TEK5010 Multiagent systems

Lecture 12: Bargaining

Exercise: Bargaining 1

Question 1

In this exercise agents are bargaining for resource allocations given by $\langle Ag, \, \mathcal{Z}, v_1, \ldots, v_N \rangle$. The set of goods $\mathcal{Z} = \{z_1, z_2\}$ are distributed between the set of agents $Ag = \{1,2\}$. The initial endowment of the goods is given by $Ag_1 = \{z_2\}$ and $Ag_2 = \{z_1\}$. The valuation functions are given by:

$$v_1(\{z_1\}) = 4$$
$$v_1(\{z_2\}) = 1$$
$$v_2(\{z_1\}) = 5$$
$$v_2(\{z_2\}) = 7$$

a) What would be a suitable protocol for bargaining in this case? Specify the needed requirements.

b) What is the set of possible allocations? Could you calculate the social welfare of the different allocations? What allocations are Pareto optimal if no side payments are allowed?

c) What would be allocation if agent 1 is selected to give the first bargaining proposal and side payments are allowed?

d) What would be allocation if agent 2 is selected for first proposal instead?

e) Comment on your findings.