



Ahsanullah University of Science and Technology (AUST)
Department of Computer Science and Engineering

Lab Report

Course No : CSE4108
Course Title : Artificial Intelligence Lab
Assignment No : 01
Date of Submission : 28-11-2022
Submitted To : Mr. Raihan Tanvir, Mr Shimul Paul

Submitted By:

Name : Debopriya Deb Roy
Student ID : 190104065
Section : B
Lab Group : B1

Question 1:

Enrich the KB demonstrated above with 'brother', 'sister', 'uncle' and 'aunt' rules in Prolog.

Code in Prolog:

```
parent(dipok, deb).
parent(dipok, sruti).
parent(dipok, jeet).
parent(dipok, swarup).
```

```
male(deb).
male(jeet).
male(swarup).
female(sruti).
parent(shekhhor, debo).
brother(shekhhor, samir).
sister(shekhhor, uma).
uncle(X, Y) :- parent(Z, X), brother(Z, Y).
aunt(X, Y) :- parent(Z, X), sister(Z, Y).
```

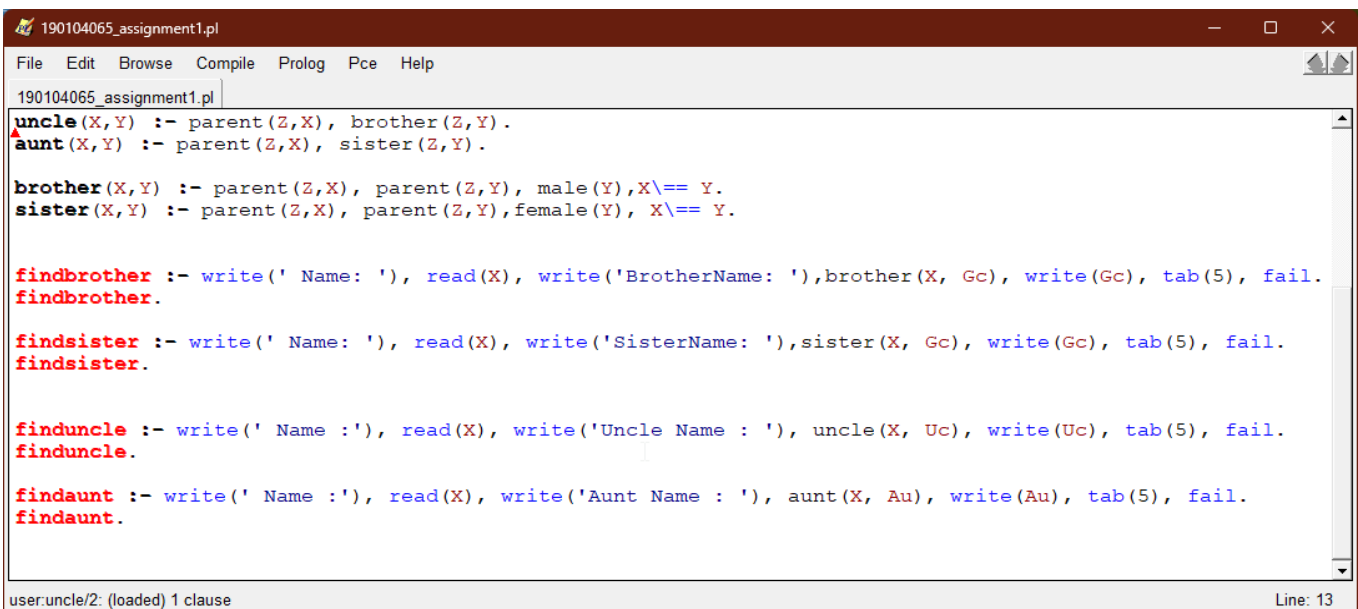
```
brother(X, Y) :- parent(Z, X), parent(Z, Y), male(Y), X \== Y.
sister(X, Y) :- parent(Z, X), parent(Z, Y), female(Y), X \== Y.
```

```
findbrother :- write(' Name: '), read(X), write('BrotherName: '), brother(X, Gc), write(Gc), tab(5), fail.
findbrother.
```

```
findsister :- write(' Name: '), read(X), write('SisterName: '), sister(X, Gc), write(Gc), tab(5), fail.
findsister.
```

```
finduncle :- write(' Name: '), read(X), write('Uncle Name: '), uncle(X, Uc), write(Uc), tab(5), fail.
finduncle.
```

```
findaunt :- write(' Name: '), read(X), write('Aunt Name: '), aunt(X, Au), write(Au), tab(5), fail.
findaunt.
```



```
190104065_assignment1.pl
File Edit Browse Compile Prolog Pce Help
190104065_assignment1.pl
uncle(X,Y) :- parent(Z,X), brother(Z,Y).
aunt(X,Y) :- parent(Z,X), sister(Z,Y).

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

findbrother :- write(' Name: '), read(X), write('BrotherName: '), brother(X, Gc), write(Gc), tab(5), fail.
findbrother.

findsister :- write(' Name: '), read(X), write('SisterName: '), sister(X, Gc), write(Gc), tab(5), fail.
findsister.

finduncle :- write(' Name: '), read(X), write('Uncle Name: '), uncle(X, Uc), write(Uc), tab(5), fail.
finduncle.

findaunt :- write(' Name: '), read(X), write('Aunt Name: '), aunt(X, Au), write(Au), tab(5), fail.
findaunt.

user:uncle/2: (loaded) 1 clause
Line: 13
```

```

?- findbrother.
   Name: deb.
  BrotherName: jeet      swarup
  true.

?- findsister.
   Name: deb.
  SisterName: sruti
  true.

?- finduncle.
   Name :debo
  |: .
  Uncle Name : samir
  true.

?- findaunt.
   Name :debo.
  Aunt Name : uma
  true.

?- █

```

Question 2:

Enrich the KB demonstrated above with ‘brother’, ‘sister’, ‘uncle’ and ‘aunt’ rules in Python.

Code in Python:

Finding brother & sister of a child

```

bro_sis_List = [('parent', 'dipok', 'deb', 'male'), ('parent', 'dipok', 'debanjona', 'female'),
                ('parent', 'samir', 'sruti', 'female'), ('parent', 'dipok', 'jeet', 'male')]

```

```

def findBrother():

```

```

    personName = str(input("Person name:"))

```

```

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

```

```

    i = 0

```

```

    while (i <= 3):

```

```

        if ((bro_sis_List[i][0] == 'parent') & (bro_sis_List[i][2] == personName)):

```

```

            for j in range(4):

```

```

                if ((bro_sis_List[j][0] == 'parent') & (bro_sis_List[i][1] == bro_sis_List[j][1]) & (bro_sis_List[j][3] ==
'male') & (bro_sis_List[j][2] != personName)):

```

```

                    print(bro_sis_List[j][2], end='\n')

```

```

            i = i+1

```

```

def findSister():

```

```

    personName = str(input("Person name:"))

```

```

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

```

```

    i = 0

```

```

    while (i <= 3):

```

```

    if ((bro_sis_List[i][0] == 'parent') & (bro_sis_List[i][2] == personName)):
        for j in range(4):
            if ((bro_sis_List[j][0] == 'parent') & (bro_sis_List[i][1] == bro_sis_List[j][1]) & (bro_sis_List[j][3] ==
'female') & (bro_sis_List[j][2] != personName)):
                print(bro_sis_List[j][2], end='\n')
        i = i+1

```

```

findBrother()
findSister()

```

Finding Uncle & Aunt of a person

```

unc_aunt_List = [('parent', 'dipok', 'deb'), ('brother', 'dipok', 'samir'),
                 ('sister', 'dipok', 'uma'), ('brother', 'dipok', 'krisno'),
                 ('brother', 'dipok', 'suvro')]

```

```

def findUncle():
    personName = str(input("Person name:"))
    print('Uncle:', end=' ')
    i = 0
    while (i <= 2):
        if ((unc_aunt_List[i][0] == 'parent') & (unc_aunt_List[i][2] == personName)):
            for j in range(5):
                if ((unc_aunt_List[j][0] == 'brother') & (unc_aunt_List[i][1] == unc_aunt_List[j][1])):
                    print(unc_aunt_List[j][2], end='\n')
            i = i+1

```

```

def findAunt():
    personName = str(input("Person name:"))
    print('Aunt:', end=' ')
    i = 0
    while (i <= 2):
        if ((unc_aunt_List[i][0] == 'parent') & (unc_aunt_List[i][2] == personName)):
            for j in range(5):
                if ((unc_aunt_List[j][0] == 'sister') & (unc_aunt_List[i][1] == unc_aunt_List[j][1])):
                    print(unc_aunt_List[j][2], end='\n')
            i = i+1

```

```

findUncle()
findAunt()

```

```

ddroy@DDR13Laptop MINGW64 ~/Desktop
$ C:/Users/ddroy/AppData/Local/Programs/Python/Python310/python.exe c:/Users/ddroy/Desktop/190104065_Assignment1.py
Person name:C:/Users/ddroy/AppData/Local/Programs/Python/Python310/python.exe c:/Users/ddroy/Desktop/190104065_Assignment1.py
Brother: Person name:deb
Sister: debanjona
Person name:deb
Uncle: samir      I
krisno
suvro
Person name:deb
Aunt: uma

```