Assignment 8
Due on 2019-05-23, 23:59:59

1. Consider a game theoretic tree where the following moves are possible:
   - Initial state: Player A.
   - Player A has three moves: left, middle, and right.
   - Player B has two moves: up and down.
   - The payoffs are as follows:
     - If Player A moves left and Player B moves up, the payoff is 3 for Player A and 1 for Player B.
     - If Player A moves middle and Player B moves down, the payoff is 2 for Player A and 2 for Player B.
     - If Player A moves right and Player B moves up, the payoff is 1 for Player A and 3 for Player B.
   - Determine the optimal strategy for both players.

2. Consider a game with the following payoffs:
   - Player A has two strategies: left and right.
   - Player B has three strategies: up, middle, and down.
   - The payoffs are as follows:
     - If Player A chooses left and Player B chooses up, the payoff is 4 for Player A and 5 for Player B.
     - If Player A chooses left and Player B chooses middle, the payoff is 2 for Player A and 3 for Player B.
     - If Player A chooses left and Player B chooses down, the payoff is 1 for Player A and 2 for Player B.
     - If Player A chooses right and Player B chooses up, the payoff is 3 for Player A and 4 for Player B.
     - If Player A chooses right and Player B chooses middle, the payoff is 1 for Player A and 1 for Player B.
     - If Player A chooses right and Player B chooses down, the payoff is 2 for Player A and 3 for Player B.
   - Determine the Nash equilibrium of the game.

3. Consider a two-player game with two strategies each: Player A can choose left or right, and Player B can choose up or down.
   - The payoffs are as follows:
     - If both players choose left, the payoff is 5 for each player.
     - If Player A chooses left and Player B chooses up, the payoff is 4 for Player A and 3 for Player B.
     - If Player A chooses left and Player B chooses down, the payoff is 3 for Player A and 4 for Player B.
     - If Player A chooses right and Player B chooses up, the payoff is 2 for Player A and 5 for Player B.
     - If Player A chooses right and Player B chooses down, the payoff is 5 for Player A and 2 for Player B.
   - Determine the Nash equilibrium of the game.

4. Consider a two-player game with two strategies each: Player A can choose left or right, and Player B can choose up or down.
   - The payoffs are as follows:
     - If both players choose left, the payoff is 5 for each player.
     - If Player A chooses left and Player B chooses up, the payoff is 4 for Player A and 3 for Player B.
     - If Player A chooses left and Player B chooses down, the payoff is 3 for Player A and 4 for Player B.
     - If Player A chooses right and Player B chooses up, the payoff is 2 for Player A and 5 for Player B.
     - If Player A chooses right and Player B chooses down, the payoff is 5 for Player A and 2 for Player B.
   - Determine the Nash equilibrium of the game.

5. Consider a two-player game with two strategies each: Player A can choose left or right, and Player B can choose up or down.
   - The payoffs are as follows:
     - If both players choose left, the payoff is 5 for each player.
     - If Player A chooses left and Player B chooses up, the payoff is 4 for Player A and 3 for Player B.
     - If Player A chooses left and Player B chooses down, the payoff is 3 for Player A and 4 for Player B.
     - If Player A chooses right and Player B chooses up, the payoff is 2 for Player A and 5 for Player B.
     - If Player A chooses right and Player B chooses down, the payoff is 5 for Player A and 2 for Player B.
   - Determine the Nash equilibrium of the game.

6. Consider a two-player game with two strategies each: Player A can choose left or right, and Player B can choose up or down.
   - The payoffs are as follows:
     - If both players choose left, the payoff is 5 for each player.
     - If Player A chooses left and Player B chooses up, the payoff is 4 for Player A and 3 for Player B.
     - If Player A chooses left and Player B chooses down, the payoff is 3 for Player A and 4 for Player B.
     - If Player A chooses right and Player B chooses up, the payoff is 2 for Player A and 5 for Player B.
     - If Player A chooses right and Player B chooses down, the payoff is 5 for Player A and 2 for Player B.
   - Determine the Nash equilibrium of the game.

7. Consider a two-player game with two strategies each: Player A can choose left or right, and Player B can choose up or down.
   - The payoffs are as follows:
     - If both players choose left, the payoff is 5 for each player.
     - If Player A chooses left and Player B chooses up, the payoff is 4 for Player A and 3 for Player B.
     - If Player A chooses left and Player B chooses down, the payoff is 3 for Player A and 4 for Player B.
     - If Player A chooses right and Player B chooses up, the payoff is 2 for Player A and 5 for Player B.
     - If Player A chooses right and Player B chooses down, the payoff is 5 for Player A and 2 for Player B.
   - Determine the Nash equilibrium of the game.

8. Consider a two-player game with two strategies each: Player A can choose left or right, and Player B can choose up or down.
   - The payoffs are as follows:
     - If both players choose left, the payoff is 5 for each player.
     - If Player A chooses left and Player B chooses up, the payoff is 4 for Player A and 3 for Player B.
     - If Player A chooses left and Player B chooses down, the payoff is 3 for Player A and 4 for Player B.
     - If Player A chooses right and Player B chooses up, the payoff is 2 for Player A and 5 for Player B.
     - If Player A chooses right and Player B chooses down, the payoff is 5 for Player A and 2 for Player B.
   - Determine the Nash equilibrium of the game.