A Correction on "A Family of 2-process Mutual Exclusion Algorithms: Notes on UNITY: 13-90"
Notes on UNITY: 22-90

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On page 6 of the above note, $I1.\ [1 \leq m \leq 3 \equiv u] \wedge [3 \leq m \leq 4 \Rightarrow \neg p]$
and $I2.\ [1 \leq n \leq 3 \equiv v] \wedge [3 \leq n \leq 4 \Rightarrow p]$
are listed as invariants of the program **2-mutex**, reproduced below.

Program 2-mutex

initially $u, v, m, n = false, false, 0, 0$
assign
{process u's program}

	$u, m := true, 1$	if	$u.h \wedge m = 0$
▯	$p, m := v, 2$	if	$m = 1$
▯	$m := 3$	if	$\neg p \wedge m = 2$
▯	$u, m := false, 4$	if	$m = 3$
▯	$p, m := true, 0$	if	$m = 4$
▯	{process v's program}		
	$v, n := true, 1$	if	$v.h \wedge n = 0$
▯	$p, n := \neg u, 2$	if	$n = 1$
▯	$n := 3$	if	$p \wedge n = 2$
▯	$v, n := false, 4$	if	$n = 3$
▯	$p, n := false, 0$	if	$n = 4$

end.

If $m = 4$ then $I1$ implies $\neg u \wedge \neg p$.
In the possible execution $\{m, n, u = 4, 1, false\}\ p, n := \neg u, 2$ if $n = 1$ $\{m, p = 4, true\}$, the postcondition violates the conjunct $[3 \leq m \leq 4 \Rightarrow \neg p]$ of $I1$.

Analogously, for $n = 4$ and statement $p, m := v, 2$ if $m = 1$ the conjunct $[3 \leq n \leq 4 \Rightarrow p]$ of $I2$ can be violated.

These invariants can be modified as follows
$I1.\ [1 \leq m \leq 3 \equiv u] \wedge [m = 3 \Rightarrow \neg p]$
$I2.\ [1 \leq n \leq 3 \equiv v] \wedge [n = 3 \Rightarrow p]$.

The proofs of the safety and progress properties are not affected by this change.