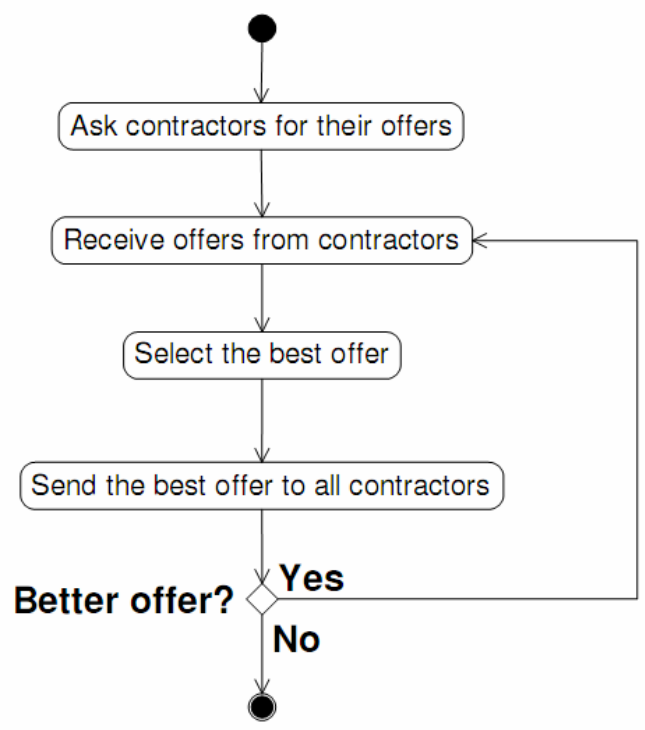
Homework 2 (09-11-2007)

Submission Deadline (18-11-2007)

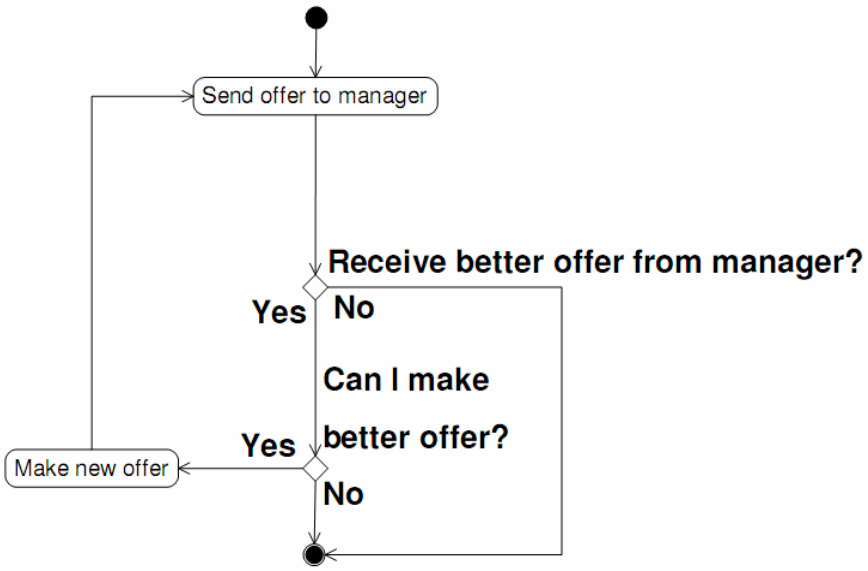
Question 1:

Implement an Iterated Contract Net Protocol.

- Iterated Contract Net Protocol differs from ordinary CNP in the following: after receiving replies from potential contractors the manager selects the best received offer and sends it to all possible contractors for possible reconsidering their offer (an possibly propose a better offer).
- This iterative process stops when no more better offers are received)



Flow of Events for Manager



Flow of Events for Contractor

Question 2:

You have to create an Agent-based peer-to-peer File transfer service.

We consider simple text file for transfer purposes (which will be composed of 'n' blocks or 'n' lines).

	Text File to be transferred
Block 1 (or line 1)	FIPA describes reference model for an agent platform in form of key
Block 2 (or line 2)	Roles necessary for managing the agent platform, these are
Block 3 (or line 3)	i). Agent Management System (AMS), ii). Agent Communication.
…	
Block n (or line n)	And iii). Directory Facilitator (DF).

You don't need to read file. You can simply consider a list (representing blocks/lines) of a text file. (Or populate the list by taking input from user). Or use any other simpler way ☺

Now consider a simple Torrent Protocol Animation as guideline for your scenario
http://en.wikipedia.org/wiki/Image:Torrentcomp_small.gif

1. For your scenario you can consider N instances of "Client_Agent".
2. Tracker/Coordinator is also an instance of "Client_Agent" (i.e. Tracker/Coordinator is Client_Agent as well but with additional Tracker/Coordinator "role". So you need to consider some coordinator selection protocol i.e. Client_Agents have to come to a consensus about Tracker/Coordinator. Or to make it simple you can consider another service which selects coordinator among N client agents and then informs all about the chosen coordinator).
3. There is no Transient Failure in system. ´
4. Client_agents send Ping message to Coordinator/Tracker agent. That serves for 02 purposes
    a. To discover if new Coordinator/Tracker need to be selected (but in our case we assume that there is no transient failure, so this feature wont be used)
    b. To enable Coordinator/Tracker to maintain a list of alive peers/agents.
5. Client_agents will query Coordinator to obtain list of peers. (To make it simple just consider a very naive way using which coordinator selects random bunch of peers in reply to query).
6. Agent who is supposed to share a file will register itself at Tracker as Seed_Agent.
7. Assume that at one time only 01 agent will share file in the system. Upon registering a Seed_Agent Tracker will announce the shared file. (You can reuse subscribe code from HW1, but in this case subscription is done at Coordinator not at DF).
8. Use a very simple block distribution file transfer mechanism. (sharing using the blocks/lines of text file)
    a. Transfer one block/line at a time

Question 3: (bonus point 02)

FIPA describes reference model for an agent platform in form of key roles necessary for managing the agent platform, these are

i). Agent Management System (AMS),
ii). Agent Communication Channel (ACC) and
iii). Directory Facilitator (DF).

Describe all these roles in the context of JADE Agent Platform, services provided by representative agents for these roles, their interaction among each other. (max 1-2 pages). Use bullets and precise points.

Deliverables

Documented Source Code (with instructions for execution) and Report for Bonus question emailed by deadline (18th November) to ahaseeb@kth.se with Subject "DAIIA07 HW2"

NOTE: You don't need to write report for Programming Questions.

A small demo (10 min) of running agents. Demo applies for Bonus question as well.

Time Slots for Demo:
Monday 19th November: 12 – 2 pm, & 5 pm – 8 pm (30 slots 10 min each). Slots sheet will be on 8th Floor elevator C.