

Enumerating universes of various sizes (2.1.19, follows page 73)

Our goal is to come up with a program that defines a predicate u such that the various answer sets of the program have extents of different sizes for u . In this we will use a constant a , a function symbol f , and an auxiliary predicate u' .

$$\begin{aligned} u(a) &\leftarrow. \\ u(f(X)) &\leftarrow u(X), \mathbf{not} \ u'(f(X)). \\ u'(f(X)) &\leftarrow \mathbf{not} \ u(f(X)). \end{aligned}$$

The answer sets of the above program are:

$$\begin{aligned} &\{u(a), u'(f(a)), u'(f(f(a))), u'(f(f(f(a)))) \dots\} \\ &\{u(a), u(f(a)), u'(f(f(a))), u'(f(f(f(a)))) \dots\} \\ &\{u(a), u(f(a)), u(f(f(a))), u'(f(f(f(a)))) \dots\} \\ &\vdots \end{aligned}$$

Exercise: Use the above program to give a different formulation of Example 165 (page 473).

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