COMP329 — Robotics & Autonomous Systems — Assessment Three

This assessment is about using the Jason implementation of AgentSpeak to build a multi-agent system.

- You are required to implement a variation of the "snow white" multi-agent system in AgentSpeak/Jason. The system was described with respect to Concurrent MetateM in the lectures on deductive reasoning agents. A few modifications are required to the original system are required, as described below.
- The system is a resource controller, with a single agent called SnowWhite controlling the resource, and three other agents (eager, greedy, and courteous) requesting the resource.
- To request a resource an agent with name "x" will use the built-in Jason primitive

  `.broadcast(tell, ask(x))`

  which will send a "tell" message to all agents in the system.
- When SnowWhite allocates the resource, she does this with the following primitive:

  `.broadcast(tell, give(x))`
- Once an agent has been allocated the resource, *it remains in this agent's possession until that agent does*:

  `.broadcast(tell, release(x))`

  Snow White should not allocate the resource to any other agent until it is released.
- Snow White should aim to give the resource to every agent that asks, but should ensure mutual exclusion as described above. SnowWhite should also try to allocate resources "fairly", i.e., to ensure that no agent is "starved".
- The other agents are as follows:
  - "greedy" will simply continually ask for the resource, i.e., will repeatedly "ask"; when it has been given the resource, it will immediately release the resource.
  - "eager" will ask for the resource initially, and then when it has been given the resource, it will wait 2 seconds, release the resource, and then ask again.
  - "courteous" will ask for the resource whenever he sees that eager and greedy have both been given the resource; when he is given the resource, he will wait two seconds and then release it.

The hand in mechanism for this assignment will be announced by email later; the aim is to use electronic submission.

DEADLINE: Friday, 13 January 2012.