Comp 333 Project #3 (25 pts) Fall 2016

Due: Nov 29

**GENERAL DIRECTIONS:** In this project you will write, compile and test an ancestor program. Use SWI-Prolog. This is an individual project. Your source code file must be called ancestors.pl.

Create a Prolog database of your family tree back to at least one of your great-grandparents. (Based only on *parent, male, female* facts. Do not add marriage facts). If your family is large, use a subset of your family tree. Draw a graph of the family tree.

* Add relationship rules for grandparent, grandfather, grandmother, mother, father, sibling (share at least one parent) , aunt (female sibling of a parent), uncle (male sibling of a parent), sister, brother, ancestor (direct ancestors) and descendant (direct descendants).
* Add a rule that finds all parents of X. Usage: findParents(X,L) puts all of the known parents of X in the list L. Do not assume that X has exactly 2 known parents. Hint: Use bagof for this rule and the following 3 rules.
* Add a rule that finds all grandparents of X. Usage: findGrandparents(X,L) puts all of the known grandparents of X in the list L. Do not assume that X has exactly 4 known grandparents.
* Add a rule that finds all of the children of X. Usage: findChildren(X, L) puts all of the known children of X in the list L.
* Add a rule that finds all of the siblings of X. Usage: findSiblings(X, L) puts all of the known children of X in the list L.
* Add a rule generationsAbove(X,Y,N) that is true when X is an ancestor of Y and N is the number of generations separating X and Y.
* Add a rule generationsBelow(X,Y,N) that is true when X is an descendant of Y and N is the number of generations separating X and Y.
* Test your Prolog program thoroughly. For testing purposes, make up family members if you are missing categories.

**Individual Hard Copy Turn in:** **(Due Nov 29 in class)**

1. Separate cover page with name, course , project # and date
2. Source code ancestors.pl with your name embedded. Source code should include all of your Prolog rules and you ancestor database.
3. Your neatly drawn ( or computer generated) family tree.
4. Output of your own test cases. Test every rule once with variables. For example, sister(mary, X).

**Electronic Copy Turn in: (Due 8am on Nov 29)**

Upload a single source file called ancestors.pl with all of your Prolog rules and your ancestor database to Moodle.. Your source file should contain as a comment your name, course, date and Project #.