Homework 1: Q2

Name: xinkai Lin, xinkaili

*Don't forget to input your list of collaborators and sources on **AutoLab**.*
Please submit this file as a PDF.

1 Proof Idea

Begin Proof Idea: we will prove this by showing that change any of the schedule from A and B will change the winning rate. I'm going to use the same example from the walk-through video. We set n = 2, so that now we have A, B both released TV shows and form a $(n!)^2$ possible pair which in here is 4. However, this time I'm going to set the success rate of Friends(a1) to be 100, and Game of Thrones(a2) to be 96. For the B, House of Cards(b1) as 96, and The Office(b2) as 98. Then I'm going to pair them up, and showing that by changing the schedule will affect the winning rate which prove to be unstable.

2 Proof Details

Begin Proof Details: First, we set n=2, where A release two TV show, a1 and a2 with the success rate of 100 and 96. Which in B also release two TV show b1 and be with the success rate of 96 and 98. Now that we have $(n!)^2$ time possible combinations which is 4. Now, A want to release a1 on the first date and a2 on the second where B want to release b1 and b2 on the second, then we have a pair of (100, 96) and (96, 98). In this case, we have 1:1 situation where A winning for the first release date and B winning for the second release date. Now, I'm going to change the schedule of A in which I'll let a2 to be on the first release date and b2 on the second. then the new pair will be (96, 96) and (100, 98). Since when we have a tie, we assume A wins. So that after the schedule changed, we have the winning rate as 2:0 with A winning on the both date. If now we change the B's schedule as (96, 98) and (100, 96), the winning ratio will be 1:1 as B wins on the first date, and A wins on the second date. Finally, if we change the schedule of A now, the pair will be (100, 98) and (96, 96). Now, we have the winning ratio as 2:0 which increase the winning rate of A. In conclusion, I have shown for all $(n!)^2$ possible time that if I change the schedule of which one of them, it will increase the winning rate, in which this prove that each pair of schedules are unstable. This is False.