Report

Logic Programming and Artificial Intelligence

Laboratory work #1

Done by FAF-151 student: Calancea D.

Verified by : Lazu V.

Chişinău 2018

Laboratory work #1

# Prolog statements. Facts, Rules, Variables, Constants, Scopes, Predicate call. Prolog programs structure.

# Goal:

The goal of the work is to train the abilities of working in the Prolog environment.

# Task:

1. Elaborate a knowledge base, a Prolog program that consists of the facts of a family tree, using the following relationships: **parent, woman, man**.

# Implementation:

male(daniel).

male(victor).

male(oleg).

male(dumitru).

male(sergiu).

male(ion).

male(ilie).

male(mihail).

male(cornel).

male(andrei).

female(tamara).

female(larisa).

female(galina).

female(svetlana).

female(felicia).

female(mihaela).

female(rodica).

female(aurica).

female(mila).

female(corina).

female(olga).

parent(tamara, daniel).

parent(andrei, daniel).

parent(mila, dumitru).

parent(ion, dumitru).

parent(mila, sergiu).

parent(ion, sergiu).

parent(mila, cornel).

parent(ion, cornel).

parent(svetlana, felicia).

parent(mihail, felicia).

parent(svetlana, mihaela).

parent(mihail, felicia).

parent(galina, rodica).

parent(ilie, rodica).

parent(galina, aurica).

parent(ilie, aurica).

parent(mila, corina).

parent(ion, corina).

parent(sergiu, tamara).

parent(olga, tamara).

parent(sergiu, ion).

parent(olga, ion).

parent(sergiu, ilie).

parent(olga, ilie).

parent(sergiu, mihail).

parent(olga, mihail).

father(X, Y) :-

male(X),

parent(X, Y).

mother(X, Y) :-

female(X),

parent(X, Y).

brother(X, Y) :-

male(X),

sibling(X, Y).

sister(X, Y) :-

female(X),

sibling(X, Y).

parents(L, X) :-

bagof(A, parent(A, X), L).

sibling(X, Y) :-

bagof(A, parent(A, X), L1),

bagof(B, parent(B, Y), L2),

L1 == L2,

not(X = Y).

uncle\_or\_aunt(X, Y) :-

bagof(A, parent(A, Y), L3),

bagof(B, sibling(B, X), L4),

intersection(L3, L4, C),

length(C, Le),

Le > 0.

uncle(X, Y) :-

male(X),

uncle\_or\_aunt(X, Y).

aunt(X, Y) :-

female(X),

uncle\_or\_aunt(X, Y).

grandparent(X, Y, [H|T]) :-

var(H) -> parents(T, Y),

parent(X, H),

grandparent(X, Y, T).

# Conclusion:

During this laboratory work I’ve learned how to use Prolog statements in order to build programs with knowledge and fact bases and how to correctly query the programs.