Experiment No: 1
Experiment Name: Formulate the following queries/ add the following facts.
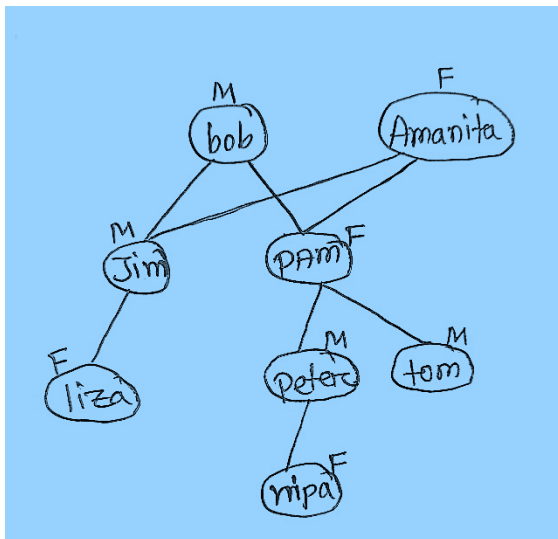
We have one set of male = {bob, tom, peter, jim} and another set of female= {liza, amanita, nipa, pam}. Write a prolog program to implement the following rules:

- ✓ "peter is the uncle of jim"
- ✓ "bob is the grandfather of liza"
- ✓ "jim is the brother of pam"

Also write the following rules: father, mother, grandfather, grandmother, predecessor, brother, sister, sibling, uncle….

Solution:

1: First generate a tree:

2: Declare facts in knowledge base:

male(bob).
male(tom).
male(peter).
male(jim).
female(liza).
female(amanita).
female(nipa).
female(pam).

parents(bob,jim).
parents(bob,pam).
parents(amanita,jim).
parents(amanita,pam).
parents(jim,liza).
parents(pam,peter).
parents(pam,tom).
parents(peter,nipa).

3: Define rules:

grandfather(X,Z):- parents(Y,Z),parents(X,Y),male(X).
%grandmother ????
sibling(X,Y):- parents(Z,X),parents(Z,Y).
mother(X,Y):- parents(X,Y),female(X).
%father ????
brother(X,Y):-parent(Z,X),parent(Z,Y),male(X),X\==Y.
sister(X,Y):-parent(Z,X),parent(Z,Y),female(X),X\==Y.
uncle(X,Y):-brother(X,Z),parent(Z,Y).%parent(X,Y):father(X,Y);mother(X,Y).
grandfather(X,Y):-father(X,Z),father(Z,Y).
grandmother(X,Y):-mother(X,Z),father(Z,Y).
wife(X,Y):-parent(X,Z),parent(Y,Z),male(Y),female(X).
uncle(X,Y):-brother(X,Z),parent(Z,Y).

H/W: We have one set of male = {asif, monjurul, anjon, rocky, parvez} and another set of female = {lima,anita, lita, ruhi, diba}.

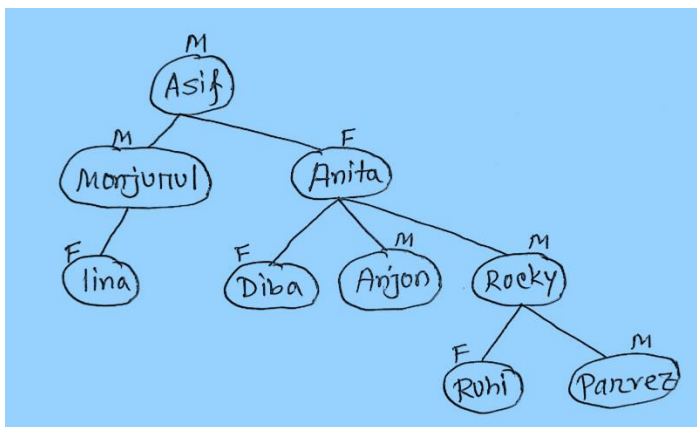Write a prolog program to implement the following rules
- ✓ "asif is the grandfather of lina"
- ✓ "diba is the sister of anjon"
- ✓ "rocky is the predecessor of ruhi"

Also write the following rules: father, mother, grandfather, grandmother, predecessor, brother, sister, sibling, uncle….

Solution:

1: First generate a tree:

2: Declare facts in knowledge base:

male(asif).
male(monjurul).
male(anjon).
male(rocky).
male(parvez).

female(lina).
female(anita).
female(lita).
female(ruhi).
female(diba).

parents(rocky,ruhi).
parents(rocky,parvez).
parents(asif,monjurul).
parents(asif,anita).
parents(monjurul,lina).

3: Define rules:

grandfather(X,Z):- parents(Y,Z),parents(X,Y),male(X).
sibling(X,Y):- parents(Z,X),parents(Z,Y).
mother(X,Y):- parents(X,Y),female(X).
father(X,Y):-parent(X,Y),male(X).
brother(X,Y):-parent(Z,X),parent(Z,Y),male(X),X\==Y.
sister(X,Y):-parent(Z,X),parent(Z,Y),female(X),X\==Y.
uncle(X,Y):-brother(X,Z),parent(Z,Y).%parent(X,Y):father(X,Y);mother(X,Y).
grandfather(X,Y):-father(X,Z),father(Z,Y).
grandmother(X,Y):-mother(X,Z),father(Z,Y).
wife(X,Y):-parent(X,Z),parent(Y,Z),male(Y),female(X).
uncle(X,Y):-brother(X,Z),parent(Z,Y).