Laboratorul Nr.1: Introducere in Prolog

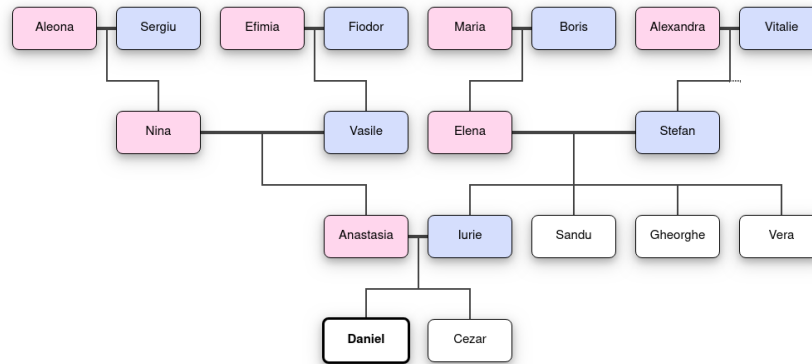Figure 1: Arborele genealogic

```prolog
male(iurie).
male(stefan).
male(gheorghe).
male(vasile).
male(daniel).
male(cezar).
male(sandu).
male(foidor).
male(boris).
male(sergiu).
male(vitalie).
male(fiodor).
male(alexei).

female(anastasia).
female(alexandra).
female(aleona).
female(elena).
female(nina).
female(vera).
female(efimia).
female(maria).



parent(daniel, iurie).
parent(daniel, anastasia).
```

```prolog
parent(cezar, iurie).
parent(cezar, anastasia).

parent(iurie, stefan).
parent(iurie, elena).

parent(gheorghe, stefan).
parent(gheorghe, elena).

parent(sandu, stefan).
parent(sandu, elena).

parent(vera, stefan).
parent(vera, elena).


parent(stefan, vitalie).
parent(stefan, alexandra).
parent(alexei, vitalie).
parent(alexei, alexandra).

parent(elena, boris).
parent(elena, maria).


parent(anastasia, vasile).
parent(anastasia, nina).


parent(vasile, fiodor).
parent(vasile, efimia).

parent(nina, sergiu).
parent(nina, aleona).

mother(X, Y) :- parent(X, Y), female(Y), X\=Y.
father(X, Y) :- parent(X, Y), male(Y), X\=Y.
brother(X, Y) :- male(Y), parent(X, Z), parent(Y, Z), X\=Y.
uncle(X, Y) :- male(Y), parent(X, Z), brother(Y, Z).
sister(X, Y)  :- female(Y), parent(X, Z), parent(Y, Z), X\=Y.
aunt(X, Y) :- female(Y), parent(X, Z), brother(Y, Z), X\=Y.
grandparent(X, Y) :- parent(Z, Y), parent(X, Z), X\=Y.
grandfather(X, Y) :- male(Y), grandparent(X, Y).
grandmother(X, Y) :- female(Y), grandparent(X, Y).
```

```
great-grandparent(X, Y) :- parent(X, A), parent(A, B), parent(B, Y), X\=Y.
great-grandmother(X, Y) :- female(Y), great-grandparent(X, Y).
great-grandfather(X, Y) :- male(Y), great-grandparent(X, Y).

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

```
1  ?- parent(daniel, X).              1  ?- sister(gheorghe, X).
2  X = iurie ;                        2  X = vera .
3  X = anastasia.                     3
4                                     4  ?- aunt(daniel, vera).
5  ?- brother(iurie, X).              5  true .
6  X = gheorghe ;                     6
7  X = gheorghe ;                     7  ?- uncle(daniel, X).
8  X = sandu ;                        8  X = gheorghe ;
9  X = sandu .                        9  X = gheorghe ;
10                                    10 X = sandu ;
11 ?- great-grandmother(daniel, X)    11 X = sandu .
12 X = alexandra ;                    12
13 X = aleona ;                       13 ?- sister(daniel, vera).
14 X = efimia ;                       14 false.
15 X = maria .                        15
16                                    16 ?- mother(iurie, vera).
17 ?- ancestor(daniel, X).            17 false.
18 X = iurie ;                        18
19 X = anastasia ;                    19 ?- mother(iurie, X).
20 X = stefan ;                       20 X = elena.
21 X = elena ;                        21
22 X = vitalie ;                      22 ?- father(elena, X).
23 X = alexandra ;                    23 X = boris .
24 X = boris ;                        24
25 X = maria ;                        25 ?-
26 X = vasile ;                       26
27 X = nina ;                         27
28 X = fiodor ;                       28
29 X = efimia ;                       29
30 X = sergiu ;                       30
31 X = aleona ;                       31
32 false.                             32
33                                    33
34 ?-                                 34
35                                    35
```

Figure 2: Rezultate

Concluzie

In aceasta lucrare de laborator ne-am familiarizat cu limbajul de programare
Prolog. El este un limbaj de programare logic, ceea ce inseamna ca noi definim un
set de fapte, descriem careva reguli, pe baza carora apoi facem interogari/operatii.

Astfel, in lucrare am definit arborele genealogic al familiei, care contine fapte, precum: `male`, `parent` si set de reguli ca: `father`, `sister` etc. Personal am observat o similaritate intre modul de functionare a limbajului Prolog cu limbajul SQL - primul are baza de cunostinte, al doilea baza de date si ambele raspund la interogari pe baza datelor inregistrate.