

Lite OWL Entailment rules

Apply the following rules recursively to generate all legal RDF triples (i.e. until none of the rules apply or the graph is unchanged.) Here, X, Y and Z stand for any uriref, bNode or literal, P, P1, P2, P3 for any uriref, and A,B,C and D for any uriref or bNode (but not a literal). These entailment rules are based on entailment rules given in RDF Model Theory. The semantics for these rules can be defined as model theoretic semantic for RDF and DAML+OIL. To understand, the examples are given for some entailment rules.

	If E contains:	then add:
R1	C rdf:type owl:Class	C rdfs:subClassOf Thing
R2	X rdf:type C C rdfs:subClassOf D	X rdf:type D
	Alex rdf:type Men Men owl:subClassOf Person	Alex rdf:type Person
R3	C rdfs:subClassOf B B rdfs:subClassOf A	C rdfs:subClassOf A
R4	P1 rdfs:subPropertyOf P2 P2 rdfs:subPropertyOf p3	P1 rdfs:subPropertyOf p3
R5	X P1 Y P1 rdfs:subPropertOf P2	X P2 Y
	Alex fatherOf Merry FatherOf rdfs:subPropertyOf parentOf	Alex parentOf Merry
R6	P rdfs:domain C X P Y	X rdf:type C
	fatherOf rdfs:domain Person Alex fatherOf Merry	Alex rdf:type Person
R7	P rdfs:range C X P Y	Y rdf:type C
	fatherOf rdfs:range Person Alex fatherOf Merry	Merry rdf:type Person
R8	X rdf:type owl:Indivisual	X rdf:type Thing
R9	C1 owl:sameClassAs C2 X rdf:type C1	X rdf:type C2
	Person owl:sameClassAs Human Alex rdf:type Person	Alex rdf:type Human

R10	C1 rdfs:subClassOf C2 C1 owl:sameClassAs D	D rdfs:subClassOf C2
	Men rdfs:subClassOf Human Men owl:sameClassAs Male	Male rdfs:subClassOf Human
R11	C1 rdfs:subClassOf C2 C2 owl:sameClassAs D	C1 rdfs:subClassOf D
	Men rdfs:subClassOf Human Human owl:sameClassAs Person	Men rdfs:subClassOf Person
R12	C1 owl:sameClassAs C2	C2 owl:sameClassAs C1
R13	C1 owl:sameClassAs C2 C2 owl:sameClassAs C3	C1 owl:sameClassAs C3
R14	P1 owl:samePropertyAs P2	P2 owl:samePropertyAs P1
R15	P1 owl:samePropertyAs P2 P2 owl:samePropertyAs P3	P1 owl:samePropertyAs P3
R16	X P1 Y P1 owl:samePropertyAs P2	X P2 Y
	Alex Sex Male Sex owl:sameClassAs Gender	Alex Gender Male
R17	P2 owl:samePropertyAs P1 P2 rdfs:subPropertyOf P3	P1 rdfs:subPropertyOf P3
	Sex owl:samePropertyAs Gender Sex rdfs:subPropertyOf PersonalInfo	Gender rdfs:subPropertyOf PersonalInfo
R18	P1 owl:samePropertyAs P3 P2 rdfs:subPropertyOf P3	P2 rdfs:subPropertyOf P1
	CharacterInfo owl:samePropertyAs PersonalInfo Gender rdfs:subPropertyOf PersonalInfo	Gender rdfs:subPropertyOf CharacterInfo
R19	X owl:sameIndividualAs Y	Y owl:sameIndividualAs X
R20	X owl:sameIndividualAs Y Y owl:sameIndividualAs Z	X owl:sameIndividualAs Z

R21	X rdf:type C X owl:sameIndividualAs Y	Y rdf:type C
R22	X P V X owl:sameIndividualAs Y	Y P V
R23	X owl:sameIndividualAs Y Z P X	Z P Y
R24	X owl:differentIndividualFrom y	Y owl:differentIndividualFrom X
R25	P1 owl:inverseOf P2 A P1 B	B P2 A
R26	P1 owl:inverseOf P2 P1 rdfs:domain C	P2 rdfs:range C
	hasHome owl:inverseOf homeOf hasHome rdfs:domain Person	homeOf rdfs:range Person
R27	P1 owl:inverseOf P2 P1 rdfs:range C	P2 rdfs:domain C
	homeOf owl:inverseOf hasHome homeOf rdfs:range Person	hasHome rdfs:domain Person
R28	P rdf:type owl:symmetricProperty X P Y	Y P X
R29	P rdf:type owl:symmetricProperty P rdfs:domain C P rdfs:range D	C owl:sameClassAs D
R30	P rdf:type owl:functionalProperty X P Y1 X P Y2	Y1 owl:sameIndividualAs Y2
R31	P rdf:type owl:transitivProperty X P Y Y P Z	X P Z

R32	P rdf:type owl:transitiveProperty P rdfs:domain C P rdfs:range D	C owl:sameClassAs D
R33	P rdf:type owl:inverseFunctionalProperty Q owl:inverseOf P	Q rdf:type owl:functionalProperty
	hasSSNumber rdf:type owl:inverseFunctionalProperty isTheSSNFor owl:invrseOf hasSSNumber	IsTheSSNumber rdf:type owl:FunctionalProperty
R34	X1 P Y X2 P Y P rdf:type owl:inverseFunctionalProperty	X1 owl:sameIndividualAs X2

More rules???