

## Embedding well-founded characterizations of logic programs in AnsProlog (Chs 3,9)

The questions we would like to answer are as follows: Consider a program  $\Pi$  in AnsProlog syntax.

1. Does there exist a translation  $t_1$  such for all atoms  $a$ 
  - $a$  is true w.r.t. well-founded semantics of  $\Pi$  iff  $a$  is true in all answer sets of  $t_1(\Pi)$ .
  - $a$  is false w.r.t. well-founded semantics of  $\Pi$  iff  $a$  is false in all answer sets of  $t_1(\Pi)$ .
2. Does there exist a translation  $t_2$  such for all atoms  $a$ 
  - $a$  is true w.r.t. well-founded semantics of  $\Pi$  iff  $a$  is true in the unique answer set of  $t_2(\Pi)$ .
  - $a$  is false w.r.t. well-founded semantics of  $\Pi$  iff  $a$  is false in the unique answer set of  $t_2(\Pi)$ .

*A Solution to Question 1.* For each rule of the form

$a \leftarrow b_1, \dots, b_l, \mathbf{not} c_1, \dots, c_n.$

in  $\Pi$ , add the following rules to the translation  $t_1(\Pi)$ :

$a \leftarrow b_1, \dots, b_l, \mathbf{not} m\_c_1, \dots, m\_c_n.$

$m\_a \leftarrow m\_b_1, \dots, m\_b_l, \mathbf{not} c_1, \dots, c_n.$

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