

CIS 716.5 Spring 2010 Homework 2

1. Consider the following interaction scenarios:

(a)

		<i>i</i>	
		defect	cooperate
<i>j</i>	defect	3	4
	cooperate	1	2
		3	4

(b)

		<i>i</i>	
		defect	cooperate
<i>j</i>	defect	-1	2
	cooperate	1	-1
		-1	2

(c)

		<i>i</i>	
		defect	cooperate
<i>j</i>	defect	3	1
	cooperate	4	2
		3	4

For each scenario in turn (the marks shown are those for the answer for *each* scenario, so overall the question is worth 75 points):

- Informally analyse the scenario to determine what each agent should do.
(5 points)
 - Classify the preferences that agents have with respect to outcomes.
(5 points)
 - Determine which strategies are strongly or weakly dominated (and explain why)
(5 points)
 - Use the idea of deleting strongly dominated strategies to simplify the scenario where appropriate.
(5 points)
 - Identify any Nash equilibria.
(5 points)
2. The FIPA Agent Communication Language (ACL) is commonly used for designing communication between agents.

Write down a short dialogue between four agents, *A*, *B*, *C* and *D*, using the FIPA ACL, in which they perform task-sharing using the contract net.

Your answer should include the content of all performatives, and you should explain both the scenario in which the task-sharing is set (you should come up with a plausible example from a domain with which you are familiar) and what each agent is achieving with each performative that it passes, in terms of the mental state of the other agents.