

CSCE 782: Fall 2004

Test 1

12 October 2005

Statement of Academic Integrity

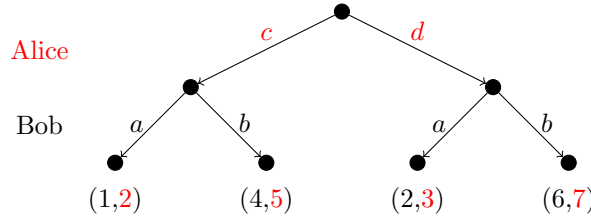
I understand that it is the responsibility of every member of the Carolina community to uphold and maintain the academic standards and integrity of the University of South Carolina. Any member of the University community, who has reasonable grounds to believe that an infraction of the Code of Student Academic Responsibility has occurred, has an obligation to report the alleged violation.

I certify that I have neither given nor received unauthorized aid on this test.

Student's Name

Student's Signature

- (10 points)** The game of soccer requires the players to make very quick decisions that take into account their current surroundings, their set of abilities, and the set of plays the coach recommended during the time out. Why is it impossible to build a purely subsumption agent to play soccer?
- (10 points)** What is the solution to the following game?



- (10 points)** What is the Nash equilibrium for the following game?

		Alice		
		<i>d</i>	<i>e</i>	<i>f</i>
Bob	<i>a</i>	1,2	2,3	3,4
	<i>b</i>	4,5	6,7	5,6
	<i>c</i>	2,9	5,2	7,5

- (10 points)** Tit-for-Tat can only be (successfully) used on games that have what property?
- (15 points)** Two agents are engaged in a monotonic concession negotiation using the Zeuthen strategy. Agent i has a utility of $U_i(\delta) = 2 - \frac{1}{2}\delta$ and agent j has $U_j(\delta) = 2\delta + 3$. δ ranges from 0 to 6. What are the agents' initial proposals? Who must make the first counterproposal? (show why)
- (10 points)** Draw the search tree for finding the winner in a combinatorial auction of 3 items where you have received all singleton bids (bids for one item) and all pair bids (bids for two items) and nothing else.
- (15 points)** Given the value function $v(\cdot)$ defined in the table below for agents 1,2,3. Give two outcomes that are in the core and, for each, show the coalition structure that makes it feasible. Use two different coalition structures.

S	$v(S)$
(1)	5
(2)	2
(3)	1
(12)	8
(13)	6
(23)	5
(123)	7

- (20 points)** Alice, Bob, and Caroline have moved to a new house and are holding a vote to decide if they should paint the house. This time, neither Alice or Bob get any value from having the house painted but Caroline gets a value of 20 if its painted. Calculate their Groves-Clarke payments assuming Alice lies and the rest tell the truth.