Seminar Report: Groupy

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1 Open questions

Try to answer all the open questions in the assignment. When asked to do so, perform experiments to support your answers.

a) **What happens if the leader worker crashes?**
If the leader worker crashes the other workers remain blocked in the "last" color. This happens as in gms1 there is no function that enables leader election, thus the rest remain without a leader.

b) **What happens now if the leader worker crashes?**
If the leader crashes in gms2, the other processes will start an election, and they will choose one of them to be the new leader and they won't stop executing on the same view.

c) **How does the membership service support the crash of a slave worker if we are not monitoring slaves?**
It will continue working as normal because the leader still broadcasts to all the slaves the chosen color. The crashed slave worker won't get the message creating unnecessary traffic but the other slaves will change its state.

d) **Why do the workers desynchronize?**
When the crash or shutdown happens during a multicast, some nodes may get the "new" color while the rest continue with the previous one, thus getting desynchronized.

e) **How would we have to change the implementation to handle the possibly lost messages? How would this impact performance?**
If P1 crashes while sending a multicast, the processes that received the message before P1 crashed should re-transmit this message to the ones that weren't able to receive it due to P1's crash before changing the view. It implies that a lot more messages would be wandering the net, increasing latency and/or performance, but all processes would eventually receive all messages.

f) **What would happen if we wrongly suspect the leader to have crashed?**
The leader would desynchronize respect others, and the others would be synchronized with each other, as a new leader would be elected among them.

g) **When is it possible that a process crashes after it has delivered a message that will not be delivered by any correct node?**
It could happen if a process while is executing the election crashes while multicasting the "last" message, but the messages that has already sent until this point suffer from a high latency, and in that time another process assumes that this first process has crashed and completes the election process changing the view, then when the messages sent by the first process arrive all get discarded as they have an inferior view number.

2 Personal opinion

Give your opinion of the seminar assignment, indicating whether it should be included in next year's course or not.

- **Noa**:
  Very tricky, even though it looks like it's working well, it's not. It wasn't difficult and guided too, nice seminar. It should be included next year, I had fun.

- **Albert**:
  I found it quite difficult to figure out if it was really working or if we had some error and that lead to us getting some sloppy errors. However, I think is interesting and that should be included in next year.

- **Pol**:
  It should be included, but it was hard to debug you had to be fast with the crashes and there were errors that didn't manifest, but at the end it was satisfactory to see how processes agreed with the color and continued working.