Cerinta Proiect 2

- Demonstrator bazat pe rezolutie -

2013-2014

Programare Logică

Demonstrator bazat pe rezolutie

Specificati in Maude un demonstrator bazat pe rezolutie pentru calculul propozitional clasic.

Solutia presupune:

1. aducerea formulelor la forma normala conjunctiva (FNC) si
2. aplicarea algoritmului Davis-Putnam.

Puteti continua programul de mai jos in Maude:

```
fmod LIMBAJ is
   sorts Variabila Literal Formula .
   subsorts Variabila < Literal < Formula .
   ops x y z u v : -> Variabila .
   op !_ : Formula -> Formula . *** negatia
   op !_ : Variabila -> Literal .
   op _->_ : Formula Formula -> Formula [prec 50 ] .  *** implicatia
   op _V_ : Formula Formula -> Formula [prec 50 ] . *** disjunctia
   op _&_ : Formula Formula -> Formula [prec 50 ] . *** conjunctia
endfm
```

```
fmod FNC-CLAUZA is
   protecting LIMBAJ .
   *** Scrieti ecuatii care aduc o formula la FNC.
   *** Se poate defini o functie care intoarce FNC a unei formule.
   op fnc : Formula -> Formula .

   sorts IntClauza Clauza FormaCl .
   subsort  Literal < IntClauza .
   op vid : -> IntClauza .
   op _,_ : IntClauza IntClauza -> IntClauza [assoc comm id: vid] .
   op [_] : IntClauza -> Clauza . *** clauza vida este {vid}

   subsort Clauza < FormaCl .
   op nil : -> FormaCl .
   *** forma clauzala este o multime de clauze
   op __ : FormaCl FormaCl -> FormaCl [assoc comm id: nil] .
   *** Descrieti functia
   op formaClauzala : Formula -> FormaCl .
   *** care sa aiba ca argument o FNC si sa intoarca forma clauzala .
endfm
```

```
fmod DAVIS-PUTNAM is
   including FNC-CLAUZA .
   *** definiti functia
   op dp : FormaCl -> Bool .
   *** care implementeaza algoritmul Davis-Putnam
endfm
```

```
fmod DEM-REZ is
   including  DAVIS-PUTNAM .
   sorts IntMultForm MultForm . *** ipotezele sunt o multime de formule
   subsort Formula < IntMultForm .
   op vidf : -> IntMultForm .
   op _;_ : IntMultForm IntMultForm -> IntMultForm [assoc comm id: vidf] .
   op {_} : IntMultForm -> MultForm .

   op formaClauzala : IntMultForm -> FormaCl .
   *** intoarce reuninune formelor clauzale ale formulelor din multime

   op _|-_ : MultForm Formula -> Bool .

   var G : IntMultForm . var f : Formula .

   eq {G} |- f = not (dp(formaClauzala(G , ! f))) .

endfm
```