$$add(X, s^8(0), Z) \rightarrow$$

Possible ground witnesses are determined by the substitutions

$$\{X/0, Z/s^8(0)\}$$

$$\{X/s(0), Z/s^9(0)\}$$

$$\{X/s(s(0)), Z/s^{10}(0)\}$$

$$\ldots$$

However, the *parameterized witness* $Z = s^8(X)$ is the most general way to witness the existential query

$$\exists X \exists Z \; add(X, s^8(0), Z)$$

since it represents the fact that $add(X, s^8(0), Z)$ is true whenever the value of Z equals the value of X plus 8.

The computation of most general witnesses is the primary aim of a proof system, called SLD resolution, the presentation of which is beyond the scope of this book.

5.5 OWL2 RL: Description Logic Meets Rules

As stated at the beginning of this chapter, Horn logic and description logics are orthogonal. In attempting to achieve their integration into one framework, the simplest approach is to consider the intersection of both logics, that is, the part of one language that can be translated in a semantics-preserving way to the other language, and vice versa. In essence, OWL2 RL seeks to capture this fragment of OWL. The advantages of this approach include:

- From the modeler's perspective, there is freedom to use either OWL or rules (and associated tools and methodologies) for modeling purposes, depending on the modeler's experience and preferences.