Assignment 6

Foundations of Logic Programming

January 23, 2013

1. Prove that $C(P)$ is closed under substitution. Conclude that for all atoms A, $C(P) \models A$ iff $A \in C(P)$. (Exercise 33)

2. Suppose that $Q\theta$ is n-deep for some $n > 0$. Prove that for every atom A of Q, there exists a query Q_1 and substitutions γ and θ_1 such that

   - $Q \Rightarrow^{\gamma} Q_1$ the selected atom of Q,
   - $Q_1\theta_1$ is $(n-1)$-deep.

   (Exercise 34)

3. Prove **Least Term Model Thorem** : $C(P)$ is the least term model of P.

4. Let P be the program SUM defined in `Slide2`. Let Q be $sum(x, s(0), s(x))$ and θ be $\{x \mapsto s(s(y))\}$. Draw an implication tree for $Q\theta$ with respect to P, and reconstruct a successful SLD-derivation from the tree. What is the c.a.s. obtained from the derivation? What is the relation of this c.a.s. to θ?