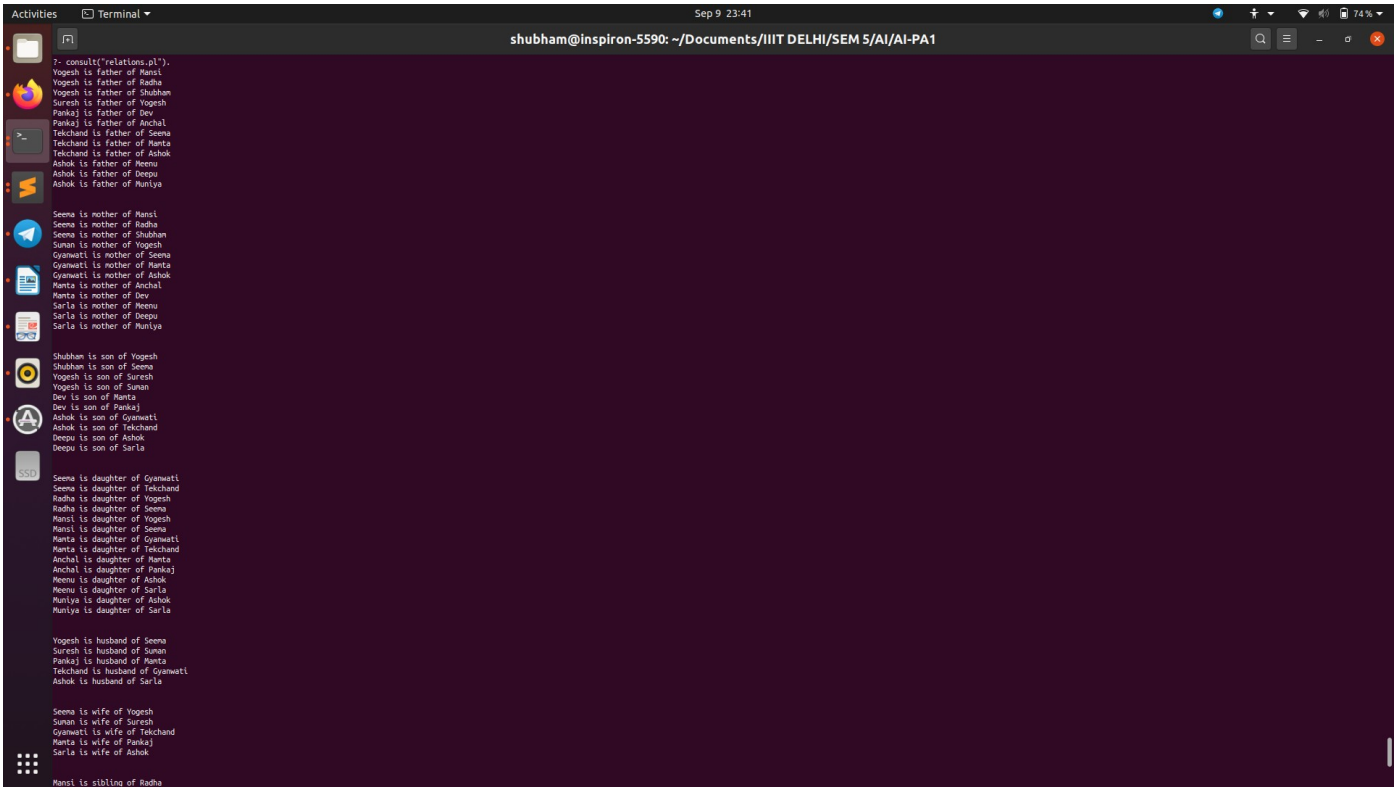
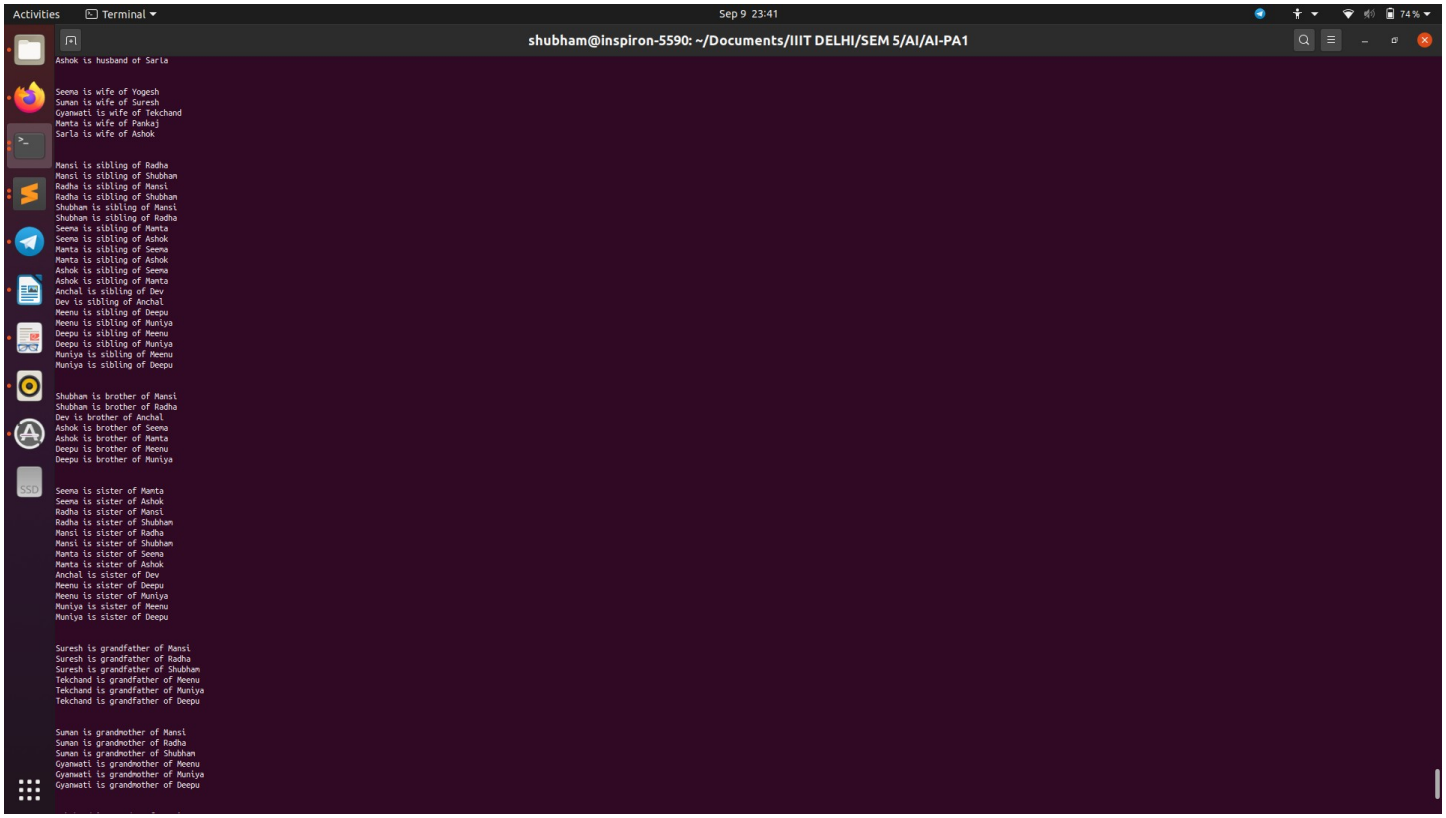
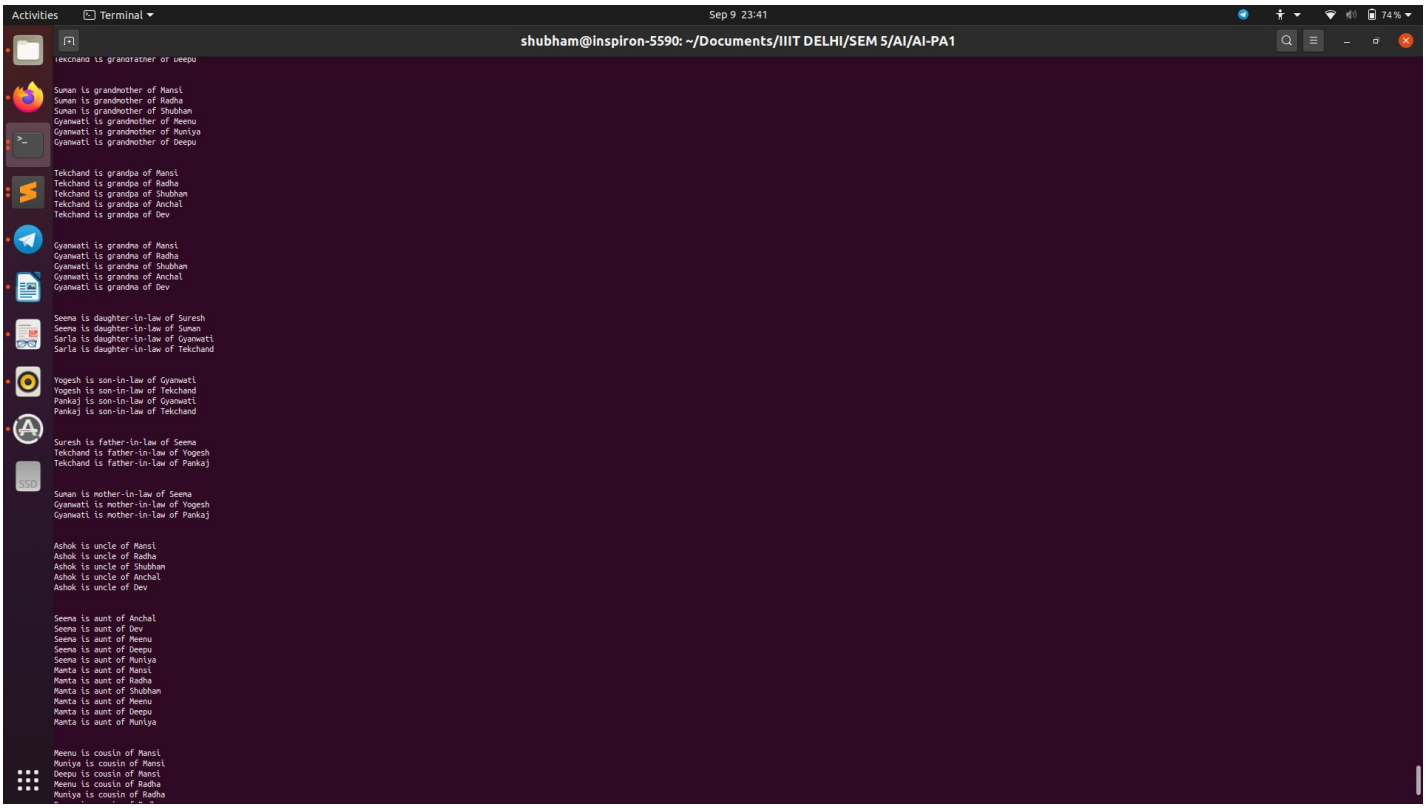
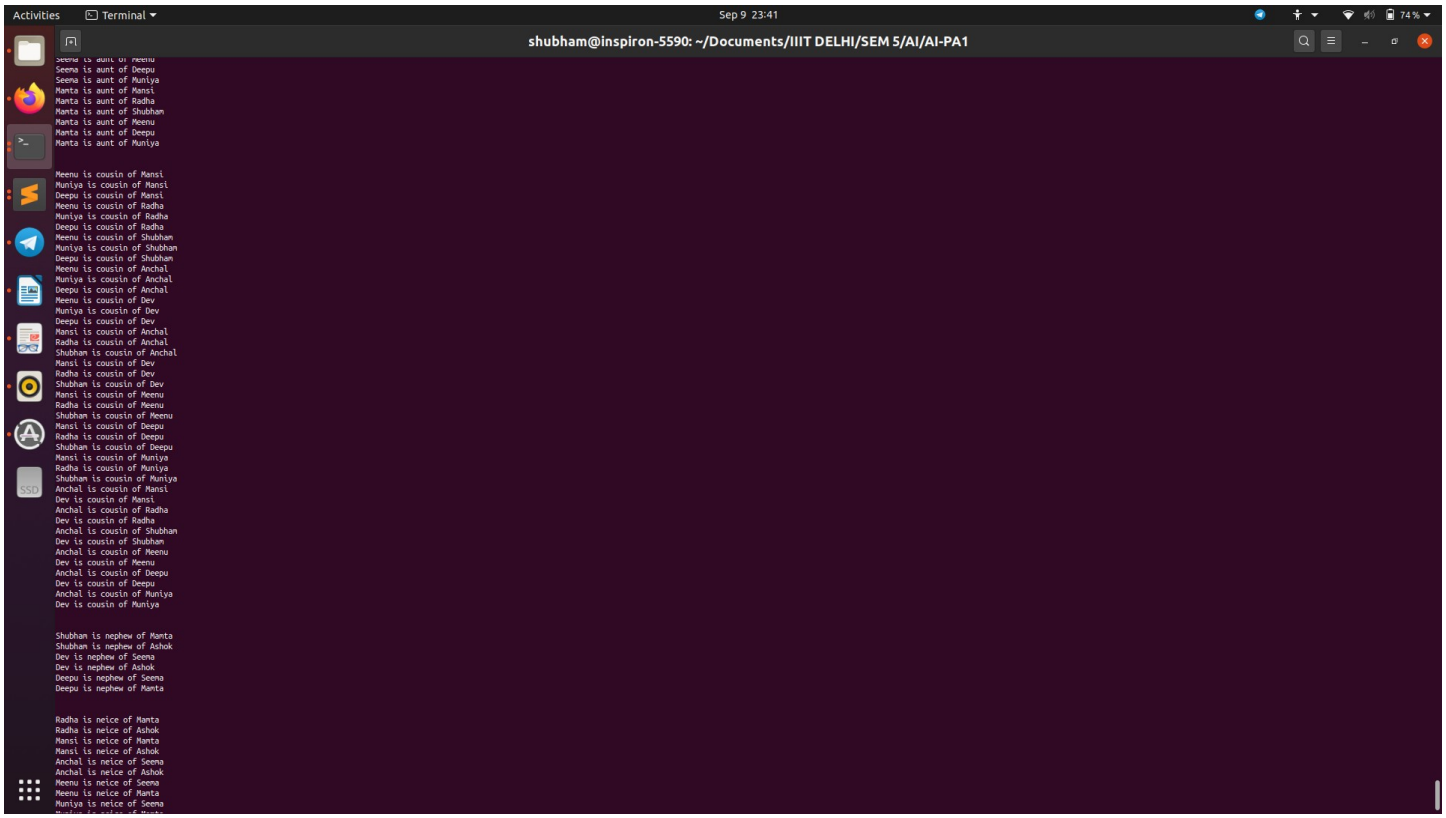

Activities
Terminal
Sep 9 23:41
74 %
shubham@inspiron-5590: ~/Documents/IIIT DELHI/SEM 5/AI/AI-PA1
?- consult("relations.pl").
Yogesh is father of Mansi
Yogesh is father of Radha
Yogesh is father of Shubham
Suresh is father of Yogesh
Pankaj is father of Dev
Pankaj is father of Anchal
Tekchand is father of Seena
Tekchand is father of Manta
Tekchand is father of Ashok
Ashok is father of Meenu
Ashok is father of Deepu
Ashok is father of Muniya
Seema is mother of Mansi
Seema is mother of Radha
Seema is mother of Shubham
Suman is mother of Yogesh
Gyanwati is mother of Seema
Gyanwati is mother of Manta
Gyanwati is mother of Ashok
Manta is mother of Anchal
Manta is mother of Dev
Sarla is mother of Meenu
Sarla is mother of Deepu
Sarla is mother of Muniya
Shubham is son of Yogesh
Shubham is son of Seema
Yogesh is son of Suresh
Yogesh is son of Suman
Dev is son of Manta
Dev is son of Pankaj
Ashok is son of Gyanwati
Ashok is son of Tekchand
Deepu is son of Ashok
Deepu is son of Sarla
Seema is daughter of Gyanwati
Seema is daughter of Tekchand
Radha is daughter of Yogesh
Radha is daughter of Seema
Mansi is daughter of Yogesh
Mansi is daughter of Seema
Manta is daughter of Gyanwati
Manta is daughter of Tekchand
Anchal is daughter of Manta
Anchal is daughter of Pankaj
Meenu is daughter of Ashok
Meenu is daughter of Sarla
Muniya is daughter of Ashok
Muniya is daughter of Sarla
Yogesh is husband of Seema
Suresh is husband of Suman
Pankaj is husband of Manta
Tekchand is husband of Gyanwati
Ashok is husband of Sarla
Seema is wife of Yogesh
Suman is wife of Suresh
Gyanwati is wife of Tekchand
Manta is wife of Pankaj
Sarla is wife of Ashok
Mansi is sibling of Radha

Ai


Activities
Terminal
Sep 9 23:41
74 %
shubham@inspiron-5590: ~/Documents/IIIT DELHI/SEM 5/AI/AI-PA1
Ashok is husband of Sarla
Seema is wife of Yogesh
Suman is wife of Suresh
Gyanwati is wife of Tekchand
Manta is wife of Pankaj
Sarla is wife of Ashok
Mansi is sibling of Radha
Mansi is sibling of Shubham
Radha is sibling of Mansi
Radha is sibling of Shubham
Shubham is sibling of Mansi
Shubham is sibling of Radha
Seema is sibling of Manta
Seema is sibling of Ashok
Manta is sibling of Seema
Manta is sibling of Ashok
Ashok is sibling of Seema
Ashok is sibling of Manta
Anchal is sibling of Dev
Dev is sibling of Anchal
Meenu is sibling of Deepu
Meenu is sibling of Muniya
Deepu is sibling of Meenu
Deepu is sibling of Muniya
Muniya is sibling of Meenu
Muniya is sibling of Deepu
Shubham is brother of Mansi
Shubham is brother of Radha
Dev is brother of Anchal
Ashok is brother of Seema
Ashok is brother of Manta
Deepu is brother of Meenu
Deepu is brother of Muniya
Seema is sister of Manta
Seema is sister of Ashok
Radha is sister of Mansi
Radha is sister of Shubham
Mansi is sister of Radha
Mansi is sister of Shubham
Manta is sister of Seema
Manta is sister of Ashok
Anchal is sister of Dev
Meenu is sister of Deepu
Meenu is sister of Muniya
Muniya is sister of Meenu
Muniya is sister of Deepu
Suresh is grandfather of Mansi
Suresh is grandfather of Radha
Suresh is grandfather of Shubham
Tekchand is grandfather of Meenu
Tekchand is grandfather of Muniya
Tekchand is grandfather of Deepu
Suman is grandmother of Mansi
Suman is grandmother of Radha
Suman is grandmother of Shubham
Gyanwati is grandmother of Meenu
Gyanwati is grandmother of Muniya
Gyanwati is grandmother of Deepu


Activities
Terminal
Sep 9 23:41
74 %
shubham@inspiron-5590: ~/Documents/IIIT DELHI/SEM 5/AI/AI-PA1
Tekchand is grandfather of Deepu
Suman is grandmother of Mansi
Suman is grandmother of Radha
Suman is grandmother of Shubhan
Gyanwati is grandmother of Meenu
Gyanwati is grandmother of Muniya
Gyanwati is grandmother of Deepu
Tekchand is grandpa of Mansi
Tekchand is grandpa of Radha
Tekchand is grandpa of Shubhan
Tekchand is grandpa of Anchal
Tekchand is grandpa of Dev
Gyanwati is grandma of Mansi
Gyanwati is grandma of Radha
Gyanwati is grandma of Shubhan
Gyanwati is grandma of Anchal
Gyanwati is grandma of Dev
Seena is daughter-in-law of Suresh
Seema is daughter-in-law of Suman
Sarla is daughter-in-law of Gyanwati
Sarla is daughter-in-law of Tekchand
Yogesh is son-in-law of Gyanwati
Yogesh is son-in-law of Tekchand
Pankaj is son-in-law of Gyanwati
Pankaj is son-in-law of Tekchand
Suresh is father-in-law of Seena
Tekchand is father-in-law of Yogesh
Tekchand is father-in-law of Pankaj
Suman is mother-in-law of Seena
Gyanwati is mother-in-law of Yogesh
Gyanwati is mother-in-law of Pankaj
Ashok is uncle of Mansi
Ashok is uncle of Radha
Ashok is uncle of Shubhan
Ashok is uncle of Anchal
Ashok is uncle of Dev
Seena is aunt of Anchal
Seena is aunt of Dev
Seena is aunt of Meenu
Seena is aunt of Deepu
Seena is aunt of Muniya
Mamta is aunt of Mansi
Mamta is aunt of Radha
Mamta is aunt of Shubhan
Mamta is aunt of Meenu
Mamta is aunt of Deepu
Mamta is aunt of Muniya
Meenu is cousin of Mansi
Muniya is cousin of Mansi
Deepu is cousin of Mansi
Meenu is cousin of Radha
Muniya is cousin of Radha


Activities
Terminal
Sep 9 23:41
74 %
shubham@inspiron-5590: ~/Documents/IIIT DELHI/SEM 5/AI/AI-PA1
Seena is aunt of Deepu
Seena is aunt of Muniya
Mamta is aunt of Mansi
Mamta is aunt of Radha
Mamta is aunt of Shubhan
Mamta is aunt of Meenu
Mamta is aunt of Deepu
Mamta is aunt of Muniya
Meenu is cousin of Mansi
Muniya is cousin of Mansi
Deepu is cousin of Mansi
Meenu is cousin of Radha
Muniya is cousin of Radha
Deepu is cousin of Radha
Meenu is cousin of Shubhan
Muniya is cousin of Shubhan
Deepu is cousin of Shubhan
Meenu is cousin of Anchal
Muniya is cousin of Anchal
Deepu is cousin of Anchal
Meenu is cousin of Dev
Muniya is cousin of Dev
Deepu is cousin of Dev
Mansi is cousin of Anchal
Radha is cousin of Anchal
Shubhan is cousin of Anchal
Mansi is cousin of Dev
Radha is cousin of Dev
Shubhan is cousin of Dev
Mansi is cousin of Meenu
Radha is cousin of Meenu
Shubhan is cousin of Meenu
Mansi is cousin of Deepu
Radha is cousin of Deepu
Shubhan is cousin of Deepu
Mansi is cousin of Muniya
Radha is cousin of Muniya
Shubhan is cousin of Muniya
Anchal is cousin of Mansi
Dev is cousin of Mansi
Anchal is cousin of Radha
Dev is cousin of Radha
Anchal is cousin of Shubhan
Dev is cousin of Shubhan
Anchal is cousin of Meenu
Dev is cousin of Meenu
Anchal is cousin of Deepu
Dev is cousin of Deepu
Anchal is cousin of Muniya
Dev is cousin of Muniya
Shubhan is nephew of Mamta
Shubhan is nephew of Ashok
Dev is nephew of Seena
Dev is nephew of Ashok
Deepu is nephew of Seena
Deepu is nephew of Mamta
Radha is neice of Mamta
Radha is neice of Ashok
Mansi is neice of Mamta
Mansi is neice of Ashok
Anchal is neice of Seena
Anchal is neice of Ashok
Meenu is neice of Seena
Meenu is neice of Mamta
Muniya is neice of Seena

CODE :-

```
% Facts

male("Shubham").
male("Yogesh").
male("Suresh").
male("Pankaj").
male("Dev").
male("Tekchand").
male("Ashok").
male("Deepu").


female("Seema").
female("Radha").
female("Mansi").
female("Suman").
female("Gyanwati").
female("Mamta").
female("Anchal").
female("Sarla").
female("Meenu").
female("Muniya").

parent("Yogesh", "Mansi").
parent("Yogesh", "Radha").
parent("Yogesh", "Shubham").
parent("Seema", "Mansi").
parent("Seema", "Radha").
parent("Seema", "Shubham").
parent("Suresh", "Yogesh").
parent("Suman", "Yogesh").
parent("Gyanwati", "Seema").
parent("Mamta", "Anchal").
parent("Mamta", "Dev").
parent("Pankaj", "Dev").
parent("Pankaj", "Anchal").
parent("Gyanwati", "Mamta").
parent("Tekchand", "Seema").
parent("Tekchand", "Mamta").
parent("Ashok", "Meenu").
parent("Ashok", "Deepu").
parent("Ashok", "Muniya").
parent("Sarla", "Meenu").
parent("Sarla", "Deepu").
parent("Sarla", "Muniya").
parent("Gyanwati", "Ashok").
```

```
parent("Tekchand", "Ashok").


child("Mansi", "Yogesh").
child("Radha", "Yogesh").
child("Shubham", "Yogesh").
child("Mansi", "Seema").
child("Radha", "Seema").
child("Shubham", "Seema").
child("Yogesh", "Suresh").
child("Yogesh", "Suman").
child("Seema", "Gyanwati").
child("Mamta", "Gyanwati").
child("Anchal", "Mamta").
child("Dev", "Mamta").
child("Anchal", "Pankaj").
child("Dev", "Pankaj").
child("Mamta", "Tekchand").
child("Seema", "Tekchand").
child("Meenu", "Sarla").
child("Muniya", "Sarla").
child("Deepu", "Sarla").
child("Meenu", "Ashok").
child("Muniya", "Ashok").
child("Deepu", "Ashok").
child("Ashok", "Gyanwati").
child("Ashok", "Tekchand").

spouse("Yogesh", "Seema").
spouse("Suresh", "Suman").
spouse("Pankaj", "Mamta").
spouse("Gyanwati", "Tekchand").
spouse("Ashok", "Sarla").

is_spouse(X, Y) :- spouse(X, Y).
is_spouse(X, Y) :- spouse(Y, X),!.



% rules for father
is_father(Father, Child) :-                                    male(Father),

        parent(Father, Child).

% rules for mother
is_mother(Mother, Child) :-                                    female(Mother),

        parent(Mother, Child).

% rules for son
```

```
is_son(Son, Parent) :-                                                male(Son),
        parent(Parent, Son).

% rules for daughter
is_daughter(Daughter, Parent) :-                                      female(Daughter),
        parent(Parent, Daughter).

% rules for husband
is_husband(Husband, Wife) :-                                          male(Husband),
        female(Wife),
        is_spouse(Wife, Husband).

% rules for wife
is_wife(Wife, Husband) :-                                             female(Wife),
        male(Husband),
        is_spouse(Wife, Husband).

% rules for sibling :-
is_sibling(Sibling1, Sibling2) :-                                     is_mother(Mother,
Sibling1),
        is_mother(Mother, Sibling2),
        is_father(Father, Sibling1),
        is_father(Father, Sibling2),
        Sibling1 \= Sibling2.


% rules for brother :-
is_brother(Brother, Sibling) :-                                       male(Brother),
        is_sibling(Brother, Sibling),
        Sibling \= Brother.


% rules for sister :-
is_sister(Sister, Sibling) :-                                       female(Sister),
        is_sibling(Sister, Sibling),
        Sibling \= Sister.
```

```
% rules for grandfather : assumed fathers father

is_grandfather(G_father, G_Child) :-                    male(G_father),

        child(G_Child, Parent),

        male(Parent),

        child(Parent, G_father).

% rules for grandmother: assumed fathers mother
is_grandmother(G_mother, G_Child) :-                    female(G_mother),

        child(G_Child, Parent),

        male(Parent),

        child(Parent, G_mother).

% rules for grandpa : assumed mothers father
is_grandpa(G_father, G_Child) :-                    male(G_father),

        child(G_Child, Parent),

        female(Parent),

        child(Parent, G_father).

% rules for grandma: assumed mothers mother
is_grandma(G_mother, G_Child) :-                    female(G_mother),

        child(G_Child, Parent),

        female(Parent),

        child(Parent, G_mother).




% rules for daughter-in-law
is_daughter_in_law(Daughter_in_law, Parent) :-                    female(Daughter_in_law),

        is_husband(Husband, Daughter_in_law),

        child(Husband, Parent).

% rules for son-in-law
is_son_in_law(Son_in_law, Parent) :-                    male(Son_in_law),
```

```
        is_wife(Wife, Son_in_law),

        child(Wife, Parent).

% rules for father-in-law
is_father_in_law(Father_in_law, Child_in_law) :-        male(Father_in_law),

        is_spouse(Child_in_law,Spouse),

        is_father(Father_in_law, Spouse).

% rules for mother-in-law
is_mother_in_law(Mother_in_law, Child_in_law) :-        female(Mother_in_law),

        is_spouse(Child_in_law,Spouse),

        is_mother(Mother_in_law, Spouse).



% rules for uncle
is_uncle(Uncle, Child) :-                                male(Uncle),

        parent(Parent, Child),

        is_brother(Uncle, Parent).

% rules for aunt
is_aunt(Aunt, Child) :-                                  female(Aunt),

        parent(Parent, Child),

        is_sister(Aunt, Parent).

% rules for cousin
is_cousin(Cousin, Child) :-                              is_uncle(Uncle, Child),

        child(Cousin, Uncle).


is_cousin(Cousin, Child) :-                              is_aunt(Aunt, Child),

        child(Cousin, Aunt).

% rules for nephew
is_nephew(Nephew, Uncle) :-                              male(Nephew),

        is_sibling(Uncle, Sibling),

        child(Nephew, Sibling).
```

```
% rules for neice
is_neice(Neice, Uncle) :-                                   female(Neice),

        is_sibling(Uncle, Sibling),

        child(Neice, Sibling).

% rules for granduncle
is_granduncle(G_uncle, Child) :-                            is_grandfather(G_father,
Child),

        is_brother(G_uncle, G_father).

% rules for grandaunt
is_grandaunt(G_aunt, Child) :-                              is_grandfather(G_father,
Child),

        is_sister(G_aunt, G_father).




print_Father(X, Y) :- forall(is_father(X, Y), (write(X), write(" is father of "), writeln(Y))),nl,nl.

:- print_Father(_, _).

print_Mother(X, Y) :- forall(is_mother(X, Y), (write(X), write(" is mother of "), writeln(Y))),nl,nl.

:- print_Mother(_, _).

print_Son(X, Y) :- forall(is_son(X, Y), (write(X), write(" is son of "), writeln(Y))),nl,nl.

:- print_Son(_, _).


print_Daughter(X, Y) :- forall(is_daughter(X, Y), (write(X), write(" is daughter of "),
writeln(Y))),nl,nl.

:- print_Daughter(_, _).


print_Husband(X, Y) :- forall(is_husband(X, Y), (write(X), write(" is husband of "),
writeln(Y))),nl,nl.

:- print_Husband(_, _).


print_Wife(X, Y) :- forall(is_wife(X, Y), (write(X), write(" is wife of "), writeln(Y))),nl,nl.
```

```
:- print_Wife(_, _).


print_Sibling(X, Y) :- forall(is_sibling(X, Y), (write(X), write(" is sibling of "), writeln(Y))),nl,nl.

:- print_Sibling(_, _).

print_Brother(X, Y) :- forall(is_brother(X, Y), (write(X), write(" is brother of "), writeln(Y))),nl,nl.

:- print_Brother(_, _).


print_Sister(X, Y) :- forall(is_sister(X, Y), (write(X), write(" is sister of "), writeln(Y))),nl,nl.

:- print_Sister(_, _).


print_Grandfather(X, Y) :- forall(is_grandfather(X, Y), (write(X), write(" is grandfather of "),
writeln(Y))),nl,nl.

:- print_Grandfather(_, _).


print_Grandmother(X, Y) :- forall(is_grandmother(X, Y), (write(X), write(" is grandmother of "),
writeln(Y))),nl,nl.

:- print_Grandmother(_, _).


print_Grandpa(X, Y) :- forall(is_grandpa(X, Y), (write(X), write(" is grandpa of "),
writeln(Y))),nl,nl.

:- print_Grandpa(_, _).


print_Grandma(X, Y) :- forall(is_grandma(X, Y), (write(X), write(" is grandma of "),
writeln(Y))),nl,nl.

:- print_Grandma(_, _).




print_Daughter_in_law(X, Y) :- forall(is_daughter_in_law(X, Y), (write(X), write(" is daughter-in-
law of "), writeln(Y))),nl,nl.

:- print_Daughter_in_law(_, _).
```

```
print_Son_in_law(X, Y) :- forall(is_son_in_law(X, Y), (write(X), write(" is son-in-law of "), writeln(Y))),nl,nl.

:- print_Son_in_law(_, _).


print_Father_in_law(X, Y) :- forall(is_father_in_law(X, Y), (write(X), write(" is father-in-law of "), writeln(Y))),nl,nl.

:- print_Father_in_law(_, _).


print_Mother_in_law(X, Y) :- forall(is_mother_in_law(X, Y), (write(X), write(" is mother-in-law of "), writeln(Y))),nl,nl.

:- print_Mother_in_law(_, _).




print_Uncle(X, Y) :- forall(is_uncle(X, Y), (write(X), write(" is uncle of "), writeln(Y))),nl,nl.

:- print_Uncle(_, _).


print_Aunt(X, Y) :- forall(is_aunt(X, Y), (write(X), write(" is aunt of "), writeln(Y))),nl,nl.

:- print_Aunt(_, _).


print_Cousin(X, Y) :- forall(is_cousin(X, Y), (write(X), write(" is cousin of "), writeln(Y))),nl,nl.

:- print_Cousin(_, _).


print_Nephew(X, Y) :- forall(is_nephew(X, Y), (write(X), write(" is nephew of "), writeln(Y))),nl,nl.

:- print_Nephew(_, _).


print_Neice(X, Y) :- forall(is_neice(X, Y), (write(X), write(" is neice of "), writeln(Y))),nl,nl.

:- print_Neice(_, _).


print_G_Uncle(X, Y) :- forall(is_granduncle(X, Y), (write(X), write(" is granduncle of "), writeln(Y))),nl,nl.

:- print_G_Uncle(_, _).
```

```
print_G_Aunt(X, Y) :- forall(is_grandaunt(X, Y), (write(X), write(" is grandaunt of "),
writeln(Y))),nl,nl.

:- print_G_Aunt(_, _).
```