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He Jifeng

Would you like to write to the editor of 'Theoretical Computer Science'? Send a copy to Rick Hehner too.

I look forward to seeing an outline of your own paper.

Tony

*With Compliments*

Dear Tony:

In the paper "a more complete model of
1983 with Rick Hehner
communicating processes", the definition of hiding in the uninterruptible version does not satisfy the condition (P1) in the definition of process, i.e. it is inconsistent.

For example, let P be a process defined as

$$past = \langle\rangle \wedge present = \{a!0\}$$

$$\vee\ past = \langle a!0\rangle \wedge present = \{b!0, c!0\}$$

$$\vee\ past = \langle a!0\rangle ^\frown \langle b!0\rangle \wedge present = \{\}$$

$$\vee\ past = \langle a!0\rangle ^\frown \langle c!0\rangle \wedge present = \{\}$$

(i.e. $P \triangleq a!0 \rightarrow (b!0 \rightarrow STOP \mid c!0 \rightarrow STOP)$)

from the definition of chan b in P given in that paper it follows that

chan b in P : $past = \langle\rangle \wedge present = \{a!0\}$

$\vee\ past = \langle a!0\rangle \wedge present = \{c!0\}$

$\vee\ past = \langle a!0\rangle \wedge present = \{\}$

hence $\langle a!0\rangle^\frown\langle c!0\rangle \notin pasts(P)$, but from (P1) we should have $\langle a!0\rangle^\frown\langle c!0\rangle \in pasts(P)$.

Furthermore, suppose that

$$P \triangleq \mu P.\ b!0 \rightarrow P$$

( due to W.A. Roscoe )

then we have

$$\text{chan } b \text{ in } P \triangleq past = \langle\rangle \wedge present = \{\}$$

( i.e. chan b in P = STOP ? )

Moreover

chan b in P $\underline{sat}$ $(\exists s.\ P[past : s] \wedge$

$past = s \setminus b \ \wedge \ present.b = \{\})$

chan b in P $\underline{sat}$ false

hence we conclude that the hiding theorem can't be proved from the uninterrupible version without using the theorem's antecedent

$$\exists f. \ \# past.b \leq f(past \setminus b)$$

Perhaps we can define chan b in P as

$\exists s, M. \ P[past : s ; present : M] \wedge past = s \setminus b$
$\wedge \ present = M \setminus b$

$\vee$

$\exists s \ \forall n \ \exists t, M. \ \# t \geq n \wedge t.b = t$
$\wedge P[past : s \frown t ; present : M] \wedge s \setminus b \leq past$

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The second term in the above definition describes the basic fact that after a process engages the infinite internal communications, there will be no restriction on its behaviour past.

Now Jeff. Sanders and I are interested to work out a new model (based on R or F).

He Jifeng