

PRACTICAL – 4

Family relation :

```
family.pl
File Edit View

female(pam).
female(liz).
female(pat).
female(ann).

male(jim).
male(bob).
male(tom).
male(peter).

parent(pam,bob).
parent(tom,bob).
parent(tom,liz).
parent(bob,ann).
parent(bob,pat).
parent(pat,jim).
parent(bob,peter).
parent(peter,jim).

mother(X,Y):- parent(X,Y),female(X).
father(X,Y):- parent(X,Y),male(X).
haschild(X):- parent(X,_).
sister(X,Y):- parent(Z,X),parent(Z,Y),female(X),X\==Y.
brother(X,Y):-parent(Z,X),parent(Z,Y),male(X),X\==Y.
```

QUERY :

```
SWI-Prolog (AMD64, Multi-threaded, version 9.2.7)
File Edit Settings Run Debug Help
For built-in help, use ?- help(Topic). or ?- apropos(Word).

?-
% d:/shubham/family.pl compiled 0.00 sec, 21 clauses
?- parent(X, jim).
X = pat ;
X = peter.

?- mother(X, Y).
X = pam,
Y = bob ;
X = pat,
Y = jim ;
false.

?- haschild(X).
X = pam ;
X = tom ;
X = tom ;
X = bob ;
X = bob ;
X = pat ;
X = bob ;
X = peter.

?- sister(X, Y).
X = liz,
Y = bob ;
X = ann,
Y = pat ;
X = ann,
Y = peter ;
X = pat,
Y = ann ;
X = pat,
Y = peter ;
false.
```

Grandparent relation :

```
family.pl Predicates family_ext.pl
File Edit View

female(pam).
female(liz).
female(pat).
female(ann).

male(jim).
male(bob).
male(tom).
male(peter).

parent(pam, bob).
parent(tom, bob).
parent(tom, liz).
parent(bob, ann).

parent(bob, pat).
parent(pat, jim).
parent(bob, peter).
parent(peter, jim).

mother(X, Y) :- parent(X, Y), female(X).
father(X, Y) :- parent(X, Y), male(X).
haschild(X) :- parent(X, _).
sister(X, Y) :- parent(Z, X), parent(Z, Y), female(X), X\==Y.
brother(X, Y) :- parent(Z, X), parent(Z, Y), male(X), X\==Y.
grandparent(X, Y) :- parent(X, Z), parent(Z, Y).
grandmother(X, Z) :- mother(X, Y), parent(Y, Z).
grandfather(X, Z) :- father(X, Y), parent(Y, Z).
wife(X, Y) :- parent(X, Z), parent(Y, Z), female(X), male(Y).
uncle(X, Z) :- brother(X, Y), parent(Y, Z).
```

QUERY :

```
SWI-Prolog (AMD64, Multi-threaded, version 9.2.7)
File Edit Settings Run Debug Help
% d:/shubham/family_ext.pl compiled 0.00 sec, 26 clauses
?- uncle(X, Y).
X = peter,
Y = jim ;
false.

?- grandparent(X, Y).
X = pam,
Y = ann ;
X = pam,
Y = pat ;
X = pam,
Y = peter ;
X = tom,
Y = ann ;
X = tom,
Y = pat ;
X = tom,
Y = peter ;
X = bob,
Y = jim ;
X = bob,
Y = jim ;
false.

?- wife(X, Y).
X = pam ;
X = tom ;
X = tom ;
X = bob ;
X = bob ;
X = pat ;
X = bob ;
X = peter.

?- mother(X, Y).
X = pam,
Y = bob ;
X = pat,
Y = jim ;
false.
```

Own-family relation :

```
family.pl  ownfamily.pl

File Edit View

female(shamal).
female(shweta).
female(chandrabhaga).

male(bhagwan).
male(shubham).
male(maruti).

parent(shamal, shweta).
parent(shamal, shubham).
parent(bhagwan, shweta).
parent(bhagwan, shubham).

mother(X,Y):- parent(X,Y),female(X).
father(X,Y):- parent(X,Y),male(X).
sister(X,Y):- parent(Z,X),parent(Z,Y),female(X),X\==Y.
brother(X,Y):-parent(Z,X),parent(Z,Y),male(X),X\==Y.

grandparent(X, Y) :- parent(X, Z), parent(Z, Y).
grandmother(X, Z) :- mother(X, Y), parent(Y, Z).
```

QUERY :

```
SWI-Prolog (AMD64, Multi-threaded, version 9.2.7)
File Edit Settings Run Debug Help
Please run ?- license. for legal details.

For online help and background, visit https://www.swi-prolog.org
For built-in help, use ?- help(Topic). or ?- apropos(Word).

?-
% c:/AI LAB PRACTICAL/ownfamily.pl compiled 0.00 sec, 16 clauses
?- parent(X, shubham).
X = shamal ;
X = bhagwan.

?- parent(X, shweta).
X = shamal ;
X = bhagwan.

?- sister(X, shubham).
X = shweta .

?- brother(X, shweta).
X = shubham .

?- mother(X, shweta).
X = shamal .

?- father(X, shweta).
X = bhagwan.

?- mother(X, shubham).
X = shamal .

?- father(X, shubham).
X = bhagwan.
```