Cameron Chandra camchan

10/10/2017

SI301/Romero

Assignment 5

Textbook Questions:

1. This claim is true. In a two-person game, each player will play their best response, yielding their highest individual payout possible. If player A has a dominant strategy, that strategy is her best response, regardless of what player B does. If player B also plays her best response, the result will be a pure strategy Nash equilibrium.
2. This statement is incorrect. In a game with multiple equilibria, like the PowerPoint vs. Keynote game, there may be a Nash equilibrium that is played, but is not social-welfare maximizing. For example, if both players choose to use PP, they are playing a Nash equilibrium. But, their payoffs would be higher if they both chose KN.
3. Nash equilibria: (D,L); (U,R)
4. Yes, player B has a dominant strategy. Player A’s optimal payout changes depending on what player B does. Player B, however, maximizes her payout by playing L, regardless of what player A does.
5. Nash equilibria: (b,L).

5. (M,M) is the only Nash equilibrium in this game.

10.

1. Nash equilibria: (3,3) is the only Nash equilibria.
2. You cannot change player A’s payoff to result in a game without a pure strategy Nash equilibrium. Regardless of what number you change player A’s payout to, either player A or B will want to deviate from their strategy to receive a higher payout.
3. Yes, you could change the 3 to a 1. With a new payout of (3,1), player B wishes to deviate from strategy L to receive the higher payout (2) of strategy R. (U,R) is not a Nash equilibrium either, along with the other two cells, because player A wishes to deviate to strategy D.

11. In a Nash equilibrium, both players are playing their best response to each others strategies. A dominated strategy implies that the player has at least one strategy resulting in a higher payout. So, a dominated strategy cannot be a player’s best response to another’s strategy. So, the strategies in an equilibrium cannot be a dominated strategy.

13.

1. Nash equilibria: (U,L,l) ; (D,R,r).
2. Player 3 plays strategy l. Player 3 knows that players A and B will play their best response to her strategy. And, because player 3 understands the payouts, the Nash equilibrium if she plays strategy l has a higher payout that strategy r. The triple strategy would be (U,L,l). This list of strategies is also a Nash equilibrium in the simultaneous game.

---------------------------------------------------------------------------------------------------------------------

2.

1. Student 1’s best responses:

In response to Student 2’s strategy (Exam) = Lecture

In response to Student 2’s strategy (Presentation) = Lecture

In response to Student 2’s strategy (Lecture) = Exam

1. Neither player has a dominant strategy. As seen from part b, Student 1’s best responses to student 2’s strategies are not all the same, as 1’s response to 2’s lecture strategy is exam. The same is true for Student 2, as two of her best response are strategy lecture and one is exam.
2. There are two Nash equilibria in this game: (Lecture,Exam); (Exam,Lecture). These are best responses for both students, in which neither wishes to deviate to another strategy.
3. To make (Exam,Exam) a Nash equilibrium, the professor must change the extra credit to 12 points. For this to occur, the payout for cells (Lecture,Exam) and (Exam,Lecture) must be (88,88). By setting up the equation (80+84+x) = 88, we solve for x to find the appropriate amount of extra credit.

3.



1. This game is impossible. If one player receives the same payoff for every strategy, every strategy must be a dominant strategy. So, one player will always have a dominant strategy.
2. This game is impossible. A best response is the strategy that yields the highest payout based on the other player’s strategy. Even if all the responses A has for B’s strategy yield a payout of 0, those responses are considered best responses. Best responses are one or more responses to an opponent’s strategy that return the highest payout.