CSCE 330 Spring 2006

Program 4

Assigned Tuesday 2006-04-11. Due Tuedsay 2006-04-18

Write a Prolog program that describes your family tree. Your program should include facts and some rules for family relations going back two generations (grandmother, grandfather, aunt, etc.). Test your program using the SWI-Prolog interpreter ("pl") on the Unix workstations.

Submit your work as a text file, called "family.pl," using the dropbox. Further details are given below.

(Exercise 1.3 from [Clocksin and Mellish, 1994].) Suppose someone has already written Prolog clauses that define the following relationships:

```
father(X,Y)  /* X is the father of Y */
mother(X,Y)  /* X is the mother of Y */
male(X)      /* X is male */
female(X)    /* X is female */
diff(X,Y)    /* X and Y are different */
```

Write Prolog clauses to define the following relationships:

```
is_mother(X)    /* X is a mother */
is_father(X)    /* X is a father */
is_son(X)       /* X is a son */
sister_of(X,Y)  /* X is a sister of Y */
grandpa_of(X,Y) /* X is a grandfather of Y */
grandma_of(X,Y) /* X is a grandmother of Y */
sibling(X,Y)    /* X is a sibling of Y */
aunt(X,Y)       /* X is an aunt of Y */
```

For example, we could write a rule for aunt, provided that we were supplied with (or wrote) rules for female, sibling, and parent:

```
aunt(X,Y) :- female(X), sibling(X,Z), parent(Z,Y).
```

Reference: Clocksin W.F. and C.S. Mellish. *Programming in Prolog (Fourth Edition)*. Berlin: Springer-Verlag, 1994.