

Introduction to Multi-Agent-Programming

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Exercise Sheet 1

Due: November 9th, 2010

Exercise 1.1 (Blackboard System (3 Pts))

Implement a blackboard system for the fire brigades. Use the `Exercise01Blackboard` class for your implementation. Override the `compute` method to compute an assignment matrix based on the utility matrix. A target can only be given to maximally one agent.

The result of a blackboard system assignment should be simulated in each round in the following way:

- The first agent will get the first choice for a target and write this to the board.
- Then the second agent will get a choice from the targets not on the board.
- ... etc. ...
- Until all agents have chosen a target.

When an agent has a choice it will chose the target with the highest utility from the available targets.

Exercise 1.2 (Contract Net (7 Pts))

Implement a contract net for the fire brigades. Use the `Exercise01ContractNet` class for your implementation. Override the `compute` method to compute an assignment matrix based on the utility matrix. A target can only be given to maximally one agent.

Each target should be auctioned using a contract net, i.e.:

- Offer the target for auctioning.
- Each agent will bid its utility for the target, if it is higher than the agent's current contract's utility.
- The highest bidder will get the contract.
- When an agent already has a previous contract, it will cancel it. In that case the canceled contract's target will need to be reauctioned.

All targets should be auctioned until no target receives any bids anymore.