CS590N: Logical Methods in Information Security **Spring 2008**

Homework #1

Due date & time: 10:30pm on Wednesday January 23, 2008. Email to the instructor (ninghui@cs.purdue.edu) by the due time.

Late Policy: Late homeworks will not be accepted.

Additional Instructions: Your submission should include two files, one includes all code for Problem 1, the other includes answers to Problem 2.

Problem 1 Programming Assignments (70 pts) Do not use any Prolog libraries in these programs. Put all code in one file.

1. Define a program for preorder(Tree,Pre), where Tree is a binary tree of the format we use in class, and Pre is a list that consists of all elements resulted from a preorder traversal of the tree. In our format, a tree is represented as tree(root, LeftTree, RightTree), and empty tree is denoted by void.
2. Define a program for subtree(S,T), where S is the subtree of T. Use the same tree representation as the previous question.
3. Write a predicate mysubset/2 that takes two lists (of constants) as arguments and checks, whether the first list is a subset of the second.
   Hint: Use auxiliary predicates if necessary.
4. Exercise 2.4 from Learning Prolog Now.
5. Exercise 3.2 from Learning Prolog Now.
6. Exercise 4.2 from Learning Prolog Now.
7. Exercise 4.3 from Learning Prolog Now.

Problem 2 Written Assignments (30 pts) Please put your typed answer in one file.

1. Exercise 2.2 from Learning Prolog Now. (No need to draw the search tree.)
2. Exercise 2.3 from Learning Prolog Now.
3. Exercise 3.5 from Learning Prolog Now.