

CS-49: Game Theory

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Problem 1.

Find a 2×2 matrix for a classical game in which Alice and Bob would each prefer to go first.

	Bob	
Alice	A: -1, B: -1	A: 0, B: 2
	A: 2, B: 0	A: -1, B: -1

TABLE 1. Alice vs. Bob

This is a zero-sum game. However, whoever moves first can force the game into a state where they have a positive outcome if the other player makes the optimal move.

1. If Alice goes first and picks the second row, then Bob's best move is to pick the first column and get a payoff of 0, but that gives Alice a payoff of 2.
2. If Bob goes first and picks the second column, then Alice's best move is to pick the first row and get a payoff of 0, but that gives Bob a payoff of 2.