

Sketch about synchronization

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Manuscript for synchronization sketch IN3030 lecture 12/2-2020 10:15 am at University of Oslo.
(Small corrections 19/2-2021 for IN3030 spring 2021.)

1. Magnus enters the room several minutes before the start of the lecture – he should stand near the blackboard that is furthest away from the door. Eric enters hurriedly at 12:15:15.
2. As Eric enters, both start writing on each their blackboards (Magnus at the northernmost; Eric at the southernmost): “IN3030 Today: Synchronization” and bids welcome to the lecture.
3. Discover each other:
Eric: "Hi, what are YOU doing here?"
Magnus: "I am doing today's lecture!"
Eric: "No, I am doing today's lecture!"
4. Both pull out a version of the lecture plan:
Magnus (pulls out a printed schedule): "No, I am doing today's lecture, see this schedule!"
Eric (pulls out a printed schedule): "No, I am doing today's lecture, see THIS schedule!"
Magnus: "Mine is the REVISED schedule!" (points to the word REVISED)
Magnus: "Mine also says REVISED!" (points to the word REVISED)
5. EJ: "What do we do about this?"
6. Both in unison (triggered by Eric sweeping his hand across toward ME): "OK, After you!!!" (repeat 3 times, i.e., a total of 4 times).
7. Eric: "I must be able to find a method for us to decide who should lecture – after all, I AM a PROFESSOR!" (Eric scratches his head...) – "... hey, I have a great idea! A flawless system that will ensure that there is only ONE lecturer!"
8. Eric: Sets up an opaque bowl and explains: “Here is how we ensure that there is no more than one lecturer: When entering, a lecturer goes over to the bowl and check whether or not it is empty. If it is empty, the lecturer then finds a piece of chalk and puts it into the bowl – thus indicating that there now is a lecturer. If the bowl is NOT empty, *i.e.*, there is chalk in the bowl, then the lecturer knows that there ALREADY is another lecturer, and he can leave. This FLAWLESS system thus *ensures* that there is ONLY one lecturer!”
9. Eric then walks over to the bowl, checks that it is empty then moves away gets a piece of chalk. He then starts bragging about his FLAWLESS system to ensure that only one will be lecturing while waving the piece of chalk in his hand. In the meantime, Magnus resolutely and quickly moves over to the bowl, checks it (flip it upside-down), then swiftly finds a piece of chalk, dumps it into the bowl and then moves to the blackboard away from the door and starts writing the agenda on the board.
10. When Eric is done bragging about his FLAWLESS system, he goes to the bowl and drops the piece of chalk into the bowl and then goes back to the board. BOTH start lecturing – saying welcome and that today, we will talk about *synchronization* – BOTH then stop when discovering that there are **TWO** lecturers.
11. Small discussion: Magnus (sarcastic): “FLAWLESS system indeed!”.
12. Eric (again scratching his head): “Let me think ... Ah! Now I know: I need TWO bowls. And now we start by putting chalk into one's OWN bowl and then checking the OTHER bowl. Eric: "This method ensures that there is AT MOST ONE LECTURER!"
13. Both now go to the blackboard, find a piece of chalk, put it into one's own bowl, then goes over to the other bowl to find chalk in it. Then both points to the other and says: “Ah, it is HIM that will lecture today!” and then both pack up and leave.
4. Eric returns and starts the actual lecturing.

Assignment: (Think carefully about your answer – and explain, e.g., with examples):

- **What went wrong in point 4, 6, 9-10, and 13?**
- **Is the statement at the end of point 8 correct?**
- **Is the statement in point 13 correct?**