## Assignment 6

## Foundations of Logic Programming

January 9, 2013

- 1. Prove that for a ground term t,  $\sigma(t)$  has the same value for all valuations  $\sigma$ . (Exercise 28 in the book)
- 2. Let E, F be expressions, S, T, U sets of expressions and  $C_1, C_2, C_3$  queries. Prove that
  - (a)  $E \models E\theta$ , for all substitutions  $\theta$ .
  - (b)  $E\theta \models \exists E$ , for all substitutions  $\theta$ .
  - (c) If E and F are variants, then  $E \models F$  and  $F \models E$ .
  - (d)  $S \cup \{E\} \models E$ .
  - (e)  $S \models T$  and  $T \models U$  implies  $S \models U$ .
  - (f) If  $E \models F$ , then  $S \models E$  implies  $S \models F$ .
  - (g) If  $S \models C_1 \leftarrow C_2$ , then  $S \models C_1, C_3 \leftarrow C_2, C_3$  and  $S \models C_3, C_1 \leftarrow C_3, C_2$ , for all  $C_3$ .
  - (h) If  $S \models C_1 \leftarrow C_2$  and  $S \models C_2 \leftarrow C_3$ , then  $S \models C_1 \leftarrow C_3$ .

(Exercise 31 in the book)