

EX.NO : 6

PROLOG

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).
```

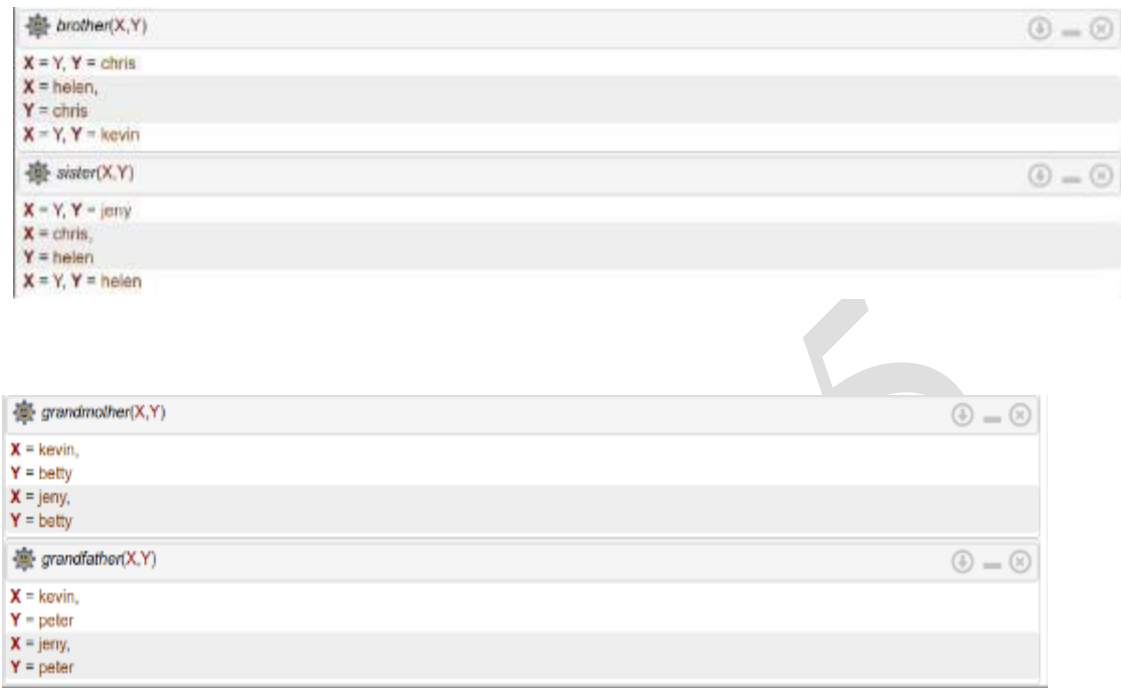
```
grandmother(X,Y):- female(Y),  
parentOf(X,Z),  
parentOf(Z,Y).
```

```
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 :

male(peter)	3	—	0
true			1
father(chris,peter)	3	—	0
true			1
father(chris,betty)	3	—	0
false			
grandfather(kevin,peter)	3	—	0
true			1
grandfather(jerry,peter)	3	—	0
true			1
grandmother(jerry,peter)	3	—	0
false			
mother(chris,X)	3	—	0
X = betty			
brother(helen,chris)	3	—	0
true			1
brother(chris,helen)	3	—	0
false			
father(X,Y)	3	—	0
X = chris, Y = peter			
X = helen, Y = peter			
X = jerry, Y = john			
X = kevin, Y = chris			
mother(X,Y)	3	—	0
X = chris, Y = betty			
X = helen, Y = betty			
X = kevin, Y = lisa			
X = jerry, Y = helen			



The image shows a screenshot of a Prolog interpreter window. It contains two sections of code and their corresponding output. The first section defines the `brother(X,Y)` predicate with three clauses: `X = Y, Y = chris`, `X = helen, Y = chris`, and `X = Y, Y = kevin`. The second section defines the `sister(X,Y)` predicate with three clauses: `X = Y, Y = jeny`, `X = chris, Y = helen`, and `X = Y, Y = helen`. Below these, the `grandmother(X,Y)` predicate is defined with two clauses: `X = kevin, Y = betty` and `X = jeny, Y = betty`. Finally, the `grandfather(X,Y)` predicate is defined with two clauses: `X = kevin, Y = peter` and `X = jeny, Y = peter`. Each section is preceded by a small icon and the predicate name in a separate line.

```
brother(X,Y)
X = Y, Y = chris
X = helen,
Y = chris
X = Y, Y = kevin

sister(X,Y)
X = Y, Y = jeny
X = chris,
Y = helen
X = Y, Y = helen

grandmother(X,Y)
X = kevin,
Y = betty
X = jeny,
Y = betty

grandfather(X,Y)
X = kevin,
Y = peter
X = jeny,
Y = peter
```

RESULT :

Thus the python code is implemented successfully and the output is verified.