EXP NO: 6 - PROLOG

AIM:

To develop a family tree using Prolog with all possible facts, rules and queries.

ALGORITHM:

1) Start by defining each family member's gender using male and female facts
2) Establish parent-child relationships using parent of facts
3) Create a father rule to identify male parents of individuals
4) Define a mother rule to identify female parents
5) Develop a grandfather rule by checking if a male is parent of a parent.
6) Add a grandmother rule by checking if female is parent of parent
7) Write a brother rule to identify males with shared parents ensuring they are not the same person.
8) Create a sister rule to identify females with shared parents ensuring they are distinct individuals.
9) Use queries to test relationships, such as checking if one person is a parent, grandparent or sibling
10) Run queries to retrieve all possible relationships.

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PROLOG CODE:

```
/* FACTS */
male (peter).
male (John).
male (chris).
male (kevin).
female (betty).
female (jeny).
female (lise).
female (helen).

parent of (chris, peter).
parent of (chris, betty).
parent of (helen, peter).
parent of (helen, betty).
parent of (kevin, chris).
parent of (kevin, lise).
parent of (jeny, john).
parent of (jeny, helen).

/* RULES */
father (X,Y) :-
    male (X),
    parent of (X,Y).

mother (X,Y) :-
    female (X),
    parent (X,Y).

grandfather (X,Y) :-
    male (X),
    parentof (X,Z),
    parentof (Z,Y).
```

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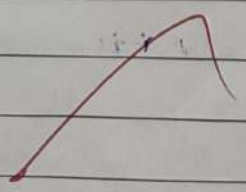
grandmother(X,Y) :-
    female(X),
    parentof(X,Z),
    parentof(Z,Y).

brother(X,Y) :-
    male(X),
    parentof(Z,X),
    parentof(Z,Y),
    X\=Y.

sister(X,Y) :-
    female(X),
    parentof(Z,X),
    parentof(Z,Y),
    X\=Y.
```



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OUTPUT:

male (peter)
true

father (chris, peter)
true

father (chris, betty)
false

grandfather (kevin, peter)
true

grandmother (jeny, peter)
false

mother (chris, X)
X = betty

RESULT:

Thus the program to develop a family tree using prolog is successfully executed and verified.