Given the relations

- father(X, Y) --- X is the father of Y,
- mother(X, Y) --- X is the mother of Y,
- female(X) --- X is female, and
- male(X) --- X is male.

you are asked to define relations for the following:

- sibling(X, Y) --- X is a sibling of Y,
- sister(X, Y) --- X is a sister of Y,
- grandson(X, Y) --- X is a grandson of Y,
- first_cousin(X, Y) --- X is a first cousin of Y, and
- descendant(X, Y) --- X is a descendant of Y.

Furthermore, you are asked to build a complete database of prolog facts from the family trees in the hand–out *Table of family relationships*. (For examples, the database will contain

- father(adam, doris).
- mother(eve, doris).
- female(doris).

and so on.) Test your definitions of the sibling, sister, grandson, first cousin, and descendant relations on the database by trying at least the following five queries:

(a) sibling(X, Y).
(b) sister(X, christopher).
(c) grandson(fred, X).
(d) first_cousin(geroge, tom).
(e) descendant(X, eve).

You must hand in

1. a hardcopy of the database from *Table of family relationships*,
2. a hardcopy of your definitions of the five relations, and
3. a transcript of a Prolog execution showing the loading of the family tree database and your definitions of the 5 relations, as well as showing the execution of the five queries described above.

1 PLEASE NOTE, NO EXCEPTION

- Homework is due before the final examination begins on June 17, 2008. Late homework will not be accepted.
- For programming assignments, you must hand in printout of the code, as well as the testing data and result. Programs must be accompanied by their documentations. For other assignments, you must hand in typeset hardcopy.
- You are expected to do the homework by yourself. Discussion among peers is encouraged but copying from others is a shame.