Lab 3 : RabbitMQ

1. Goals

In this lab you will work with the RabbitMQ middleware which provides different mechanisms for indirect communication.

Java RMI does not provide failure transparency.

2. Official documentation

[1] https://www.rabbitmq.com

3. Install

RabbitMQ is installed on the machines at UFR IM2AG.
To develop with RabbitMQ, you will need the client side SDK and some additional libraries that are available on Moodle or directly from internet.

4. Start with the tutorial

Read, understand and try the programs at http://www.rabbitmq.com/getstarted.html

5. Ring with RabbitMQ

5.1 Write a program that creates a unidirectional ring containing three nodes one of which is the initiator. The initiator sends a message that goes through the ring. The program stops when the message has done its tour.

For the creation of the different nodes you can use Java Threads. For the communication between nodes you can use RabbitMQ communication channels.

5.1 Generalize the previous program so as to create a ring of N nodes.

6. Election on a Ring

Modify the previous program so as to implement the election algorithm (the node with the smaller ID is to be elected).

7. Tree with RabbitMQ

Write a program that takes as an input a matrix that defines a tree topology and instantiate it using RabbitMQ.

8. Diffusion on a tree

Using your RabbitMQ tree, implement the diffusion algorithm (one node sends a message to all nodes). You can first consider the simple version (without acknowledgements) and then consider the second version (with acknowledgements).