Ahsanullah University of Science & Technology

Department of Computer Science & Engineering

CSE 4108

Artificial Intelligence

Submitted By:

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Date of Submission: **19 february, 2020**

Q. Modify the Python and Prolog codes demonstrated above to find the grandparents of somebody. And Enrich the KB demonstrated above with ‘brother’, ‘sister’, ‘uncle’ and ‘aunt’ rules in Python and Prolog.

Python code:

```
tupleList1=[('parent', 'Rashid', 'Hasib'),

            ('parent', 'Hasib', 'Rakib'),

            ('parent', 'Rakib', 'Sohel'),

            ('parent', 'Rakib', 'Rebeka'),

            ('parent', 'Sohel', 'Mukta'),

            ('parent', 'Sohel', 'Rumi')]

Male=['Rashid', 'Hasib', 'Rakib', 'Sohel', 'Mukta']


#finding grandparent of X

X=str(input("Grandchild:"))

print('Grandparent:', end=' ')

i=0

while(i<=5):

    if ((tupleList1[i][0] == 'parent')&( tupleList1[i][2] == X)):

        for j in range(6):

            if ((tupleList1[j][0] == 'parent') & ( tupleList1[i][1] == tupleList1[j][2])):

                print(tupleList1[j][1])

    i=i+1
```

```
#finding brother of X

X=str(input("Sibling Name:"))

print('Brother:', end=' ')

flag=0

i=0

while(i<=5):

            if ((tupleList1[i][0] == 'parent')&(tupleList1[i][2] == X)):

        for j in range(6):

            if ((tupleList1[j][0] == 'parent')&(tupleList1[i][1] == tupleList1[j][1]) & (tupleList1[i][2] != tupleList1[j][2])):



                for k in Male:

                            if(tupleList1[j][2] == k):

                        print(tupleList1[j][2], end=' ')




    i=i+1



#finding sister of X

X=str(input("Sibling Name:"))

print('Sister:', end=' ')

flag=0
```

```
i=0

while(i<=5):

    if ((tupleList1[i][0] == 'parent')&(tupleList1[i][2] == X)):

   for j in range(6):

    if ((tupleList1[j][0] == 'parent')&(tupleList1[i][1] == tupleList1[j][1]) & (tupleList1[i][2] != tupleList1[j][2])):


     for k not in Male:

         if(tupleList1[j][2] == k):

        print(tupleList1[j][2], end=' ')




 i=i+1




#Find Uncle of X



X=str(input("Enter nephew or niece Name:"))

print('Uncle:', end=' ')

flag=0

i=0

while(i<=5):

    if ((tupleList1[i][0] == 'parent')&(tupleList1[i][2] == X)):
```

```
    Y = tupleList1[i][1]

    for j in range(6):

      if ((tupleList1[j][0] == 'parent')&(tupleList1[i][1] == tupleList1[j][2])):

        Z = tupleList1[j][1]

  i=i+1


m=0

while(m<=5):

      if ((tupleList1[m][0] == 'parent')&(tupleList1[m][1] == Z)):

    if(tupleList1[m][2] != Y):


      for k in Male:

        if(tupleList1[m][2] == k):

            print(tupleList1[m][2], end=' ')

            flag=1

      if(flag==0):

        pass


  m=m+1
```

```
#Finding Aunt of X


X=str(input("Enter nephew or niece Name:"))

print('Aunt:', end=' ')

flag=0

i=0

while(i<=5):

      if ((tupleList1[i][0] == 'parent')&(tupleList1[i][2] == X)):

    Y = tupleList1[i][1]

    for j in range(6):

      if ((tupleList1[j][0] == 'parent')&(tupleList1[i][1] == tupleList1[j][2])):

        Z = tupleList1[j][1]

  i=i+1


m=0

while(m<=5):

      if ((tupleList1[m][0] == 'parent')&(tupleList1[m][1] == Z)):

    if(tupleList1[m][2] != Y):


      for k in Male:

        if(tupleList1[m][2] == k):

            flag=1
        if(flag==0):

           print(tupleList1[m][2], end=' ')


  m=m+1
```

Prolog code:

```
male('Rashid').

male('Hasib').

male('Rakib').

male('Sohel').

male('Mukta').

parent('Rashid' , 'Hasib').

parent('Hasib' , 'Rakib').

parent('Rakib' , 'Sohel').

parent('Rakib' , 'Rebeka').

parent('Sohel' , 'Mukta').

parent('Sohel' , 'Rumi').

fBrother(X,Y) :- parent(Z,X),parent(Z,Y),male(Y),not(X=Y).

fSister(X,Y) :- parent(Z,X),parent(Z,Y),not(male(Y)),not(X=Y).

fUncle(X,Y) :-parent(Z,X),fBrother(Z,Y),male(Y).

fAunt(X,Y) :-parent(Z,X),fSister(Z,Y),not(male(Y)).

grandChild(X, Z) :- parent(Z, Y), parent(Y, X).
```

```
printGrandParent :-

write(' GrandChild: '), read(X),

write('Grandparent: '),grandChild(X, Gc), write(Gc),fail.

printBrother :-

write(' Enter the name of a sibling:'),read(A),

write(' The Brother is:'),fBrother(A,B),write(B),fail.

printSister :-

write(' Enter the name of a sibling:'),read(C),

write(' The Sister is:'),fSister(C,D),write(D),fail.

printUncle :-

write(' Enter the name of a niece or nephew:'),read(X),

write(' The Uncle is :'),fUncle(X,Un),write(Un),fail.

printAunt :-

write(' Enter the name of a niece or nephew:'),read(X),

write(' The Aunt is :'),fAunt(X,A),write(A),fail.
```