

Praktikumi nr 12 ülesanne

1. Tutvuda Loengu nr 10 „Loogika valemite interpreteerimine“ (peatükk 12.3) materjaliga
2. Olgu Kripke struktuur esitatud faktimallidega:

```
transition(State_i, State_j).  
state(State,Label_list).      % Label_list - list of atomic proposition labels
```

Näide:

```
transition(a,b).  
transition(a,h).  
transition(h,k).  
transition(h,f).  
transition(b,f).  
transition(h,i).  
transition(f,i).  
transition(f,c).  
transition(i,g).  
transition(i,j).  
transition(g,d).  
transition(g,e).  
  
state(a,[x,y,z]).  
state(b,[x,y]).  
state(c,[q]).  
state(d,[r]).  
state(e,[r]).  
state(f,[x,y,q]).  
state(g,[q]).  
state(h,[x,y,r]).  
state(i,[x,y]).  
state(j,[q]).  
state(k,[x,y,p]).
```

3. Realiseerida $M, s_0 \models E \leftrightarrow g$ algoritm:

```

 $W_{-1} := \emptyset$ 
 $W_0 := [\varphi]$ 
 $i := 0$ 
while  $W_{i+1} \neq W_i \wedge S_0 \cap W_{i+1} = \emptyset$ 
do
     $i := i + 1$ 
     $W_{i+1} := \text{pre}(W_i) \cup W_i$ 
od
if  $S_0 \cap W_{i+1} \neq \emptyset$  then write 'Formula  $E \leftrightarrow \varphi$  is valid'
else write 'Formula  $E \leftrightarrow \varphi$  is invalid'

```

4. Algoritmi realiseerimiseks kasutada hulgateooria tehteid ja eel-kujutuse **pre** arvutamiseks järgmist reeglit.

```

pre(Rel, Set, SetA):-
    assert(pre_set([])),
    prel(Rel, Set),
    retract(pre_set(A)), list_to_set(A, SetA).

```

kus

```

prel(_, []).
prel(Rel, [El | Set]):-
    Rel_i=..[Rel, Pre_el, El],
    call(Rel_i),
    arg(1, Rel_i, Prel),
    retract(pre_set(P)),
    assert(pre_set([Prel | P])),
    fail.
prel(Rel, [El | Set]):-
    prel(Rel, Set).

```

