

## **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)              | ⊞ ⊞ |
| true                     | ⊞   |
| father(chris,peter)      | ⊞ ⊞ |
| true                     | ⊞   |
| father(chris,betty)      | ⊞ ⊞ |
| false                    | ⊞   |
| grandfather(kevin,peter) | ⊞ ⊞ |
| true                     | ⊞   |
| grandfather(jerry,peter) | ⊞ ⊞ |
| true                     | ⊞   |
| grandmother(jerry,peter) | ⊞ ⊞ |
| false                    | ⊞   |
| mother(chris,X)          | ⊞ ⊞ |
| X = betty                | ⊞   |
| brother(helen,chris)     | ⊞ ⊞ |
| true                     | ⊞   |
| brother(chris,helen)     | ⊞ ⊞ |
| false                    | ⊞   |
| father(X,Y)              | ⊞ ⊞ |
| X = chris,<br>Y = peter  | ⊞   |
| X = helen,<br>Y = peter  | ⊞   |
| X = jerry,<br>Y = john   | ⊞   |
| X = kevin,<br>Y = chris  | ⊞   |
| mother(X,Y)              | ⊞ ⊞ |
| X = chris,<br>Y = betty  | ⊞   |
| X = helen,<br>Y = betty  | ⊞   |
| X = kevin,<br>Y = lisa   | ⊞   |
| X = jerry,<br>Y = helen  | ⊞   |

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

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

```
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
```

## **RESULT :**

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