NAME – SHRAVANI BAHULEKAR

ROLL N0 – 32

PRN – 12111224

ASSIGNMENT 5

BATCH – D2

% Facts:

male(dattatray).

male(suresh).

male(uday).

male(jaydeep).

male(jayant).

male(sujit).

male(pratik).

male(prasad).

male(parth).

male(anagh).

male(rohan).

male(sumant).

male(suyog).

male(swaraj).

male(suhas).

male(srinivas).

female(shaila).

female(dipti).

female(swara).

female(pranjal).

female(pradnya).

female(suman).

female(jaya).

female(smita).

female(swati).

female(mayuri).

female(pallavi).

female(jayanti).

female(priyanka).

female(shwetali).

female(sanika).

female(shravani).

female(medha).

female(spruha).

female(gargi).

parent(dattatray, suresh).

parent(dattatray, uday).

parent(suman, smita).

parent(suman, swati).

parent(suman, sujit).

parent(suresh, smita).

parent(suresh, swati).

parent(suresh, sujit).

parent(uday, pallavi).

parent(uday, pratik).

parent(uday, priyanka).

parent(jaya, pallavi).

parent(jaya, pratik).

parent(jaya, priyanka).

parent(smita, shwetali).

parent(smita, sanika).

parent(jaydeep, shwetali).

parent(jaydeep, sanika).

parent(swati, shravani).

parent(swati, medha).

parent(jayant, shravani).

parent(jayant, medha).

parent(sujit, spruha).

parent(mayuri, spruha).

parent(pratik, gargi).

parent(jayanti, gargi).

parent(priyanka, parth).

parent(priyanka, anagh).

parent(prasad, parth).

parent(prasad, anagh).

parent(gargi, pradnya).

parent(rohan, pradnya).

parent(dattatray, sumant).

parent(sumant, dipti).

parent(shaila,dipti).

parent(sumant, suhas).

parent(shaila, suhas).

parent(dipti, swara).

parent(dipti, swaraj).

parent(suyog, swara).

parent(suyog, swaraj).

parent(suhas, srinivas).

parent(pranjal, srinivas).

husband(sumant, shaila).

husband(suyog, dipti).

husband(suhas, pranjal).

husband(suresh, suman).

husband(uday, jaya).

husband(jaydeep, smita).

husband(jayant, swati).

husband(sujit, mayuri).

husband(pratik, jayanti).

husband(prasad, priyanka).

husband(rohan, gargi).

% Rules:

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

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

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

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

granddaughter(X,Y) :- daughter(X,W), (son(W,Y);daughter(W,Y)).

grandson(X,Y) :- son(X,W), (son(W,Y);daughter(W,Y)).

wife(X, Y) :- husband(Y, X).

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

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

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

cousin(X, Y) :- parent(Z, X), parent(W, Y), sibling(Z, W).

niece(X, Y) :- parent(W, X), (sibling(W, Y);brother\_in\_law(W,Y);sister\_in\_law(W,Y)),female(X).

nephew(X, Y) :- parent(W, X), (sibling(W, Y);brother\_in\_law(W,Y);sister\_in\_law(W,Y)),male(X).

second\_niece(X, Y) :- mother(P,X),(sister\_in\_law(P,Y);cousin(P,Y);cousin\_in\_law(P,Y)),female(X).

second\_nephew(X, Y) :- mother(P,X),(sister\_in\_law(P,Y);cousin(P,Y);cousin\_in\_law(P,Y)),male(X).

cousin\_nephew(X, Y) :-  parent(W,X),cousin(W,Y),male(X).

cousin\_niece(X, Y) :-  parent(W,X),cousin(W,Y),female(X).

uncle(X, Y) :- parent(Z, Y), (sibling(X, Z);brother\_in\_law(X,Z)), male(X).

aunt(X, Y) :- (cousin(Z, Y), mother(X, Z), female(X));(sister\_in\_law(X,W),parent(W,Y)).

first\_cousin\_aunt(X, Y) :- (cousin(X,M), parent(M,Y),female(X));(husband(W,X),parent(V,Y),cousin(W,V)).

first\_cousin\_uncle(X, Y) :- (cousin(X,M), parent(M,Y),male(X));(wife(W,X),parent(V,Y),cousin(W,V)).

second\_cousin\_aunt(X, Y) :- parent(P,Y), second\_cousin(P,X), female(X).

brother\_in\_law(X, Y) :-(husband(X, Z), sibling(Z, Y));(husband(X,W),husband(Y,V),sibling(W,V));(sibling(X,W),wife(W,Y),male(X));(husband(X,W),sister\_in\_law(W,Y)).

sister\_in\_law(X, Y) :- (sibling(X,W),(wife(W,Y);husband(W,Y)),female(X));(wife(X,M),sibling(M,V),(wife(V,Y);husband(V,Y)));(wife(X,M),sibling(M,Y)).

cousin\_in\_law(X, Y) :- (cousin(X, Z), (wife(Z, Y);husband(Z,Y)));((husband(X,W);wife(X,W)),cousin(W,Y));((husband(X,W);wife(X,W)),(husband(Y,V);wife(Y,V)),cousin(W,V)).

daughter\_in\_law(X,Y) :- wife(X,W),son(W,Y).

son\_in\_law(X,Y) :- husband(X,W),daughter(W,Y).

niece\_in\_law(X, Y) :- wife(X,M), nephew(M,Y).

nephew\_in\_law(X, Y) :- husband(X,M), niece(M,Y).

second\_niece\_in\_law(X, Y) :- wife(X,M), second\_nephew(M,Y).

second\_nephew\_in\_law(X, Y) :- husband(X,M), second\_niece(M,Y).

father\_in\_law(X, Y) :- father(X,W),(wife(W,Y);husband(W,Y)).

mother\_in\_law(X, Y) :- mother(X,W),(wife(W,Y);husband(W,Y)).

uncle\_in\_law(X, Y) :-  (husband(W,Y);wife(W,Y)),uncle(X,W).

aunt\_in\_law(X, Y) :- (husband(W,Y);wife(W,Y)),aunt(X,W).

grandson\_in\_law(X, Y) :- husband(X,W), granddaughter(W,Y).

granddaughter\_in\_law(X, Y) :- wife(X,M), grandson(M,Y).

grandfather\_in\_law(X, Y) :- grandfather(X,W), (wife(W,Y);husband(W,Y)).

grand\_uncle(X, Y) :- (uncle(X, Z), parent(Z, Y));(parent(P,Y),(niece(P,X);nephew(P,X);second\_niece(P,X);second\_nephew(P,X)),male(X)).

grand\_aunt(X, Y) :- (aunt(X, Z), parent(Z, Y));(parent(P,Y),(niece(P,X);nephew(P,X);second\_niece(P,X);second\_nephew(P,X)),female(X)).

grand\_niece(X, Y) :- (grand\_uncle(Y,X);grand\_aunt(Y,X)),female(X).

grand\_nephew(X, Y) :- (grand\_uncle(Y,X);grand\_aunt(Y,X)),male(X).

second\_cousin(X, Y) :- grandfather(Z, X), grandfather(W,Y),sibling(W, Z).

paternal\_cousin(X, Y) :- grandfather(Z, Y), father(W, X), sibling(Z, W).

great\_grandfather(X, Z) :- father(X, Y), grandfather(Y, Z).

great\_granddaughter(X, Y) :- daughter(X,M),(granddaughter(M,Y);grandson(M,Y)).

great\_grandson(X, Y) :- son(X,M),(granddaughter(M,Y);grandson(M,Y)).

great\_grand\_niece(X, Y) :- great\_granddaughter(X,P),(sibling(P,Y);brother\_in\_law(P,Y);sister\_in\_law(P,Y)),female(X).

great\_great\_grandfather(X, Y) :- great\_grandfather(X,W),parent(W,Y).

great\_great\_granddaughter(X, Y) :- great\_great\_grandfather(Y, X).

find\_relationship(X, Y) :-

    father(X, Y), write(X), write(' is the father of '), write(Y), nl.

find\_relationship(X, Y) :-

    mother(X, Y), write(X), write(' is the mother of '), write(Y), nl.

find\_relationship(X, Y) :-

    son(X, Y), write(X), write(' is the son of '), write(Y), nl.

find\_relationship(X, Y) :-

    daughter(X, Y), write(X), write(' is the daughter of '), write(Y), nl.

find\_relationship(X, Y) :-

    husband(X, Y), write(X), write(' is the husband of '), write(Y), nl.

find\_relationship(X, Y) :-

    wife(X, Y), write(X), write(' is the wife of '), write(Y), nl.

find\_relationship(X, Y) :-

    grandfather(X, Y), write(X), write(' is the grandfather of '), write(Y), nl.

find\_relationship(X, Y) :-

    grandmother(X, Y), write(X), write(' is the grandmother of '), write(Y), nl.

find\_relationship(X, Y) :-

    sibling(X, Y), write(X), write(' is the sibling of '), write(Y), nl.

find\_relationship(X, Y) :-

    father(Z, Y), mother(X, Z), write(X), write(' is the grandmother of '), write(Y), nl.

find\_relationship(X, Y) :-

    father\_in\_law(X, Y), write(X), write(' is the father-in-law of '), write(Y), nl.

find\_relationship(X, Y) :-

    mother\_in\_law(X, Y), write(X), write(' is the mother-in-law of '), write(Y), nl.

find\_relationship(X, Y) :-

    brother\_in\_law(X, Y), write(X), write(' is the brother-in-law of '), write(Y), nl.

find\_relationship(X, Y) :-

    sister\_in\_law(X, Y), write(X), write(' is the sister-in-law of '), write(Y), nl.

find\_relationship(X, Y) :-

    cousin\_in\_law(X, Y), write(X), write(' is the cousin-in-law of '), write(Y), nl.

find\_relationship(X, Y) :-

    uncle\_in\_law(X, Y), write(X), write(' is the uncle-in-law of '), write(Y), nl.

find\_relationship(X, Y) :-

    aunt\_in\_law(X, Y), write(X), write(' is the aunt-in-law of '), write(Y), nl.

find\_relationship(X, Y) :-

    grandfather\_in\_law(X, Y), write(X), write(' is the grandfather-in-law of '), write(Y), nl.

find\_relationship(X, Y) :-

    granddaughter\_in\_law(X, Y), write(X), write(' is the granddaughter-in-law of '), write(Y), nl.

find\_relationship(X, Y) :-

    grandson\_in\_law(X, Y), write(X), write(' is the grandson-in-law of '), write(Y), nl.

find\_relationship(X, Y) :-

    grand\_uncle(X, Y), write(X), write(' is the grand-uncle of '), write(Y), nl.

find\_relationship(X, Y) :-

    grand\_aunt(X, Y), write(X), write(' is the grand-aunt of '), write(Y), nl.

find\_relationship(X, Y) :-

    uncle(X, Y), write(X), write(' is the uncle of '), write(Y), nl.

find\_relationship(X, Y) :-

    aunt(X, Y), write(X), write(' is the aunt of '), write(Y), nl.

find\_relationship(X, Y) :-

    first\_cousin\_aunt(X, Y), write(X), write(' is the first cousin aunt of '), write(Y), nl.

find\_relationship(X, Y) :-

    first\_cousin\_uncle(X, Y), write(X), write(' is the first cousin uncle of '), write(Y), nl.

find\_relationship(X, Y) :-

    cousin(X, Y), write(X), write(' is the cousin of '), write(Y), nl.

find\_relationship(X, Y) :-

    second\_cousin(X, Y), write(X), write(' is the second cousin of '), write(Y), nl.

find\_relationship(X, Y) :-

    paternal\_cousin(X, Y), write(X), write(' is the paternal cousin of '), write(Y), nl.

find\_relationship(X, Y) :-

    great\_grandfather(X, Y), write(X), write(' is the great-grandfather of '), write(Y), nl.

find\_relationship(X, Y) :-

    daughter\_in\_law(X, Y), write(X), write(' is the daughter in law of '), write(Y), nl.

find\_relationship(X, Y) :-

    granddaughter(X, Y), write(X), write(' is the granddaughter of '), write(Y), nl.

find\_relationship(X, Y) :-

    grandson(X, Y), write(X), write(' is the grandson of '), write(Y), nl.

find\_relationship(X, Y) :-

    son\_in\_law(X, Y), write(X), write(' is the son in law of '), write(Y), nl.

find\_relationship(X, Y) :-

    niece\_in\_law(X, Y), write(X), write(' is the niece in law of '), write(Y), nl.

find\_relationship(X, Y) :-

    nephew\_in\_law(X, Y), write(X), write(' is the nephew in law of '), write(Y), nl.

find\_relationship(X, Y) :-

   niece(X, Y), write(X), write(' is the niece of '), write(Y), nl.

find\_relationship(X, Y) :-

   nephew(X, Y), write(X), write(' is the nephew of '), write(Y), nl.

find\_relationship(X, Y) :-

  second\_nephew(X, Y), write(X), write(' is the second nephew of '), write(Y), nl.

find\_relationship(X, Y) :-

   second\_niece(X, Y), write(X), write(' is the second niece of '), write(Y), nl.

find\_relationship(X, Y) :-

   cousin\_nephew(X, Y), write(X), write(' is the cousin nephew of '), write(Y), nl.

find\_relationship(X, Y) :-

   cousin\_niece(X, Y), write(X), write(' is the cousin niece of '), write(Y), nl.

find\_relationship(X, Y) :-

   great\_granddaughter(X, Y), write(X), write(' is the great granddaughter of '), write(Y), nl.

find\_relationship(X, Y) :-

   great\_grandson(X, Y), write(X), write(' is the great grandson of '), write(Y), nl.

find\_relationship(X, Y) :-

   grand\_niece(X, Y), write(X), write(' is the grand niece of '), write(Y), nl.

find\_relationship(X, Y) :-

   grand\_nephew(X, Y), write(X), write(' is the grand nephew of '), write(Y), nl.

find\_relationship(X, Y) :-

great\_great\_granddaughter(X, Y), write(X), write(' is the great great granddaughter of '), write(Y), nl.

find\_relationship(X, Y) :-

second\_niece\_in\_law(X, Y), write(X), write(' is the second\_niece\_in\_law of '), write(Y), nl.

find\_relationship(X, Y) :-

second\_nephew\_in\_law(X, Y), write(X), write(' is the second\_nephew\_in\_law of '), write(Y), nl.

find\_relationship(X, Y) :-

second\_cousin\_aunt(X, Y), write(X), write(' is the second\_cousin\_aunt of '), write(Y), nl.

find\_relationship(X, Y) :-

great\_grand\_niece(X, Y), write(X), write(' is the great\_grand\_niece of '), write(Y), nl.

find\_relationship(X, Y) :- write('Relationship not defined between '), write(X), write(' and '), write(Y), nl.