

Foundations of Logic Programming

Prof. Michael Thielscher, Sebastian Voigt

International Master Program in Computational Logic — winter term 2008/2009

Date of Exercise: 02.02.2009

Exercise 7.1

Consider the following program P :

```

pal(List) :- rev(List, List).

rev(L1, L2) :- rev(L1, [], L2).

rev([], L, L).
rev([E|L1], L2, Sol) :- rev(L1, [E|L2], Sol).

```

- Show that P is recurrent w.r.t. some level mapping $||$.
- Is the query $?- \text{pal}([a|L]).$ bounded w.r.t. $||$ from a)? And $?- \text{rev}([a,b], L).?$
- Give the level of the bounded query $?- \text{pal}([a,b,a]), \text{rev}([a,b], [c]).$

Exercise 7.2

Consider the following program P :

```

edge(a, b).
edge(b, c).

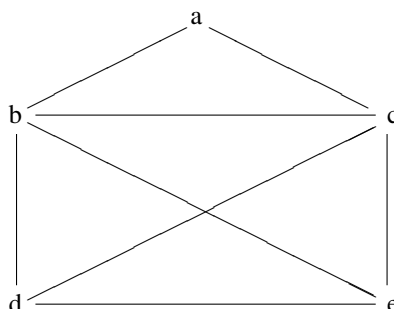
path(X, Y) :- edge(X, Y).
path(X, Y) :- edge(X, Z), path(Z, Y).

```

- Without using Lemma 6.8 and Corollary 6.9, show that P is not recurrent.
- Show that P is acceptable w.r.t. some level mapping $||$ and some interpretation I .
- Is P still acceptable when adding the fact $\text{edge}(c, a)$ to it? Verify your claim by using Corollary 6.24 on Slide VIII/33.

Exercise 7.3

The following figure should be drawn at one go without drawing a line more than once.



Write a Prolog program to solve the problem.