

FORMÁLNE METÓDY TVORBY SOFTVÉRU

DOMÁCA ÚLOHA 3

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1.)

- a) Nil a $\tau.\tau.\text{Nil}$ -> Áno
- b) $\tau.a.\text{Nil} + \tau.b.\text{Nil}$ a $a.\text{Nil} + b.\text{Nil}$ -> Nie
- c) $\mu X.\tau.X$ a $\mu X.(\tau.X + \tau.\text{Nil})$ -> Áno
- d) $\mu X.\tau.X$ a Nil -> Áno

Status	Time	Property	Verify	Edit	Delete	Options
	50 ms	$X \approx Y$				
	25 ms	$XX \approx YY$				
	26 ms	$XXX \approx YYY$				
	25 ms	$XXXX \approx YYYY$				

Obr. 1: Výsledky bisimulácií

2.)

Po boji... Funkčný kód, sender posiela správy kým nedostane potvrdenie a mediumy ich vedia zahadzovať, kontrola slabej bisimulácia vyšla správne. Receiver vždy vráti potvrdenie ale output iba ak potvrdenie korešponduje s jeho vnútorným stavom. (obrázky na ďalšej strane)

Protokol_send_receive

Parse

CCS

TCCS

16

```

1  ProtokolSpecifikacia = in1.'out1.ProtokolSpecifikacia +
2  in2.'out2.ProtokolSpecifikacia + in3.'out3.ProtokolSpecifikacia;
3
4  Protokol = (Sender | Medium1 | Medium2 | Receiver)\{sm01, sm11, sm02, sm12, sm03, sm13, mr01, mr11, mr02, mr12, mr03, mr13, rm0,
   rm1, ms0, ms1};
5
6  Medium1 = (sm01.(sm01.Medium1 + Medium1)) + (sm11.(sm11.Medium1 + Medium1)) +
7  (sm02.(sm02.Medium1 + Medium1)) + (sm12.(sm12.Medium1 + Medium1)) +
8  (sm03.(sm03.Medium1 + Medium1)) + (sm13.(sm13.Medium1 + Medium1));
9
10 Medium2 = (rm0.(rm0.Medium2 + Medium2)) + (rm1.(rm1.Medium2 + Medium2));
11
12 Sender = Sender0;
13
14 Sender0 = in1.SenderRep01 + in2.SenderRep02 + in3.SenderRep03;
15
16 Sender1 = in1.SenderRep11 + in2.SenderRep12 + in3.SenderRep13;
17
18 SenderRep01 = sm01.(ms0.Sender1 + SenderRep01);
19 SenderRep02 = sm02.(ms0.Sender1 + SenderRep02);
20 SenderRep03 = sm03.(ms0.Sender1 + SenderRep03);
21 SenderRep11 = sm11.(ms1.Sender0 + SenderRep11);
22 SenderRep12 = sm12.(ms1.Sender0 + SenderRep12);
23 SenderRep13 = sm13.(ms1.Sender0 + SenderRep13);
24
25 Receiver = Receiver0;
26
27 Receiver0 = mr01.'out1.rm0.Receiver1 + mr02.'out2.rm0.Receiver1 + mr03.'out3.rm0.Receiver1 +
28 mr11.'rm1.Receiver0 + mr12.'rm1.Receiver0 + mr13.'rm1.Receiver0;
29
30 Receiver1 = mr11.'out1.rm1.Receiver0 + mr12.'out2.rm1.Receiver0 + mr13.'out3.rm1.Receiver0 +
31 mr01.'rm0.Receiver1 + mr02.'rm0.Receiver1 + mr03.'rm0.Receiver1;
32

```

Obr. 2: Finálny výsledok

Status	Time	Property	Verify	Edit	Delete	Options
✓	101 ms	ProtokolSpecifikacia ≈ Protokol	🔄	✎	🗑️	☰

Obr. 3: Výsledky bisimulácii