**Bansilal Ramnath Agarwal Charitable Trust's**

**Vishwakarma Institute of Technology**

(An Autonomous Institute affiliated to Savitribai Phule Pune University)

**Assignment No. 05**

Name: Sakshi Ashok Jagdale

Class: TY-CS-D

Roll No.: 08

PRN No.: 12110056

male(rau).

male(dnyaneshwar).

male(tukaram).

male(pandurang).

male(suresh).

male(mahesh).

male(panjabrao).

male(bhagwan).

male(lalaso).

male(aabaso).

male(ashok).

male(amol).

male(shreyash).

male(ranjit).

male(mayur).

male(ajay).

male(sagar).

male(arnav).

male(ayush).

male(mahadev).

female(anusaya).

female(balaka).

female(anjubai).

female(shalan).

female(smita).

female(sangita).

female(usha).

female(bhawana).

female(usha).

female(savita).

female(bhagyashri).

female(swati).

female(shila).

female(shraddha).

female(supriya).

female(kajal).

female(shital).

female(sakshi).

female(saniya).

female(aaradhya).

female(anvi).

female(anushka).

female(aakanksha).

female(sushma).

% Parent-child relationships

parent(rau, dnyaneshwar).

parent(rau, tukaram).

parent(rau, pandurang).

parent(anusaya, dnyaneshwar).

parent(anusaya, tukaram).

parent(anusaya, pandurang).

parent(dnyaneshwar, bhagwan).

parent(dnyaneshwar, lalaso).

parent(dnyaneshwar, sangita).

parent(balaka, bhagwan).

parent(balaka, lalaso).

parent(balaka, sangita).

parent(tukaram, aabaso).

parent(tukaram, usha).

parent(anjubai, aabaso).

parent(anjubai, usha).

parent(pandurang, ashok).

parent(pandurang, amol).

parent(pandurang, shila).

parent(pandurang, swati).

parent(shalan, ashok).

parent(shalan, amol).

parent(shalan, shila).

parent(shalan, swati).

parent(bhagwan, shraddha).

parent(bhagwan, shreyash).

parent(smita, shraddha).

parent(smita, shreyash).

parent(sangita, ranjit).

parent(sangita, mayur).

parent(sangita, supriya).

parent(usha, shital).

parent(usha, sagar).

parent(mahadev, shital).

parent(mahadev, sagar).

parent(aabaso, kajal).

parent(aabaso, ajay).

parent(sushma, kajal).

parent(sushma, ajay).

parent(ashok, sakshi).

parent(ashok, saniya).

parent(savita, sakshi).

parent(savita, saniya).

parent(amol, aaradhya).

parent(amol, anvi).

parent(bhagyashri, aaradhya).

parent(bhagyashri, anvi).

parent(swati,arnav).

parent(swati,anushka).

parent(shila,aakanksha).

parent(shila,ayush).

% Marriage relationships

married(rau, anusaya).

married(dnyaneshwar,balaka).

married(tukaram, anjubai).

married(pandurang, shalan).

married(bhagwan,smita).

married(ashok,savita).

married(amol,bhagyashri).

married(suresh,sangita).

married(mahesh,swati).

married(panjabrao,shila).

married(mahadev,usha).

married(aabaso,sushma).

brother(X,Y):- male(X),parent(Z,X),parent(Z,Y),X\=Y.

sister(X,Y):- female(X),parent(Z,X),parent(Z,Y),X\=Y.

husband(X,Y):- male(X),female(Y),married(X,Y).

wife(X,Y):- female(X),male(Y),married(Y,X).

son(X,Y):- male(X),parent(Y,X).

daughter(X,Y):- female(X),parent(Y,X).

grandmother(X,Y):- female(X),parent(X,Z),parent(Z,Y).

grandfather(X,Y):- male(X),parent(X,Z),parent(Z,Y).

mother(X,Y):- female(X),parent(X,Y).

father(X,Y):- male(X),parent(X,Y).

cousin(X,Y):- parent(P,X),parent(Q,Y),parent(Z,P),parent(Z,Q),P\=Q,X\=Y.

maternaluncle(X,Y):- parent(Z,Y),parent(P,Z),parent(P,X),male(X),female(Z).

uncle(X,Y):- parent(Z,Y),parent(P,Z),parent(P,X),Z\=X,male(X);

wife(A,X),mother(B,Y),sister(A,B). % mothers sisters husband

aunt(X,Y):- female(X),parent(Z,Y),married(P,X),parent(Q,Z),parent(Q,P),Z\=P,male(Z);

mother(A,Y), sister(X,A).

daughter\_in\_law(X, Y) :- female(X),married(Z,X), parent(Y, Z) .

son\_in\_law(X,Y):- male(X),married(X,Z),parent(Y,Z).

second\_uncle(X,Y):- male(X),father(D,Y),father(Z,D),father(S,X),brother(S,Z),Z\=S;

wife(A,X),mother(B,Y),cousin(A,B). % mothers cousin sisters husband

second\_aunt(X,Y):- female(X),father(D,Y),father(Z,D),husband(R,X),father(T,R),brother(T,Z).

second\_maternal\_uncle(X,Y):- male(X),mother(D,Y),father(Z,D),father(S,X),brother(S,Z),Z\=S.

second\_maternal\_aunt(X,Y):- female(X),mother(D,Y),father(Z,D),husband(R,X),father(T,R),brother(T,Z).

sister\_in\_law(X,Y):- husband(Z,X),brother(Z,Y),female(X),male(Y);

husband(Z,X),husband(U,Y),brother(Z,U),female(X),female(Y);

female(X),male(Y),wife(Z,Y),brother(P,Z),wife(X,P). % brothers wife

second\_sister\_in\_law(X,Y):- female(X),female(Y), husband(Z,X),husband(P,Y),cousin(Z,P);

female(X),husband(Z,X),cousin(Y,Z);

female(X),male(Y),husband(Z,X),wife(P,Y),cousin(Z,P).

second\_cousin(X,Y):- parent(A,X),parent(B,Y),cousin(A,B). %fathers cousins child

second\_daughter\_in\_law(X,Y):- female(X),female(Y),husband(A,X),husband(B,Y),father(Z,A),brother(Z,B). % husbands brothers daughter in law

second\_daughter\_in\_law(X,Y):-female(X),male(Y), husband(A,X),father(B,A),brother(B,Y). %brothers duaghter in law

second\_son\_in\_law(X,Y):- male(X),female(Y),wife(A,X),husband(B,Y),father(Z,A),brother(Z,B).

second\_son\_in\_law(X,Y):-male(X),male(Y), wife(A,X),father(B,A),brother(B,Y).

maternal\_aunt(X,Y):- female(X), father(A,Y),sister(X,A). % fathers sister

great\_grandmother(X,Y):- female(X),parent(A,Y), grandmother(X,A).

great\_grandfather(X,Y):- male(X),parent(A,Y), grandfather(X,A).

uncle\_by\_marriage(X,Y) :- male(X),father(A,Y),wife(B,X),sister(B,A). % fathers siters husband

second\_uncle\_by\_marriage(X,Y):- male(X),father(A,Y),wife(B,X),cousin(B,A). % fathers cousin sisters husband

second\_grand\_mother(X,Y):- female(X),grandfather(Z,Y),husband(P,X),brother(Z,P).

second\_grand\_father(X,Y):- male(X),grandfather(Z,Y),brother(Z,X).

brother\_in\_law(X,Y):- male(X),husband(A,Y),husband(X,P),brother(A,P); %husbands sisters husband

male(X),male(Y),wife(A,X),wife(B,Y),sister(A,B); % wifes sisters husband

sister(A,Y), wife(A,X). % sisters husband

second\_brother\_in\_law(X,Y):- male(X),male(Y),wife(A,X),wife(B,Y),cousin(A,B);% wifes cousin sisters husband

male(X),husband(A,Y),cousin(X,A);% husbands cousin brother

wife(A,X),husband(B,Y),cousin(A,B).% husbands cousin sister husband