

**Reg.no:220701030**

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## **PROLOG \_ FAMILY TREE**

### **AIM:**

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

### **SOURCE CODE:**

#### **KNOWLEDGE BASE:**

**/\*FACTS :: \*/**

male(peter).  
male(john).  
male(chris).  
male(kevin).  
female(betty).  
female(jeny).  
female(lisa).  
female(helen).

parentOf(chris,peter).  
parentOf(chris,betty).  
parentOf(helen,peter).  
parentOf(helen,betty).  
parentOf(kevin,chris).  
parentOf(kevin,lisa).  
parentOf(jeny,john).  
parentOf(jeny,helen).

**/\*RULES :: \*/**

**/\* son,parent**

**\* son,grandparent\*/**

father(X,Y):- male(Y), parentOf(X,Y).  
mother(X,Y):- female(Y), parentOf(X,Y).  
grandfather(X,Y):- male(Y),parentOf(X,Z),parentOf(Z,Y).  
grandmother(X,Y):- female(Y),parentOf(X,Z),parentOf(Z,Y).  
brother(X,Y):- male(Y), father(X,Z), father(Y,W),Z==W.  
sister(X,Y):- female(Y), father(X,Z),father(Y,W),Z==W.

**OUTPUT:**

The screenshot shows the SWISH Prolog environment. On the left, the program code is displayed in a text editor. On the right, the execution results are shown in a table format, with variables Y, X, Z, and W representing different individuals in the family tree.

**Program Code:**

```

1 male(peter).
2 male(john).
3 male(chris).
4 male(kevin).
5
6 female(betty).
7 female(jeny).
8 female(lisa).
9 female(helen).
10
11 parentof(chris,peter).
12 parentof(chris,betty).
13 parentof(helen,peter).
14 parentof(helen,betty).
15 parentof(kevin,chris).
16 parentof(kevin,lisa).
17 parentof(jeny,john).
18 parentof(jeny,helen).
19
20 father(X,Y):- male(Y), parentof(X,Y).
21 mother(X,Y):- female(Y), parentof(X,Y).
22
23 grandfather(X,Y):- male(Y),parentof(X,Z),parentof(Z,Y).
24 grandmother(X,Y):- female(Y),parentof(X,Z),parentof(Z,Y).
25 brother(X,Y):- male(Y), father(X,Z), father(Y,W),Z==W.
26 sister(X,Y):- female(Y), father(X,Z),father(Y,W),Z==W.
27

```

**Execution Results:**

Query	Y	X	Z	W
male(Y), parentof(X,Y).	peter	chris		
female(Y), parentof(X,Y).	betty	chris		
male(Y),parentof(X,Z),parentof(Z,Y).	peter	kevin	chris	
female(Y),parentof(X,Z),parentof(Z,Y).	betty	kevin	chris	
male(Y), father(X,Z), father(Y,W),Z==W.	chris	chris	peter	peter
female(Y), father(X,Z),father(Y,W),Z==W.	jeny	jeny	john	john

**RESULT:**

Thus, the prolog for family tree program has been executed successfully.