

## 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:

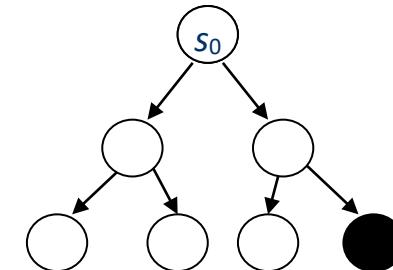
```
transition(a,b).  
transition(a,h).  
transition(h,k).  
transition(h,f).  
transition(b,f).  
transition(h,i).  
transition(f,i).  
transition(f,c).  
transition(i,g).  
transition(i,j).  
transition(g,d).  
transition(g,e).
```

```
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  $M, S_0 \models E \leftrightarrow g$  algoritmi:

```
W-1 := ∅
W0 := [|φ|]
i := 0
while Wi+1 ≠ Wi ∧ S0 ∩ Wi+1 = ∅
    do
        i := i + 1
        Wi+1 := pre(Wi) ∪ Wi
    od
if S0 ∩ Wi+1 ≠ ∅ then write 'Formula E↔φ is valid'
else write 'Formula E↔φ is invalid'
```

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



$M, S_0 \models E \leftrightarrow g$

```
pre(Rel, Set, SetA):-
    assert(pre_set([])),
    pre1(Rel, Set),
    retract(pre_set(A)), list_to_set(A, SetA).
```

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```
pre1(_, []).
pre1(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.
pre1(Rel, [El | Set]):-
    pre1(Rel, Set).
```