Examine the two folders: Case1 and Case2

In each one of them, there is a transcript file recording the data of 300 matches between the user and an agent (representing a market). The transcripts use format as those used in Lab 1 and Lab 2.

Part 1:

For each Case 1 and Case 2 separately, create a separate Jupiter notebook using numpy and pandas to carry out the following data-analytic tasks:

- Read the data in the transcript file into a 2-dimensional numpy array X.
- Retrieve the actions of the agent as a separate 1-dimensional numpy array market Y.
- Create a DataFrame object Z1 with 3 columns: Now, Prev1, Prev2 such that the ith row in Z1 records the actions of the agent (representing a market) in match i+2, i+1, and I respectively.
  In other words, for each of the matches from match 2 to match 299, the columns Now, Prev1, Prev2 record (i) the action by the agent for the match, (ii) the action by the agent for the previous match, and (iii) the action by the agent for the match before the previous match.
- Use groupby in Pandas to collect statistics regarding numbers of times Rock, Paper, Scissor (i.e. 0, 1, 2) show up in Now when Prev1 is Rock, Paper, Scissor (i.e. 0, 1, 2) respectively.
- Use groupby in Pandas to collect statistics regarding numbers of times Rock, Paper, Scissor (i.e. 0, 1, 2) show up in Now when Prev2 is Rock, Paper, Scissor (i.e. 0, 1, 2) respectively.
- Use groupby in Pandas to collect statistics regarding numbers of times Rock, Paper, Scissor (i.e. 0, 1, 2) show up in Now when Prev1 is Rock, Paper, Scissor (i.e. 0, 1, 2) respectively and Prev2 is Rock, Paper, Scissor (i.e. 0, 1, 2) respectively. (Note that there are possible 9 combinations of actions from Prev1 and Prev2.)
- Submission: Upload the 2 Jupiter notebooks.

Part 2:

Put down the statistical data you got from Part 1 in a WORD document. **For Case 1 and Case 2 separately**, provide answers and explanations to the following questions based on the statistical data. Put down your answers and explanations in the WORD document.

- Do you think the action by the agent in a match (Now) is independent of (i.e. not really affected by) the agent's action in the previous match (Prev1)? Why or why not?
- Do you think the action by the agent in a match (Now) is independent of (i.e. not really affected by) the agent's action in the match before the previous match (Prev2)? Why or why not?
- Do you think the action by the agent in a match (Now) are jointly affected by the agent's actions in the previous 2 matches (Prev1 and Prev2)? Why or why not?
- Based on the answers above, what would be your approach to play the game with the agent in order to improve your net gain over time?
- Submission: Upload your word document.