Description logics and OWL

***Describe the notions of T-box, A-box, knowledge base, subsumption, satisfiability.***

T-box concept and role taxonomies, internal knowledge

Terminological axioms, an equality whose left-hand side is an atomic concept is a definition

A finite set of definitions T is a Tbox (or terminology) if no symbolic name is defined more than once.

C = D (R = S)

C ⊆ D (R ⊆ S)

(disjoint C D)

a-box individuals, extensional knowledge

assertions about individuals: C(a), R(a,b)

Knowledge base (KB): a knowledge base is a tuple<T,A> where T is a Tbox and A is an Abox

***Model a given a scenario using description logics.***

***Give the semantics for a given description logic construct.***

***Describe the difference between open-world assumption and closed-world assumption.***

Databases: closed world reasoning

database instance represents one interpretation

absence of information interpreted as negative information“complete information”

query evaluation is finite model checking

DL: open world reasoning

Abox represents many interpretations (its models)

absence of information is lack of information“incomplete information”

query evaluation is logical reasoning

***Describe the different reasoning services.***

Reduction to subsumption

Reduction to unsatisfiability

***Given 2 concepts, prove that one concept subsumes the other (or not) using a tableau algorithm.***

***Know some reasons for intractibility, undecidability of description logics.***

***Know the difference between the variants of OWL.***