

- From the implementation perspective, either description logic reasoners or deductive rule systems can be used. Thus it is possible to model using one framework, such as OWL, and to use a reasoning engine from the other framework, such as rules. This feature provides extra flexibility and ensures interoperability with a variety of tools.

In the remainder of this section we show how many constructs of RDF Schema and OWL2 RL can be expressed in Horn logic, and also discuss some constructs that in general cannot be expressed. This discussion focuses on the basic constructs highlighting the connections and differences between rules and description logics. For more information on OWL2 RL constructs and their relation to logic, please refer to section 5.6.4 and the suggested reading at the end of this chapter.

We begin with RDF and RDF Schema. A triple of the form (a, P, b) in RDF can be expressed as a fact

$$P(a, b)$$

Similarly, an instance declaration of the form $type(a, C)$, stating that a is an instance of class C , can be expressed as

$$C(a)$$

The fact that C is a subclass of D is easily expressed as

$$C(X) \rightarrow D(X)$$

and similarly for subproperty. Finally, domain and range restrictions can also be expressed in Horn logic. For example, the following rule states that C is the domain of property P :

$$P(X, Y) \rightarrow C(X)$$

Now we turn to OWL. *equivalentClass*(C, D) can be expressed by the pair of rules