

Errata for the Fourth Printing

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Note: Page and line numbers below are in the fourth printing.

p. xvi:

Chapter 23 title should be “Modeling V: Partially Synchronous System Models”.

p. 35, line 8:

”are left as an exercise (Exercise 3.6)”.

p. 48:

After Exercise 3.5, add a new exercise:

“Prove that the total time complexity of the HS algorithm is at most $3n$ if n is a power of 2, and $5n$ otherwise.”

p. 61, line 19:

”time is $O(\text{diam})$, the number of messages is $O(\text{diam}|E|)$, and the number of bits is $O(n|E|b)$.”

p. 111, line 3:

“it must be that i_k does not send a message...”

p. 154:

After Exercise 6.5, add a new exercise:

“If the FloodSet algorithm is run for only f rounds instead of $f + 1$, then what is the largest number of different decisions that can be reached by nonfaulty processes?”

p. 155:

After Exercise 6.13, add a new exercise:

“If the EIGStop algorithm is run for only f rounds instead of $f + 1$, then what is the largest number of different decisions that can be reached by nonfaulty processes?”

p. 234:

After Exercise 8.16, add a new exercise:

“Consider a channel D , which is similar to channel C on p. 204, except that it allows internal message duplication.

More specifically, in addition to the `send` and `receive` actions, D has two internal actions, `duplicate` and `discard`. When a `send(m)` occurs, the message m is added to the end of the queue along with a Boolean tag. Tags for successive messages that are sent alternate, $1, 0, 1, 0, \dots$. A `duplicate` causes an arbitrary message in the queue to be duplicated in place, along with its tag. The channel also keeps track of the tag of the last message delivered. A `receive` delivers the first message on the queue, as before, but only if the tag is unequal to that of the last message delivered. A `discard` discards the first message on the queue, provided the tag is the same as that of the last message delivered.

- (a) Give formal code for automaton D , in the same style as the other code in this chapter.
- (b) Prove carefully that D implements C , in the sense of inclusion of sets of traces. Use a simulation relation.”

p. 286:

The precondition for `set-flagi` should use = instead of :=.

p. 330:

After Exercise 10.23, add a new exercise: :

“Prove that the Bakery algorithm guarantees bounded bypass.”

p. 425, line 6:

“returned by the second of these two sets of reads (which...”

p. 425, line 7:

“by the first of the two sets of reads”

What follows now is a collection of changes that would have to be made all together, for consistency. This change would simplify some arguments. The new observation is that we can omit Condition 1 in the statement of Lemma 16. It is implied by Condition 2, because β is a sequence.

p. 434, line -1:

Replace “four” by “three”.

p. 435, line 1:

Replace “four” by “three”.

p. 435, Lemma 13.16:

Remove the first condition and renumber the others.

After the Lemma, remove the first sentence, explaining Condition 1, and renumber the mentions of Conditions 2, 3, and 4 in the rest of this paragraph as 1, 2, and 3.

Modify the proof to begin with:

“We begin by claiming that for any operation π in Π , there are only finitely many operations ϕ such that $\phi < \pi$. This is because, if there were infinitely many such operations ϕ , then by Condition 1, all of their invocation events would have to precede the response event of β . (The fact that β contains no incomplete operations implies that such a response event does in fact appear in β .) But β is a sequence, so no element can have infinitely many predecessors, a contradiction.

Now we describe how to insert a serialization”

p. 435, line -6:

Instead of “Condition 1 implies”, say “The claim at the beginning of this proof implies”.

p. 436, line 13:

Condition 1

p. 436, line 18:

Condition 2

- p. 436, line 19:
Condition 3
- p. 439, line 14:
Replace “four” with “three”.
- p. 439:
Remove the entire proof numbered 1, which spans from line 16 to line -7 on the page. Renumber the remaining three parts as 1, 2 and 3 instead of 2, 3 and 4.
- p. 443, line -3:
Replace “four” with “three”.
- p. 443, line -2 and -1:
“Conditions 2 and 3 are immediate, so all we must show is Condition 1. For this, the following...”
- p. 444, line -15 and -14:
Omit the tiny paragraph “Using Claims 13.24 and...an exercise”
- p. 453:
Omit Exercise 13.27.
- p. 444, line 13:
Replace “For Condition 2,” with “To show Condition 1,”
- p. 580, line 1:
Replace “four” with “three”.
This is the end of coordinated set of changes.
- p. 700, lines -1 and -2:
Four instances of α should be α' .
- p. 731:
After Exercise 22.13, add a new exercise: :
“Prove that the Probe protocol is not message bounded. Do this by showing, for each k , how to produce a complete execution α that has no k -extensions.”
- p. 736, line -12:
Replace “lower” with “lower(C)”.

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