CS3304   Program #3: Genealogy   Due: May 1

General Knowledge:

Your aunt or uncle is a sibling, or the spouse of a sibling, of one of your parents. Your greataunt (or greatuncle) is the sister (or brother) of one of your grandparents or the spouse of the brother (or sister) of one of your grandparents. Siblings are any two people who share the same parents.

Known Genealogical Facts:

At a recent family gathering, the oldest people present were the twins, Alice and Cletus. Alice is married to Bob, and Cletus is married to Dianna. All of Alice and Bob's children were in attendance: Edward, Florence and Grace. Grace brought her husband Keith and their child Harry. Grace's sister-in-law, Jennifer (Edward's wife), came too. Edward brought his child, Iona.

Assignment:

Write a prolog program which represents the gathering. You should make clear the meaning of any assertions (or predicates) that you use. For example, does "(parent X Y)" mean that "X is the parent of Y" or that "Y is the parent of X"?

Your are welcome to create any rules to infer relationships if you find them useful, as long as they are logically equivalent to the ones alluded to above. Use a minimal set of facts that allow you to infer all other relationship. Those facts are stated in the gathering, e.g. brother, sister, husband and father relationships. These four are all the facts that you need. You can write rule to infer sibling, wife, parent, grandfather, grandmother aunt, uncle, greataunt and greatuncle.

Your program will need some common-sense knowledge that is not given in the problem statement. For example, if X is married to Y, then Y is married to X. But, if M is the brother of N, N is not necessarily the brother of M.

Your program should be able to handle queries that involve brother, sister, sibling, father, mother, parent, grandfather, grandmother, aunt, uncle, greataunt or greatuncle. In particular, you are to ask your prolog system who is the greataunt of Harry.

I suggest that you store all facts and rules in a single file, and use the prolog "consult" primitive to instantiate the facts and rules in your execution environment. Your can then make interactive queries and modify the facts and rules within the prolog environment.

For your final run, use file redirection as explained in class. You will turn in (1) your input file that has been redirected as input, and (2) the file created with output redirected. You will upload to arthur.cs.vt.edu a tar.gz file (named LastnameFM##.tar.gz) containing the above files and a README file containing your name and student id number.