

Exercises for MI

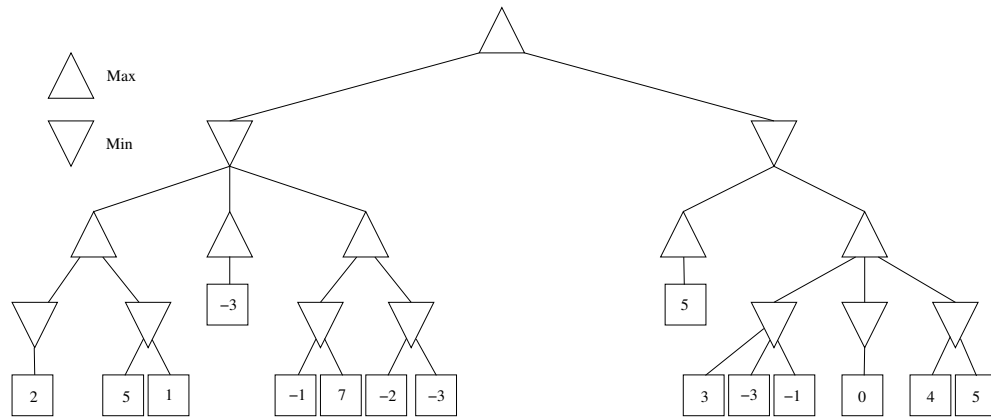
Exercise sheet 12

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Exercise 1 Continue with the exercises from last time.

Exercise 2*

Consider the following game tree:



- Compute the utility values for all nodes.
- If the utility values are computed in a depth-first order that always considers branches in left-to-right order, which nodes can be pruned, i.e. for which nodes is it not required to compute the utility value in order to determine the optimal strategy for both players?
- For each node in the game tree, determine the ordering of the outgoing branches that is optimal in the following sense: if utility values are computed for nodes in that order, then a maximal number of nodes can be pruned in the utility computation.

Exercise 3*

Consider the following game representation in normal form:

Barb	Andy		
	a_1	a_2	a_3
b_1	2 0	1 0	2 2
b_2	2 0	1 1	0 0
b_3	2 1	0 0	0 2
b_4	2 0	0 0	0 2
b_5	0 0	1 1	0 2
b_6	0 0	1 1	0 0

The matrix shows the utilities for Andy (red numbers) and Barb (green numbers) for each combinations of strategies they can choose (Andy has 3 strategies to choose from, Barb has 6).

- Determine at least two Nash equilibria consisting of pure strategies for this game.
- Show that there is no Nash equilibrium where Barb plays b_4 , and Andy plays any (possibly mixed) strategy.