

TEK5010 Multiagent systems

Lecture 10: Cooperative game theory

Exercise: Cooperative games 2

### Question 1

- a) 3 agents  $Ag = \{a, b, c\}$  are evaluating their expected utility in terms of collaborating in different groups. However, coalitional games present several problems from a computational perspective. Explain what you understand these problems to be by giving *two* examples of representation of the characteristic function of the 3 agents:

$$v(\emptyset) = 0$$

$$v(\{a\}) = 3, v(\{b\}) = 0, v(\{c\}) = 7$$

$$v(\{a, b\}) = 13, v(\{a, c\}) = 16, v(\{b, c\}) = 7$$

$$v(\{a, b, c\}) = 26$$

- b) Solve the game.
- c) Calculate the Shapley value for each player in this game.