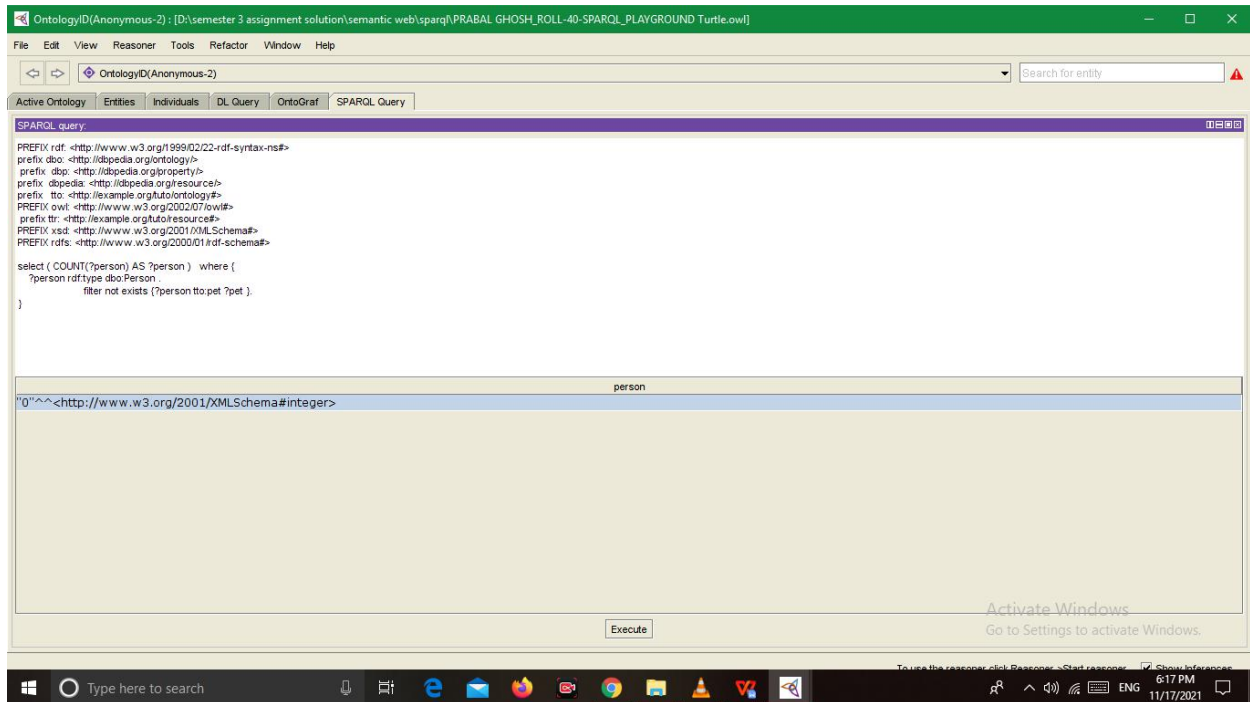
```
select ?person ?pet where {  
  ?person rdf:type dbo:Person .  
  filter not exists {?person tto:pet ?pet }.  
}
```





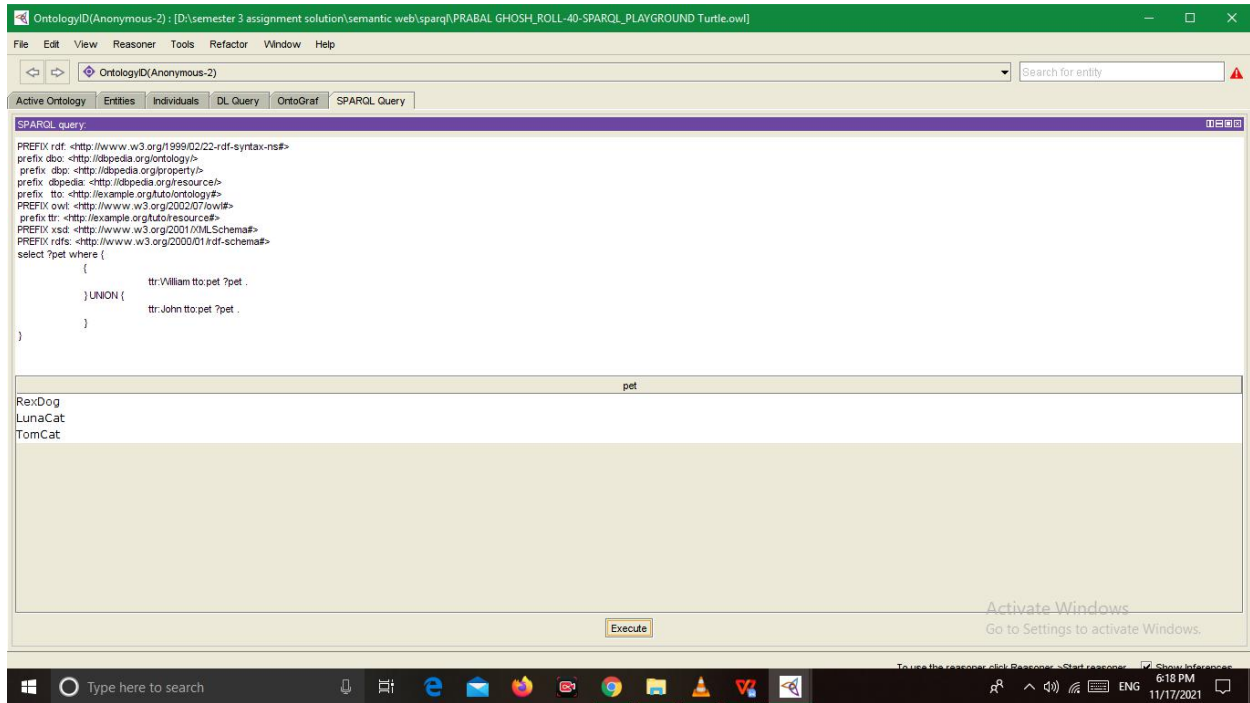
208)

```
select ( COUNT(?person) AS ?person ) where {  
  ?person rdf:type dbo:Person .  
  filter not exists {?person tto:pet ?pet } .  
}
```



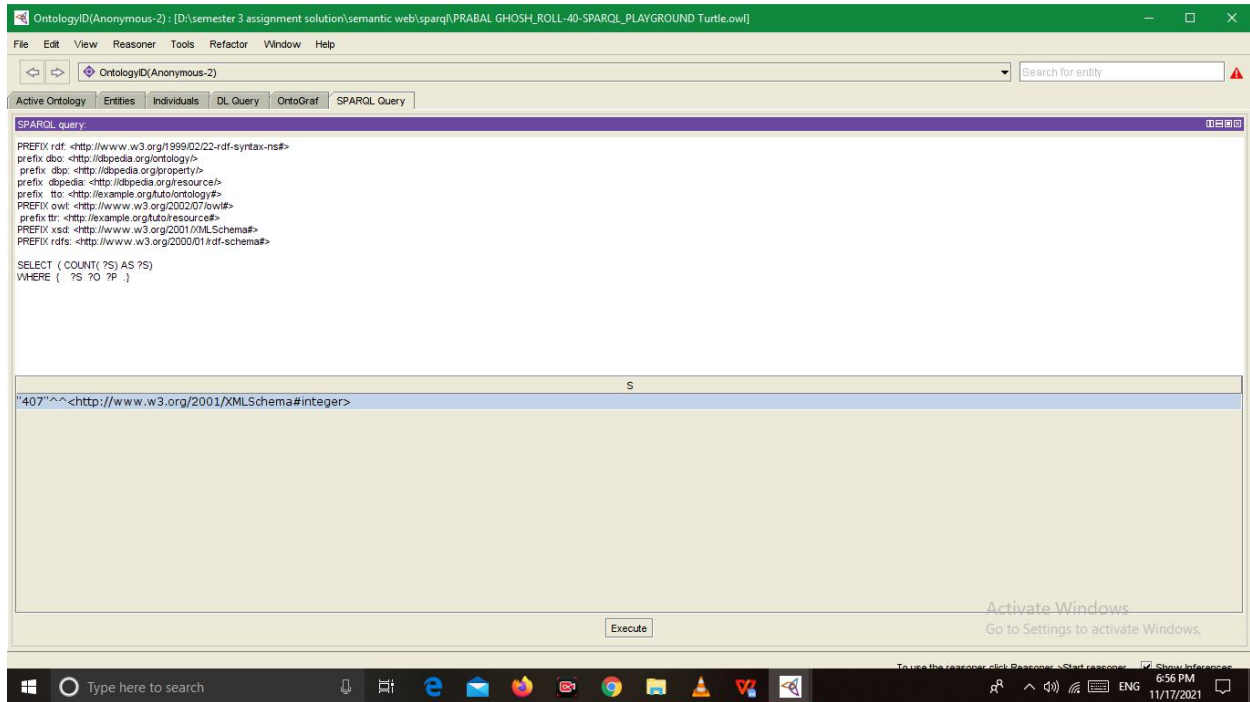
209)

```
select ?pet where {  
  {  
    ttr:William tto:pet ?pet .  
  } UNION {  
    ttr:John tto:pet ?pet .  
  }  
}
```



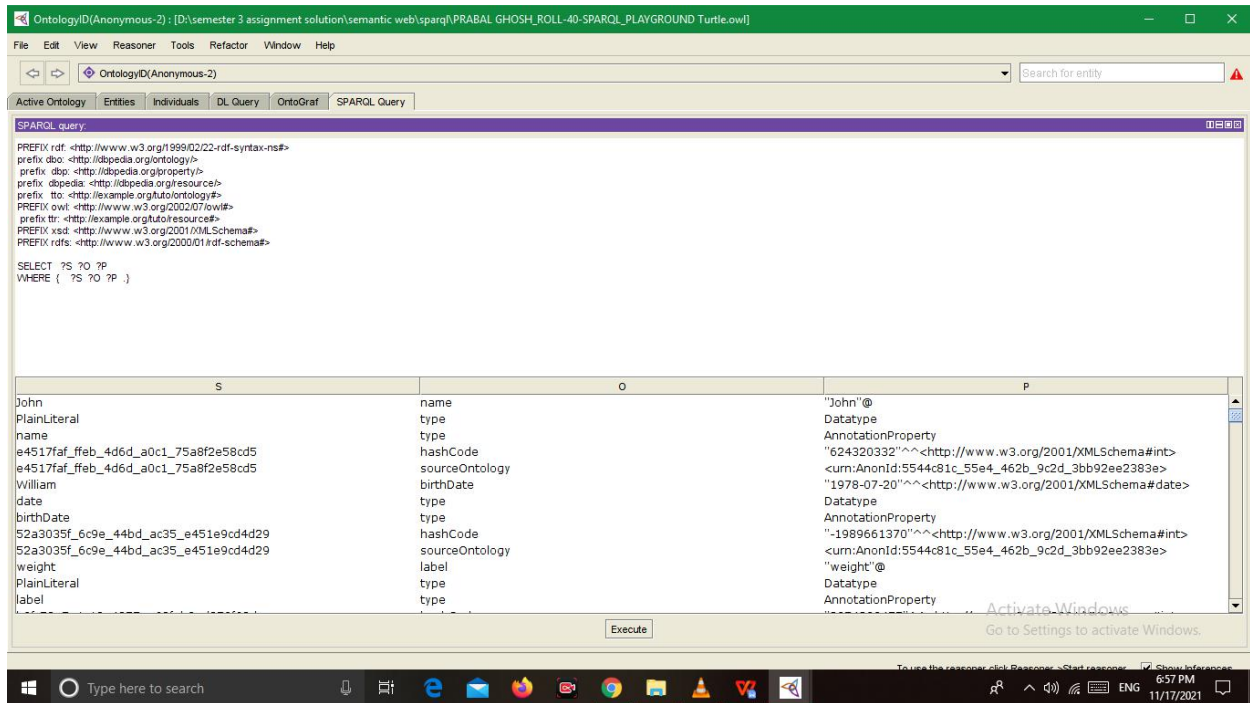
2) Write a SPARQL statement to find out: How many triplets are contained in the dataset? Take a screenshot of the SPARQL code box and the output and paste in the word file.

```
SELECT ( COUNT( ?S) AS ?S)
WHERE { ?S ?O ?P .}
```



triplets are contained in the  
Dataset -----

```
SELECT ?S ?O ?P
WHERE { ?S ?O ?P .}
```



3.

Write a SPARQL statement to find out: How many instances of a “Animal” class are declared? Take a screenshot of the SPARQL code box and the output and paste below.

```

select ?x
where{
  {?x rdf:type tto:Cat .
    }
  UNION
  { ?x rdf:type tto:Monkey.
    }
  UNION {?x rdf:type tto:Dog.
    } }

```

OntologyID(Anonymous-2) : [D:\semester 3 assignment solution\semantic web\sparql\PRABAL GHOSH\_ROLL-40-SPARQL\_PLAYGROUND Turtle.owl]

File Edit View Reasoner Tools Refactor Window Help

OntologyID(Anonymous-2)

Active Ontology Entities Individuals DL Query OntoGraf SPARQL Query

SPARQL query:

PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>  
prefix dbo: <http://dbpedia.org/ontology/>  
prefix dbp: <http://dbpedia.org/property/>  
prefix dbpedia: <http://dbpedia.org/resource/>  
prefix tto: <http://example.org/tuto/ontology#>  
PREFIX owl: <http://www.w3.org/2002/07/owl#>  
prefix ttr: <http://example.org/tuto/resource#>  
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>  
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>  
select ?x  
where {  
(?x rdfs:type tto:Cat  
UNION  
( ?x rdfs:type tto:Monkey  
UNION (?x rdfs:type tto:Dog  
)

x

LunaCat  
TomCat  
SnuffMonkey  
RexDog