

## Introduction to Multi-Agent-Programming

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### Exercise Sheet 11

**Due: February 1st, 2010**

**Exercise 11.1** (Social Choice and Manipulation (0.5 pt))

Three people are voting on their drinks (Milk, Wine, Beer). Only one drink will be served at their party. Borda protocol is used. First two people voted

(a)  $Milk > Wine > Beer$

(b)  $Beer > Milk > Wine$

Assume true preference of the third people is  $Wine > Milk > Beer$ . How will he/she vote if the results of the others are known?

**Exercise 11.2** (Auction and True Preferences (0.5 pt))

Name an auction protocol that encourages the bidders to declare their true preferences and one auction protocol that encourages bidders not to state their preferences. Explain your answer.

**Exercise 11.3** (Voting as Strategic Game (1 pt))

FORMALIZE (Please use a formal way) plurality voting with 2 voters and 2 alternatives as a strategic game.

**Exercise 11.4** (Arrow's Theorem (1 pt))

Why does Arrow's theorem only hold for at least 2 voters and at least 3 alternatives?

**This exercise should be submitted during the lecture on Monday (February 1st)**