Supplementary Material

Table 1: Example of some common OWL 2EL constructs written using the Manchester syntax alonside an example of implementation using Brain.

Name	Description Logic	OWL (Manchester Syntax)	Brain implementation
Concepts			
atomic concept	A	Class: A	brain.addClass(”A”);
intersection	$C \sqcap D$	C and D	brain.equivalentClasses(”A”,”C and D”);
top concept	$\top$	owl:Thing	brain.getOWLClass(”Thing”);
bottom concept	$\bot$	owl:Nothing	brain.getUnsatisfiableClasses();
union	$C \sqcup D$	C or D	Not supported (Not in EL profile)
complement	$\neg C$	not C	Not supported (Not in EL profile
universal restriction	$\forall R.C$	P only C	Not supported (Not in EL profile)
Roles			
atomic role	R	ObjectProperty: P	brain.addObjectProperty(”P”);
Individuals			
individual name	a	Individual: a	Not supported yet
Axioms			
TBox (terminological axioms)			
concept inclusion	$C \sqsubseteq D$	C SubClassOf: D	brain.subClassOf(”C”, ”D”);
concept equivalence	$C \equiv D$	C EquivalentTo: D	brain.equivalentClasses(”C”, ”D”);
concept disjointness	$C \sqcap D \sqsubseteq \bot$	C DisjointWith: D	brain.disjointClasses(”C”, ”D”);
RBox (relational axioms)			
role inclusion	$R \sqsubseteq S$	R SubPropertyOf: S	brain.subPropertyOf(”R”, ”S”);
role equivalence	$R \equiv S$	R EquivalentTo: S	brain.equivalentProperties(”R”, ”S”);
complex role inclusion	$R1 \circ R2 \sqsubseteq S$	S SubPropertyChain: R1 o R2	brain.chain(”R1 o R2”, ”S”);
role transitivity	$R \circ R \sqsubseteq R$	Characteristics: Transitive	brain.transitive(”R”);
ABox (assertional axioms)			
concept assertion	$C(a)$	a Types: C	Not supported yet
role assertion	$R(a, b)$	a Facts: R b	Not supported yet
individual equality	$a = b$	a SameAs: b	Not supported yet
individual inequality	$a \neq b$	a DifferentFrom: b	Not supported yet

Table 2: Comparison SQL vs OWL

	Relational Model (SQL)	**OWL (via Brain)**
Query: regulators of ’blood coagulation’	SELECT DISTINCT * FROM term INNER JOIN graph_path AS g ON (term.id=g.term1_id AND g.relationship_type_id=21) INNER JOIN term AS r ON (r.id=g.term2_id) WHERE term.name=’blood coagulation’ AND distance <> 0 ;	brain.getSubClasses(”RO_0002211 some GO_0007596”, false);
pouyet	foo	bar