

18BECE30558

TITHI PATEL

PRACTICAL-7

Program (1): Code for Prolog program for family hierarchy in Artificial Intelligence.

predicates

```
male(symbol).  
female(symbol).  
father(symbol,symbol).  
husband(symbol,symbol).  
brother(symbol,symbol).  
sister(symbol,symbol).  
listbrothers(symbol).  
listsisters(symbol).  
mother(symbol,symbol).  
grandfather(symbol).  
grandmother(symbol).  
uncle(symbol).  
aunt(symbol).  
cousin(symbol).  
listgrandsons(symbol).  
listgranddaughters(symbol).  
printmenu.  
action(integer).  
repeat.
```

clauses

```
male(dashrath).  
male(ram).  
male(laxman).  
male(bharat).  
male(luv).  
male(kush).  
male(son_of_laxman).  
female(kaushalya).  
female(sita).  
female(urmila).  
female(daughter_of_dashrath).
```

```
father(dashrath,ram).
father(dashrath,laxman).
father(dashrath,bharat).
father(ram,luv).
father(ram,kush).
```

```
father(laxman,son_of_laxman).
father(dashrath,daughter_of_dashrath).
husband(dashrath,kaushalya).
husband(ram,sita).
husband(laxman,urmila).
mother(X,Y): husband(Z,X),
father(Z,Y).
brother(X,Y): father(Z,X),
father(Z,Y),
X<>Y,
male(X).
sister(X,Y): father(Z,X),
father(Z,Y),
X<>Y,
female(X).
listbrothers(X) : brother(Z,X),
write(Z).
listsisters(X): sister(Z,X),
write(Z).
grandfather(X): father(Y, Z),
father(Z,X),
write(Y, " is the grandfather of ",X,"\n").
grandmother(X): husband(Z,X),
father(Z,V),
father(V,Y),
write(Y, " is the grandmother of ",X,"\n").
```

```
listgrandsons(X): father(X,Z),
father(Z,Y),
male(Y),
write(Y,"\n"),
fail.
listgrandsons(X): husband(Y,X),
father(Y,V),
```

```
father(V,Z),
male(Z),
write(Z,"\n"),
fail.
```

```
listgranddaughters(X): father(X,Z),
father(Z,Y),
female(Y),
write(Y,"\n"),
fail.
```

```
listgranddaughters(X): husband(Y,X),
father(Y,V),
father(V,Z),
female(Z),
write(Z,"\n"),
fail.
```

```
uncle(X): brother(Z,Y),
father(Z,X),
male(Y),
write(Y,"\n"),
fail.
```

```
aunt(X): husband(Z,Y),
brother(Z,V),
father(V,X),
write(Y,"\n"),
fail.
```

```
cousin(X): father(Z,X),
father(V,Y),
Z<>V,
brother(V,Z),
write(Y,"\n").
```

```
repeat.
```

```
repeat: repeat.
```

```
action(1): write("\nEnter name of person whose father is to be found : "),
readln(X),
write("\n"),
write("Father of ",X," is:"),
father(Z,X),
write(Z,"\n"),
```

fail.

```
action(2): write("\nEnter name of person whose mother is to be found : "),
readln(X),
write("\n"),
write("Mother of ",X," is:"),
```

```
mother(Z,X),
write(Z,"\n"),
fail.
```

```
action(3): write("\nEnter name of person whose brothers are to be found : "),
readln(X),
write("\n"),
write("Brothers of ",X," are:\n"),
listbrothers(X),
write("\n"),
fail.
```

```
action(4): write("\nEnter name of person whose sisters are to be found : "),
readln(X),
write("\n"),
write("Sisters of ",X," are:\n"),
listsisters(X),
write("\n"),
fail.
```

```
action(5): write("\nEnter name of person whose grandsons are to be found : "),
readln(X),
write("\n"),
write("Grandsons of ",X," are:\n"),
listgrandsons(X),
write("\n"),
fail.
```

```
action(6): write("\nEnter name of person whose granddaughters are to be found : "),
readln(X),
write("\n"),
write("Granddaughters of ",X," are:\n"),
listgranddaughters(X),
write("\n"),
fail.
```

```
action(7): write("\nEnter name of person whose uncles are to be found : "),
```

```
readln(X),
write("\n"),
write("Uncles of ",X," are:\n"),
uncle(X),
write("\n"),
fail.
action(8): write("\nEnter name of person whose aunties are to be found : "),
readln(X),
write("\n"),
write("Aunties of ",X," are:\n"),
```

```
aunt(X),
write("\n"),
fail.
action(9): write("\nEnter name of person whose cousins are to be found : "),
readln(X),
write("\n"),
write("Cousins of ",X," are:\n"),
cousin(X),
write("\n"),
fail.
action(0).
printmenu :
repeat,
write("\n1. Display Father of?\n"),
write("2. Display Mother of?\n"),
write("3. List all brothers of?\n"),
write("4. List all sisters of?\n"),
write("5. List all grandson of?\n"),
write("6. List all granddaughter of?\n"),
write("7. List all uncles of?\n"),
write("8. List all aunty of?\n"),
write("9. list all cousins of?\n"),
write("0. exit\n"),
write("Enter your choice : "),
readInt(Choice),
action(Choice),
write("\n"),
repeat.
```

Output:

```

                                     Family Tree
7. List all uncles of?
8. List all aunty of?
9. list all cousins of?
0. exit
Enter your choice : 7

Enter name of person whose uncles are to be found : kush

Uncles of kush are:
laxman
bharat

1. Display Father of?
2. Display Mother of?
3. List all brothers of?
4. List all sisters of?
5. List all grandson of?
6. List all granddaughter of?
7. List all uncles of?
8. List all aunty of?
9. list all cousins of?
0. exit
Enter your choice : _
```