

Distributed Systems

TP n°2 - Token passing

Hadrien Croubois
hadrien.croubois@ens-lyon.fr

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All documents are available on my website: <http://hadriencroubois.com/#Teaching>

Conclusion of TP1

By now, you should be able to:

- Spawn processes
- Send messages to a specific process
- Receive messages

You will need all this for today's session. Also, make sure you know how not to get stuck in a receive mode.

Waves in distributed systems : the token approach

Today's objective is to deploy processes and have a token follow a predefined path between them. All spawned processes should halt once the message has gone through.

Question 1

- a) Write a function which moves a token back and forwards M times between two different processes. After the messages have been sent, all spawned processes should terminate gracefully.

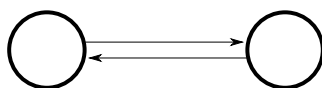


Figure 1: Ping/Pong topology

- b) Write a function which moves a token M times around a ring of N processes (with $N > 2$). Note that if $N = 2$ we fall the ping/pong topology. After the messages have been sent, all spawned processes should terminate gracefully.

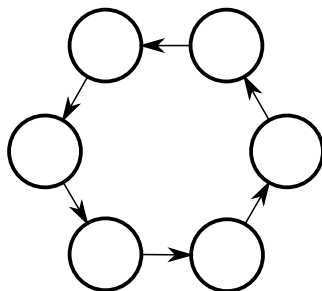


Figure 2: Ring topology

- c) Write a function which moves a token M around a star of $N + 1$ processes (with $N > 1$ the number of peripheral processes). After the messages have been sent, the processes should terminate gracefully.

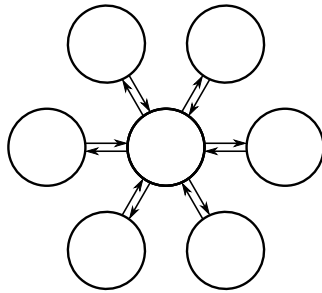


Figure 3: Star topology

Bonus

You managed to answer all the previous questions ? Good work ! Now try and deploying a really distributed system by running the ping/pong topology between two different Erlang instances running on different machines !