Summary of Syntax Validity of SPARQL Queries

Concept	Code	Valid Syntax	Parser Output

rdfs:Resource	PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
	ASK {
	  SELECT (count(*) as ?count)
	  WHERE {
	  ?s a rdfs:Resource .
	  }
	  GROUP BY ?s
	  HAVING (COUNT(?s) = 1)
	}
		True	None

rdfs:Literal	PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
	SELECT (COUNT(?literal) AS ?literal_count)
	WHERE {
	  ?literal a rdfs:Literal .
	}
		True	None

rdfs:Class	PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
	PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
	
	SELECT (COUNT(*) as ?count)
	WHERE {
	  ?class rdf:type rdfs:Class .
	}
	GROUP BY ?class
	HAVING (COUNT(*) = 1)
		True	None

rdfs:Datatype	PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
	SELECT (COUNT(?datatype) as ?datatypeCount)
	WHERE {
	  ?datatype a rdfs:Datatype .
	}
	HAVING (COUNT(?datatype) = 1)
		True	None

rdfs:Container	PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
	SELECT (COUNT(?container) AS ?containerCount)
	WHERE {
	  ?container rdf:type rdfs:Container .
	}
		False	QueryBadFormed: A bad request has been sent to the endpoint: probably the SPARQL query is badly formed.
			
			b'Error 400: Parse error: \
			nPREFIX rdfs:
			<http://www.w3.org/2000/01/rdf-schema#>\nSELECT (COUNT(?container) AS ?containerCount) \
			nWHERE {\n ?container rdf:type rdfs:Container .\
			n}\n\rLine 4, column 14: Unresolved prefixed name: rdf:type\n'

rdfs:label	PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
	SELECT DISTINCT ?s
	WHERE {
	  ?s rdfs:label ?label.
	  FILTER NOT EXISTS {
	  ?s rdfs:label ?otherLabel.
	  FILTER (?otherLabel != ?label)
	  }
	}
		True	None

rdfs:comment	PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
	
	SELECT ?resource
	WHERE {
	  ?resource rdfs:comment ?comment .
	  FILTER NOT EXISTS {
	  ?resource rdfs:comment ?otherComment .
	  FILTER (?otherComment != ?comment)
	  }
	}
		True	None

rdfs:domain	PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#> PREFIX owl: <http://www.w3.org/2002/07/owl#> SELECT ?property (COUNT(?domain) AS ?domainCount) WHERE {	True	None

	?property rdf:type owl:ObjectProperty . ?property rdfs:domain ?domain . } GROUP BY ?property HAVING (COUNT(?domain) = 1)		

rdfs:range	PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
	SELECT (count(*) as ?count)
	WHERE {
	?property rdfs:range ?range .
	}
	GROUP BY ?property
	HAVING (count(*) = 1)
		True	None

rdfs:subClassOf	PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
	PREFIX owl: <http://www.w3.org/2002/07/owl#>
	PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
	
	SELECT ?class (COUNT(?parent) AS ?count)
	WHERE {
	?class rdfs:subClassOf ?parent .
	}
	GROUP BY ?class
	HAVING (COUNT(?parent) = 1)
		True	None

skos:Concept	PREFIX skos: <http://www.w3.org/2004/02/skos/core#>
	
	ASK {
	?c a skos:Concept .
	FILTER NOT EXISTS {
	?c a skos:Concept .
	FILTER (?c != ?c2 || ?c2 != ?c)
	}
	}
		True	None

skos:Collection	PREFIX skos: <http://www.w3.org/2004/02/skos/core#>
	
	SELECT (COUNT(*) AS ?count)
	WHERE {
	?s a skos:Collection .
	}
	HAVING (COUNT(*) = 1)
		True	None

skos:ConceptScheme	PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
	PREFIX skos: <http://www.w3.org/2004/02/skos/core#>
	
	ASK {
	{
	SELECT (COUNT(?scheme) AS ?count)
	WHERE {
	?scheme rdf:type skos:ConceptScheme .
	}
	}
	FILTER(?count = 1)
	}
		True	None

skos:OrderedCollection	PREFIX skos: <http://www.w3.org/2004/02/skos/core#>
	
	SELECT (COUNT(?oc) as ?ocCount)
	WHERE {
	?oc a skos:OrderedCollection .
	}
	HAVING (COUNT(?oc) = 1)
		True	None

skos:CollectableProperty	PREFIX skos: <http://www.w3.org/2004/02/skos/core#>
	
	SELECT (COUNT(?cp) AS ?numCollectableProperty)
	WHERE {
	GRAPH <mygraph> {
	?cp a skos:CollectableProperty .
	}
	}
	HAVING (?numCollectableProperty = 1)
		True	None

skos:topConceptOf	PREFIX skos: <http://www.w3.org/2004/02/skos/core#>
	
	SELECT ?concept (COUNT(?topConcept) AS ?count)
	WHERE {
	?concept skos:topConceptOf ?topConcept .
	}
	GROUP BY ?concept
	HAVING (COUNT(?topConcept) = 1)
		True	None

skos:semanticRelation	PREFIX skos: <http://www.w3.org/2004/02/skos/core#> SELECT ?x WHERE { ?x skos:semanticRelation ?y .	True	None

	FILTER NOT EXISTS {
	?x skos:semanticRelation ?z .
	FILTER (?z != ?y)
	}
	}		

skos:memberList	SPARQL
	PREFIX skos: <http://www.w3.org/2004/02/skos/core#>
	
	ASK {
	?c skos:memberList ?list .
	NOT EXISTS {
	?c skos:memberList ?otherList .
	FILTER (?list != ?otherList)
	}
	}
		False	QueryBadFormed: A bad request has been sent to the endpoint: probably the SPARQL query is badly formed.
			
			b'Error 400: Parse error: \nSPARQL\nPREFIX skos: <http://www.w3.org/2004/02/skos/core#>\n\nASK {\n ?c skos:memberList ?list .\n NOT EXISTS { \n ?c skos:memberList ?otherList .\n FILTER (?list != ?otherList)\n }\n}\n\rLexical error at line 1, column 7. Encountered: "\\n" (10), after : "SPARQL"\n'

skos:member	PREFIX skos: <http://www.w3.org/2004/02/skos/core#>
	
	SELECT ?concept (COUNT(?member) AS ?count)
	WHERE {
	?concept skos:member ?member .
	}
	GROUP BY ?concept
	HAVING (COUNT(?member) = 1)
		True	None

skos:hasTopConcept	PREFIX skos: <http://www.w3.org/2004/02/skos/core#>
	
	SELECT (COUNT(?topConcept) AS ?count)
	WHERE {
	?scheme skos:hasTopConcept ?topConcept .
	}
	GROUP BY ?scheme
	HAVING (COUNT(?topConcept) = 1)
		True	None

foaf:Agent	PREFIX foaf: <http://xmlns.com/foaf/0.1/>
	
	ASK {
	?agent a foaf:Agent .
	FILTER NOT EXISTS {
	?agent a [a foaf:Agent ; !sameTerm(?agent)] .
	}
	}
		False	QueryBadFormed: A bad request has been sent to the endpoint: probably the SPARQL query is badly formed.
			
			b'Error 400: Parse error: \nPREFIX foaf: <http://xmlns.com/foaf/0.1/>\n\nASK {\n ?agent a foaf:Agent .\n FILTER NOT EXISTS {\n ?agent a [a foaf:Agent ; !sameTerm(?agent)] .\n }\n}\n\rEncountered "
			"sameTerm" "sameTerm
			"" at line 6, column 32.\nWas expecting one of:\n <IRIref> ...\n <PNAME_NS> ...\n <PNAME_LN> ...\n "a" ...\n "(" ...\n "^" ...\n\n'

foaf:Person	PREFIX foaf: <http://xmlns.com/foaf/0.1/>
	SELECT (COUNT(?person) AS ?count)
	WHERE {
	?person rdf:type foaf:Person .
	}
		False	QueryBadFormed: A bad request has been sent to the endpoint: probably the SPARQL query is badly formed.

			b'Error 400: Parse error: \ nPREFIX foaf: <http://xmlns.com/foaf/0.1/ >\nSELECT (COUNT(? person) AS ?count)\ nWHERE {\n ?person rdf:type foaf:Person .\n}\n\ rLine 4, column 11: Unresolved prefixed name: rdf:type\n'

foaf:Document	PREFIX foaf: <http://xmlns.com/foaf/0.1/>
	
	SELECT (COUNT(*) as ?count)
	WHERE {
	?document a foaf:Document .
	}
	HAVING (?count = 1)
		True	None

foaf:Group	PREFIX foaf: <http://xmlns.com/foaf/0.1/>
	
	ASK {
	SELECT (COUNT(?group) AS ?count)
	WHERE {
	?group rdf:type foaf:Group .
	}
	GROUP BY ?group
	HAVING (COUNT(?group) = 1)
	}
		False	QueryBadFormed: A bad request has been sent to the endpoint: probably the SPARQL query is badly formed.
			
			b'Error 400: Parse error: \ nPREFIX foaf: <http://xmlns.com/foaf/0.1/ >\n\nASK {\n SELECT (COUNT(?group) AS ? count)\n WHERE {\n ? group rdf:type foaf:Group .\n }\n GROUP BY ?group\n HAVING (COUNT(?group) = 1)\n}\n\rLine 6, column 12: Unresolved prefixed name: rdf:type\n'

foaf:OnlineAccount	PREFIX foaf: <http://xmlns.com/foaf/0.1/>
	PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
	ASK {
	?person foaf:onlineAccount ?account1 .
	{ SELECT (COUNT(?account2) AS ?count)
	WHERE { ?person foaf:onlineAccount ?account2 . }
	}
	FILTER (?count = 1)
	}
		True	None

foaf:name	PREFIX foaf: <http://xmlns.com/foaf/0.1/>
	SELECT ?s WHERE {
	?s foaf:name ?name .
	FILTER NOT EXISTS {
	?s foaf:name ?otherName .
	FILTER (?name != ?otherName)
	}
	}
		True	None

foaf:knows	PREFIX foaf: <http://xmlns.com/foaf/0.1/>
	SELECT ?person
	WHERE {
	?person foaf:knows ?friend .
	FILTER NOT EXISTS {
	?person foaf:knows ?otherFriend .
	FILTER (?friend != ?otherFriend)
	}
	}
		True	None

foaf:based_near	PREFIX foaf: <http://xmlns.com/foaf/0.1/>
	
	SELECT (COUNT(*) AS ?count)
	WHERE {
	?person foaf:based_near ?location .
	}
	GROUP BY ?person
	HAVING (COUNT(*) = 1)
		True	None

foaf:accountName	PREFIX foaf: <http://xmlns.com/foaf/0.1/> ASK { ?person foaf:accountName ?name1 .	True	None

	?person foaf:accountName ?name2 . FILTER (?name1 != ?name2) }		

foaf:holdsAccount	PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
	PREFIX foaf: <http://xmlns.com/foaf/0.1/>
	
	ASK {
	?person foaf:holdsAccount ?account1 .
	?person foaf:holdsAccount ?account2 .
	FILTER (?account1 != ?account2)
	}
		True	None

prov:Agent	PREFIX prov: <http://www.w3.org/ns/prov#>
	
	SELECT (COUNT(?agent) AS ?count)
	WHERE {
	?agent a prov:Agent .
	}
		True	None

prov:Activity	PREFIX prov: <http://www.w3.org/ns/prov#>
	
	SELECT (COUNT(?activity) AS ?activityCount)
	WHERE {
	?activity a prov:Activity .
	}
	GROUP BY ?activity
	HAVING (COUNT(?activity) = 1)
		True	None

prov:Entity	PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
	PREFIX prov: <http://www.w3.org/ns/prov#>
	
	SELECT (COUNT(?entity) AS ?count)
	WHERE {
	?entity rdf:type prov:Entity .
	}
	HAVING (?count = 1)
		True	None

prov:Collection	PREFIX prov: <http://www.w3.org/ns/prov#>
	
	ASK {
	{
	SELECT (COUNT(*) AS ?count)
	WHERE {
	?s a prov:Collection .
	}
	}
	FILTER (?count = 1)
	}
		True	None

prov:Location	PREFIX prov: <http://www.w3.org/ns/prov#>
	SELECT ?s WHERE {
	?s prov:Location ?o1 .
	FILTER NOT EXISTS {
	?s prov:Location ?o2 .
	FILTER (?o1 != ?o2)
	}
	}
		True	None

prov:wasGeneratedBy	PREFIX prov: <http://www.w3.org/ns/prov#>
	
	SELECT ?subject
	WHERE {
	?subject prov:wasGeneratedBy ?value .
	FILTER NOT EXISTS {
	?subject prov:wasGeneratedBy ?otherValue .
	FILTER (?value != ?otherValue)
	}
	}
		True	None

prov:generatedAtTime	PREFIX prov: <http://www.w3.org/ns/prov#>
	PREFIX ex: <http://example.com/>
	
	SELECT DISTINCT ?s WHERE {
	?s prov:generatedAtTime ?t .
	FILTER NOT EXISTS {
	?s prov:generatedAtTime ?t2 .
	FILTER (?t != ?t2)
	}
	}
		True	None

prov:atLocation	PREFIX prov: <http://www.w3.org/ns/prov#>
	SELECT ?instance
	WHERE {
	?instance prov:atLocation ?location1 .
	FILTER NOT EXISTS {
	?instance prov:atLocation ?location2 FILTER (?
	location1 != ?location2)
		True	None

	} }		

prov:hadMember	PREFIX prov: <http://www.w3.org/ns/prov#>
	
	SELECT ?group (COUNT(?member) AS ?count)
	WHERE {
	?group prov:hadMember ?member .
	}
	GROUP BY ?group
	HAVING (COUNT(?member) = 1)
		True	None

prov:used	PREFIX prov: <http://www.w3.org/ns/prov#>
	
	SELECT ?entity
	WHERE {
	?activity prov:used ?entity .
	}
	GROUP BY ?activity
	HAVING (COUNT(?entity) = 1)
		False	QueryBadFormed: A bad request has been sent to the endpoint: probably the SPARQL query is badly formed.
			
			b'Error 400: Parse error: \nPREFIX prov: <http://www.w3.org/ns/prov#>\n\nSELECT ?entity\nWHERE {\n ?activity prov:used ?entity .\n}\nGROUP BY ?activity\nHAVING (COUNT(?entity) = 1)\n\rNon-group key variable in SELECT: ?entity\n'

rdf:List	PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
	
	SELECT (COUNT(*) as ?count)
	WHERE {
	?list a rdf:List .
	}
	HAVING (COUNT(*) = 1)
		True	None

rdf:Bag	PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
	
	SELECT (COUNT(?bag) AS ?count)
	WHERE {
	?bag rdf:type rdf:Bag .
	}
		True	None

rdf:Statement	PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
	SELECT (COUNT(*) as ?count)
	WHERE {
	?subject ?predicate ?object .
	FILTER(isURI(?subject) && isURI(?predicate) && isURI(?object))
	FILTER(!isBlank(?subject) && !isBlank(?predicate) && !isBlank(?object))
	FILTER(?predicate = rdf:subject || ?predicate = rdf:predicate || ?predicate = rdf:object)
	}
	GROUP BY ?predicate
	HAVING (COUNT(*) = 1 && ?predicate = rdf:Statement)
		True	None

rdf:Property	PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
	
	SELECT (COUNT(*) as ?count) WHERE {
	?s rdf:type rdf:Property.
	}
	
	HAVING(?count = 1)
		True	None

rdf:HTML	PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
	PREFIX owl: <http://www.w3.org/2002/07/owl#>
	
	ASK {
	?s rdf:type owl:Class .
	?s owl:equivalentClass ?c .
	?c owl:onProperty rdf:HTML .
	?c owl:cardinality '1'^^xsd:nonNegativeInteger .
	}
		False	QueryBadFormed: A bad request has been sent to the endpoint: probably the SPARQL query is badly formed.
			
			b"Error 400: Parse error: \nPREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>\nPREFIX owl: <http://www.w3.org/2002/07/owl#>\n\nASK {\n ?s

			rdf:type owl:Class .\n ?s owl:equivalentClass ?c .\n ?c owl:onProperty rdf:HTML .\n ?c owl:cardinality '1'^^xsd:nonNegativeInteger .\n}\n\rLine 8, column 27: Unresolved prefixed name: xsd:nonNegativeInteger\n"

rdf:first	PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
	PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
	
	ASK {
	  ?s rdf:first ?first .
	  FILTER NOT EXISTS { ?s rdf:first ?other . FILTER (?first != ?other) }
	}
		True	None

rdf:type	PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
	SELECT (COUNT(?type) AS ?count)
	WHERE {
	  ?s rdf:type ?type .
	}
	HAVING (COUNT(?type) = 1)
		True	None

rdf:subject	PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
	PREFIX example: <http://example.com/>
	
	SELECT ?s (COUNT(?s) AS ?count)
	WHERE {
	  ?s rdf:subject example:exampleConcept .
	}
	GROUP BY ?s
	HAVING (COUNT(?s) = 1)
		True	None

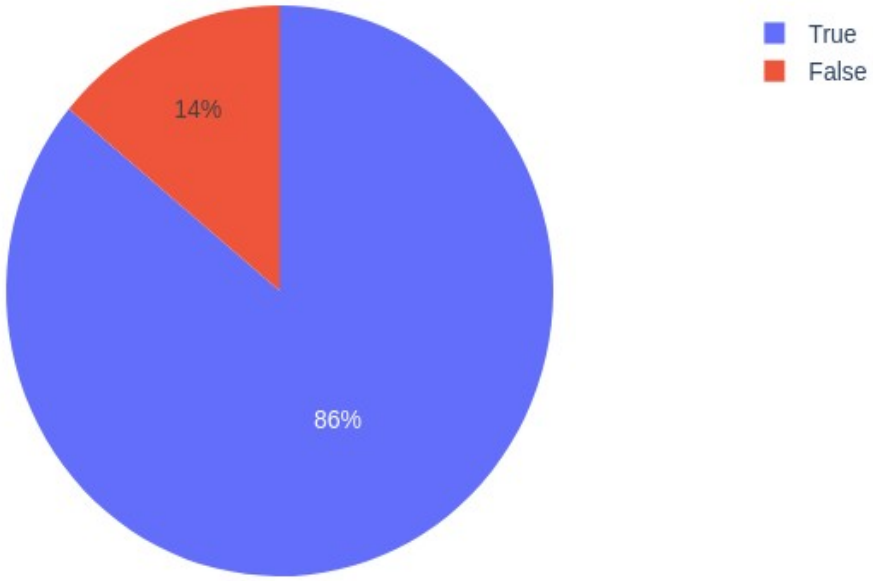
rdf:value	PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
	PREFIX owl: <http://www.w3.org/2002/07/owl#>
	
	SELECT ?subject
	WHERE {
	  ?subject rdf:value ?value .
	  FILTER NOT EXISTS {
	  ?subject rdf:value ?otherValue .
	  FILTER (?value != ?otherValue)
	  }
	}
		True	None

rdf:rest	PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
	PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
	
	SELECT (COUNT(?rest) AS ?count)
	WHERE {
	  ?s rdf:rest ?rest .
	}
		True	None

The table below shows the occurrences of each category for the tested ontologies.

Ontology Prefix	True Count	False Count	No Response Count
rdfs	9	1	0
skos	9	1	0
foaf	7	3	0
prov	9	1	0
rdf	9	1	0

Figure 1: Occurences of each category of response ('True', 'False', 'None')



Code Category	True Count	False Count	No Response Count
Instance Graphs	43	7	0
Shacl Shapes	46	4	0
Sparql Queries	43	7	0